# ORICA BOTANY

MODIFICATION APPLICATION
FOR THE
HCB WASTE REPACKAGING PLANT
PROJECT APPROVAL

**9 APRIL 2018**

**REPACKAGING PLANT PROJECT - PROJECT 06_0028**
**MODIFATION NUMBER 7**

# CONTENTS

# 1. SUMMARY

Orica seeks a modification to the Project Approval issued for the Hexachlorobenzene (HCB) waste repackaging plant to align the Project Approval and Environment Protection Licence 2148. This modification is submitted to the Department of Planning and Environment (DPE) for consideration.

The proposed changes will simplify compliance tracking, ensure that future environmental auditing can be conducted with administrative clarity and provide project stakeholders with a sole source of reference for specific regulatory environmental monitoring requirements for operation of the HCB waste repackaging plant.

The benefit of this modification is that it will remove the need for further administration over time should aspects of the EPL2148 conditions be modified over the coming years of repackaging required to facilitate export of the HCB waste.

# 2. BACKGROUND

## History of the HCB Waste

Hexachlorobenzene (HCB) was produced on the Botany Industrial Park (BIP) as a by-product of the manufacture process of chemical solvents and plastics between the 1960s and 1991. HCB is a bioaccumulative Class 6.1 material, a Scheduled Waste and Scheduled Poison (S7), and is also a suspected carcinogen. It is not flammable or soluble.

As a result of historical operations, Orica accumulated approximately 15,000 tonnes of waste materials (including concentrated waste and low-level HCB contaminated waste, e.g. contaminated packaging) contaminated with HCB and other chlorinated compounds.

## Repackaging Need

Orica has an ongoing programme of re-drumming the material from any deteriorating drums of HCB waste. The nature of the waste means that redrumming is necessary. Redrumming produces waste in the form of used personal protective equipment, crushed drums and pallets.

## Repackaging Plant Proposal

In 2006 to improve its HCB operations, and as a necessary step in permanently removing the HCB waste from Botany, Orica developed a proposal to build a new re-packaging plant and a new store (described as Store "J") in a warehouse on the BIP.

An Environment Assessment for the repackaging plant project was prepared and submitted to the now NSW Department of Planning and Environment (DPE) in April 2006. Approval for construction and operation of the repackaging plant was received August 2006 (Project Approval 06_0028).

The re-packaging plant was designed to suit the three identified options for the waste at that point in time; destruction at a plant to be developed somewhere in NSW, export for destruction and ongoing storage.

The re-packaging plant is a materials handling facility to automate work previously performed manually. There is no chemical processing of the waste. The plant was required to enable Orica to prepare the waste for transport off site, it reduced manual re-drumming, improved occupational hygiene for workers handling the waste, and provided the capacity to repackage the HCB waste at the rate required for off-site treatment.

Store "J" was needed to provide an area for packing drums into transport containers for Orica to move the waste off-site for destruction. The area was sized for 4 containers, a day's maximum production, but, also provided additional storage to consolidate stocks at the rear of the site and to accommodate the waste generated each year from re-drumming operations. Consolidating waste at Store J allowed more of the waste to be situated further away from residents in Denison Street (and no closer to other residents than the existing Stores A, B and C where the majority of the waste is kept). A number of modifications have been processed since the granting of consent.

### History of Waste Destruction Investigations

Through the 1970s and 1980s, many unsuccessful attempts were made to establish a high temperature incinerator in Australia to deal with stores of hazardous wastes, including HCB, but in 1992 the idea of a centralised high temperature waste disposal facility was abandoned,

and the focus changed to alternative emerging technologies to treat each type of intractable waste.

In 1996, the Australian and New Zealand Environment and Conservation Council (ANZECC) endorsed the National HCB Waste Management Plan, which required Orica to treat its HCB waste on site.

Orica commenced investigations into the development of a waste destruction facility, selected the Geomelt process and released an Environmental Impact Statement (EIS) in 2001. An Independent Review Panel (IRP) concluded in 2004 that it would be preferable to undertake the waste destruction process at an alternative, remote site and Orica withdrew its proposal to build the plant at Botany.

In accordance with the IRP's conclusions, Orica looked for a suitable host site for the construction and operation of a waste destruction facility within New South Wales, but this was not successful.

Orica also undertook investigations into export options for treatment of the waste and following unsuccessful export applications to Germany, Denmark and France, export to Finland has succeeded as outlined below.

**Waste Export**

In July 2016 Orica lodged an application with the Federal Government to export an initial shipment of 135 tonnes of HCB waste currently stockpiled at the BIP for safe and permanent destruction in Finland at a facility operated by Finnish environmental management company, Ekokem (now Fortum Waste Solutions). An initial shipment of 135 tonnes was shipped in December 2016 and a subsequent application, approval and then shipment of 1,500 tonnes followed later in 2017. At the time of writing Orica is preparing for a third Finnish export application.

The road transport of HCB waste from BIP to Port Botany is not covered by the Project Approval for the HCB Waste Repackaging Plant. This transportation is planned in close consultation with local Emergency Services.

**Waste Stocks**

Orica Botany stores the wastes in accordance with the Project Approval, EPL 2148, the Chemical Control Order in Relation to Scheduled Chemical Wastes 2004 and the Environmentally Hazardous Chemical Act Licence 26.

The wastes stocks are reported to the Environment Protection Authority (EPA) annually and those reported most recently (August 2017) are summarised in Table 1 (this data does not account for the second export shipment).

**Table 1 Waste Stock Summary**

| Material | Container(s) used for repackaging[1] | Waste mass[2] (t) | Organochlorine mass[2] (t) |
|---|---|---|---|
| Chlorinated solvents byproduct wastes | 100L, 200L steel drum, IBC[3] | 7,800 | 7,800 |
| Vinyls byproduct wastes | IBC[3] | 1,700 | 1,700 |
| Demolition wastes | Plywood box[4], IBC[3], 205 L steel drum | 200 | 2 |
| Contaminated process wastes[5] | Plywood box[4], IBC[3], 205 L steel drum | 1,600 | 400 |
| Contaminated packaging wastes | Plywood box[4], Woven bag[6], 205 L steel drum | 2,300 | 23 |
| **Total** | | **13,600** | **9,900** |

Note 1: All repackaging containers are specifically approved for the dangerous goods that they contain.
Note 2: Mass rounded for reporting purposes only.
Note 3: IBC refers to Intermediate Bulk Container, 1000 litre, constructed of high density polythene (HDPE).
Note 4: Plywood boxes hold 1000 litres of solids and are approved for the containment of various low level wastes.

Note 5: Refers to wastes from the repackaging and historical operations, not processing / treatment of waste.

Note 6: Woven bags are specifically approved for the containment of contaminated wooden pallets.

# 1. PAST MODIFICATIONS

The HCB Waste Repackaging Plant Approval (06_0028) has been amended on six separate occasions to address the need for additional storage areas on Site and reflect changes to the project Environmental Protection Licence as follows:

| Modification | Date | Purpose |
|---|---|---|
| 1 | 9 January 2007 | To alter air quality monitoring requirements. |
| 2 | 16 February 2009 | To rectify inconsistencies with air quality and volatile organic<br>compounds monitoring requirements of Environmental Protection<br>Licence 2148 (EPL 2148). |
| 3 | 10 July 2009 | To approve additional container storage areas on Site and for the<br>construction of temporary cover over Store H. |
| 4 | 12 July 2010 | To allow use of depot 11/57 for relocation of a number of shipping<br>containers from depot 11/52. |
| 5 | 7 July 2011 | To allow the waste from Store E to be repackaged at Store J, and<br>for wastes from Store E, suitable for thermal treatment, to be<br>relocated to the Car Park Waste Encapsulation Project. |
| 6 | 31 July 2012 | To provide an additional enclosed storage facility for HCB waste held on Site. |

# 2. REPACKAGING PLANT OPERATIONS

**Operations from 2007- 2011**

The Repackaging Plant was commissioned in May 2007. It semi-automates HCB waste repackaging operations, improving the repackaging capacity and operator working conditions compared with previous manual repackaging methods.

Full scale repackaging was completed in 2011 in accordance with the Project Approval and Environment Protection Licence (EPL) 2148.

The repackaging plant remains unchanged from that approved, commissioned, verified and operated during this period. The exception is that that liquids separation is no longer required as that was undertaken during the full-scale repackaging campaign.

**Store E**

Store E consisted of six vertical storage tanks filled with demolition material generated during the closure of the Solvents Plant and the demolition of the Hexa Store at the Chlorine Plant. It contained low-level HCB contaminated waste, such as soil, concrete foundations and slabs, cables and carbon black exchangers.

Relocation of Store E wastes was completed in December 2011.

Store E is not in use but is still registered as a dangerous goods depot.

Licence monitoring points that related to Store E (i.e. points 28, 32 and 36) have been removed from the EPL2148 as they are no longer required.

**Store G/H**

Stores G/H consisted of Vinyls plant wastes stored in 29 concrete tanks and about 700 te in 205 L steel drums.

Repackaging at Stores G/H was completed in April 2011. This store is maintained but it is not anticipated that further repackaging will be undertaken at this location.

**Operations Since 2011**

Since full scale repackaging was completed in 2011 the Project has been in a maintenance phase of storage and inspection. Periodic rounds of minor repackaging are undertaken as required to maintain the packaging in the condition required for export.

Appendix 1 provided figures outlining the current waste store locations at BIP, the HCB Waste Repackaging plant process and the EPL licence points.

The HCB waste repackaging plant was designed to repackage the full stockpile.

The ongoing minor repackaging rounds are not the same as the 2007 – 2011 major campaign, which repackaged the bulk of the waste in approximately 4 years.

The Project Environmental Assessment prepared in 2006, and the subsequent HAZOP, considered a repackaging rate of 300 tonne of waste per week operating eight hours per day five days per week.

Seven staff are currently employed to manage the waste stores and they undertake activities including repackaging, relocating waste to shipping containers, inspections, maintenance etc.

Current operation is very sporadic and averages at a few drums a week (equivalent to approx. one tonne / week). Drums are repackaged on an as needs basis, to maintain them in the high quality required for export. Waste stores are inspected monthly and drums showing any early signs of corrosion are noted and redrumming activities are scheduled to occur when a small campaign is justified to ensure effective use of staff.

As repackaging is sporadic it is not anticipated that the plant will be required to operate at the approved capacity. We have maintained the plant capability and run it in small campaigns for efficiency.

**Environmental Management**

An Operation Environmental Management Plan (OEMP) continues to be implemented for the works.

A copy of the OEMP, last updated in February 2018, is available on Orica's website, and is included as Appendix 3.

The project is licenced under Environment Protection Licence 2148. The licensed monitoring points are shown in Figure 3 in Appendix 1. Points 40, 41 and 42 are no longer in use. Monitoring has been conducted and has demonstrated full compliance to date. Orica has not had any non-compliances with the emissions sampling requirements of EPL2148 since the HCB waste repackaging Plant commenced operations in 2007.

Monitoring data is publicly available on the Orica website at:

http://www.orica.com/Sustainability/Environmental-Monitoring-Data/Botany/hcb-repackaging-plant-project#.WougBxFPrZM

EPL2148 states that "drums previously used for HCB storage that have demonstrated a concentration of less than two mg/kg can be recycled".

Orica is investigating local options for the destruction of low level waste (e.g. used Personal Protective Equipment, pallets etc.).

**Independent Environmental Audits**

The purpose of Environmental Audits required by the Project Approval was to independently assess compliance and environmental management practices for the project.

Environmental Audits were undertaken in late 2007 and late 2008 (with reports finalised in 2008 and 2009 respectively). The 2009 Audit Report (Parsons Brinckerhoff 2009) concluded:

- *the project has been carried out generally in accordance with the requirements of the Project Approval and subsequent Modifications*
- *the project has been carried out generally in accordance with the requirements of other licences and approvals that apply to the project*
- *the environmental performance of the project is in line with the predictions made and conclusions drawn in the Environmental Assessment*
- *a number of minor opportunities exist to improve project administration*

- *there have been no environmental impacts associated with the project to warrant mitigation works.*

As stated above, Orica has not had any non-compliances with the emissions sampling requirements of EPL2148 since the HCB waste repackaging Plant commenced operations in 2007.

# 3. PROPOSED MODIFICATIONS TO THE PROJECT APPROVAL

This Proposal supports the 7th application for modification to the Project Approval under Section 75W of the Environmental Planning and Assessment Act. The modification request seeks administrative changes to a number of operating conditions where there is a lack of alignment with conditions in EPL 2148, or where minor updates are required. There are no safety, environmental or community impacts as a result of the proposed amendments, as they are administrative only.

The proposed changes and justifications are presented in Table 2.

Some of these changes are minor, for example where monitoring point naming has changed. Other changes are required to reflect material changes to EPL2148 requirements that have come into place as a result of a review of monitoring requirements in light of data obtained over extended operations. The specific contaminants to be monitored and the frequency of monitoring has been adjusted by the EPA over time as deemed appropriate to ensure the ongoing safe operation of the repackaging plant. This has resulted in a lack of alignment between EPL2148 and the Project Approval.

**Reference to Earlier Requests to Remove Inconsistencies**

Orica notes that this modification application is not the first request to remove discrepancies between the Project Approval and EPL2148. In October 2008 Orica submitted a modification application requesting that the Project Approval refer to EPL2148 instead of attempting to duplicate the conditions in EPL2148. That application also pointed out that future amendments to EPL2148 were anticipated and that the discrepancy between the two regulatory instruments would further complicate compliance tracking.

In February 2009 the Department replied stating that it did not support allowing further modification of the approval beyond realigning it with the EPL. At that time, however, the discrepancies between EPL2148 and the Project Approval were relatively minor and included differences in monitoring point nomenclature and the status of breakthrough limits and repackaging trials.

Since 2009 the conditions of EPL2148 relevant to the HCB waste repackaging plant have been further modified by the EPA and thus the lack of alignment is now more complex. For example, the number of parameters to be monitored at Point 26, the common stack housing the HCB waste repackaging plant and Store J has been reduced from nine to five since that time, and the frequency of monitoring has also been altered in EPL2148. These changes have been endorsed by the EPA in light of sound monitoring performance and the changed nature of operations over time.

**Benefit of Proposed Modifications**

It is Orica's preference that the Project Approval be modified to simply refer to EPL2148 as the source of environmental monitoring requirements for the HCB Waste repackaging plant.

The benefit of this approach is that it will remove the need for further administration over time should minor aspects of the EPL2148 conditions be modified over the coming years of repackaging required to facilitate export of the HCB waste.

It will also ensure that future environmental auditing can be conducted with administrative clarity and provide project stakeholders with a sole source of reference for specific regulatory environmental monitoring requirements for operation of the HCB waste repackaging plant.

**Alternatives**

Table 2 also provides an alternative modification for relevant conditions of the Project Approval that would ensure the two regulatory instruments are aligned at this point in time. This alternative approach is not Orica's preferred solution as it does not ensure consistency for the continued life of the project as further changes to EPL2148 may be required over time, and thus further administration would be required to again realign requirements.

## Table 2: Project Approval proposed amendments

<table>
<tr><th>Reference</th><th>Condition</th><th>Proposed amendment</th><th>Justification for proposed amendment</th><th>Alternative Option to align with EPL2148</th></tr>
<tr><td>Glossary</td><td>CPRC – Community Participation Review Committee</td><td>Replace with: OBLC – Orica Botany Liaison Committee.</td><td>The CPRC, following consultation with the relevant stakeholders, was merged with the Groundwater Community Liaison Committee in 2014. The merged committee is called the Orica Botany Liaison Committee (OBLC).</td><td>N/A</td></tr>
<tr><td>Condition 2.5</td><td>For the purposes of this approval, air monitoring/ air discharge points shall be identified as provided in Table 1.</td><td>Remove or update to state that monitoring and discharge points must be identified as specified in EPL 2148.</td><td>This operating condition is essentially duplicated in EPL 2148 condition P1.1.<br><br>The EPA amended the monitoring point numbers as a result of the establishment of other (non-HCB project) licensed monitoring points. Points 27, 31 and 35 no longer align with the approval.<br><br>Refer to Figure 1 in Appendix 1 for a plan showing monitoring locations.</td><td>Modify Condition 2.5 to align with EPL2148 as follows:<br><br>Remove the rows called Points 27, 31 and 35 from Table 1 and replace them with:<br><br><table><tr><th>EPL2148 ID Number</th><th>Type of Discharge Point</th><th>Description of Location</th></tr><tr><td>40</td><td>Discharge to air</td><td>Stack from temporary enclosure of Store G/H</td></tr><tr><td>41</td><td>In-line pipe monitoring</td><td>Store G/H interstage point between the activated charcoal filters on the extraction pipe (former point 35)</td></tr></table></td></tr>
</table>

<table>
<tr><th>Reference</th><th>Condition</th><th>Proposed amendment</th><th>Justification for proposed amendment</th><th>Alternative Option to align with EPL2148</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><td>42</td><td>In-line pipe monitoring</td><td>Store G/H interstage point between the activated charcoal filters on the extraction pipe (former point 31)</td></tr>
</table>
Note –no activity has been undertaken at Stores G/H for some time. These stores were tanks and waste from those locations has been repackaged and transferred to other HCB stores at BIP.
</td></tr>
<tr><td>Condition 2.6</td><td>The Proponent shall design, construct, operate and maintain the project to ensure that the concentration of each pollutant at the discharge points (see EPL Identification Number) listed in Table 2 does not exceed the maximum concentration limit specified for that particular pollutant. For the purpose of monitoring and determining compliance with this condition, "dioxins and furans" shall be polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF),</td><td>Remove or update to state that discharge limits must comply with those specified in EPL 2148.</td><td>This operating condition is essentially duplicated in EPL 2148 condition L2.1 - L2.3, with monitoring frequencies specified in condition M2.2 and M2.5.<br><br>Throughout the previous full-scale repackaging campaign, dioxin results were in full compliance with the specified limit, often below the limit of detection. In response the EPA amended the EPL, so dioxin testing was no longer required.<br><br>Other pollutants (including hazardous substances, cadmium and mercury) are no longer required in EPL2148. Correspondence from the EPA regarding the modifications to EPL2148 is included in Appendix 2.<br><br>Refer to Figure 3 in Appendix 1 for a schematic of current air monitoring.</td><td>Modify Condition 2.6 to align with EPL2148 as follows:
<table>
<tr><th>EPL2148 ID Number</th><th>Pollutant</th><th>Maximum Concentration Limit</th></tr>
<tr><td>26</td><td>Hexachloroethane</td><td>9.7 mgm$^{-3}$</td></tr>
<tr><td></td><td>Volatile Organic Compounds</td><td>10 mgm$^{-3}$</td></tr>
<tr><td></td><td>Hexachlorobenzene</td><td>0.002 mgm$^{-3}$</td></tr>
<tr><td></td><td>Total solids</td><td>10 mgm$^{-3}$</td></tr>
<tr><td></td><td>Hexachlorobutadiene</td><td>0.21 mgm$^{-3}$</td></tr>
<tr><td>29, 30, 33, 34</td><td>Tetrachloroethene (tetrachloroethylene)</td><td>340 mgm$^{-3}$</td></tr>
<tr><td>40</td><td>Hexachlorobenzene</td><td>0.002 mgm$^{-3}$</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Reference</th><th>Condition</th><th>Proposed amendment</th><th>Justification for proposed amendment</th><th>Alternative Option to align with EPL2148</th></tr>
<tr><td></td><td>presented as 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD) equivalent and calculated in accordance with the procedures included in Part 4, clause 29 of the Protection of the Environment Operations (Clean Air) Regulation 2002.</td><td></td><td></td><td>
<table>
<tr><td></td><td>Hexachlorobutadiene</td><td>0.21 mgm$^{-3}$</td></tr>
<tr><td></td><td>Hexachloroethane</td><td>9.7 mgm$^{-3}$</td></tr>
<tr><td></td><td>Total solids</td><td>10 mgm$^{-3}$</td></tr>
<tr><td></td><td>Volatile Organic Compounds</td><td>10 mgm$^{-3}$</td></tr>
<tr><td>41</td><td>1,2-Dichloroethane</td><td>40 mgm$^{-3}$</td></tr>
<tr><td>42</td><td>1,2-Dichloroethane</td><td>40 mgm$^{-3}$</td></tr>
</table>
</td></tr>
<tr><td>Condition 2.8</td><td>If the break-through limit described in condition 2.7 at monitoring/ discharge point 29 or 30 is exceeded after completion of commissioning, the repackaging facility shall immediately shutdown. The Proponent shall only restart the repackaging facility after the carbon filter is replaced with a new activated carbon filter.</td><td>Remove or update to state that shutdown must occur in accordance with the requirements of EPL 2148.</td><td>This operating condition is essentially duplicated EPL 2148 condition E4.3. It is further detailed in the Air Quality Management Plan, which has been reviewed and commented on by the EPA. A copy of the current Operation Environmental Management Plan, incorporating the Air Quality Management Plan is enclosed with this Proposal (refer Appendix 3).</td><td>Modify Condition 2.6 to align with EPL2148 as follows:<br><br>E4.3 Shutdown Requirements<br>a) If the break-through limit at monitoring/discharge points 29 or 30 is exceeded after completion of commissioning, the HCB repackaging facility must shutdown as soon as practical after the exceedance is reported (twice daily checks are undertaken during operation). The licensee must only restart the HCB repackaging facility after the carbon bed is replaced with a new or regenerated activated carbon bed.<br>Replacement carbon is not required in the event that the exceedance is found to be a technical error and is unjustified.<br>b) If any concentration limit described in condition L2.3 at monitoring/discharge point 26 is exceeded after completion of commissioning, the HCB repackaging facility must shutdown on receipt of the relevant monitoring data. The licensee can only restart the HCB repackaging facility after receiving written approval from the EPA.</td></tr>
</table>

| Reference | Condition | Proposed amendment | Justification for proposed amendment | Alternative Option to align with EPL2148 |
|---|---|---|---|---|
| Condition 2.9 | If the break-through limit described in condition 2.7 at monitoring/ discharge point 31 is exceeded after completion of commissioning, material transfer processes shall immediately shut down. The Proponent may only restart the material transfer processes after the carbon filter is replaced with a new activated carbon filter. | Remove or update to state that shutdown must occur in accordance with the requirements of EPL 2148. | As above. | As a minimum the condition should be changed to refer to point 42, instead of point 31.<br>EPL2148 no longer has shutdown requirements for point 31 (now point 42), this is the interstage point for stores G/H.<br>No activity has been undertaken at Stores G/H for some time. These stores were tanks and waste from those locations has been repackaged and transferred to other HCB stores at BIP. |
| Condition 2.10 | If any concentration limit described in condition 2.6 at monitoring/ discharge point 26 or 27 is exceeded after completion of commissioning, the repackaging facility shall immediately shut down. The Proponent may only restart the repackaging facility after receiving written approval from the OEH. | Remove or update to state that shutdown must occur in accordance with the requirements of EPL 2148. | As above | As a minimum the condition should be changed to refer to point 40, instead of point 27. |

<table>
<tr><th>Reference</th><th>Condition</th><th>Proposed amendment</th><th>Justification for proposed amendment</th><th>Alternative Option to align with EPL2148</th></tr>
<tr>
<td>Condition 2.13</td>
<td>The Proponent shall design, construct, operate and maintain the project to ensure that the noise contributions from the project to the background acoustic environment do not exceed the maximum allowable noise contributions specified in Table 1, at those locations and during those periods indicated. The maximum allowable noise contributions apply under wind speeds up to 3 ms-1 (measured at 10 metres above ground level), and under temperature inversion conditions of up to 3 ºC/ 100.<br>Note: Location is nearest affected receivers surrounding the re-packaging plant and Stores E and H.<br>Parameter is LAeq(15 minute) 35 dB(A) for day, evening and night and LAeq(1 minute) 45 dB(A) for night, Sundays and public holidays.</td>
<td>Remove or update to state that Orica must comply with the noise requirements specified in EPL 2148.</td>
<td>Site wide (cumulative) ambient noise limits are specified in EPL 2148 condition L5.2.<br><br>There is no environmental or community benefit associated with this project specified condition. Orica requests this be removed as:<br><br>▪ the receivers nearest to the infrastructure are all commercial or industrial facilities, many of which operate on a 24 hour basis with significant noise profiles in their own right;<br>▪ the residential receivers nearest to the repackaging plant are approximately 500 metres away and are separated by other plants and operations on the Botany Industrial Park with higher permitted noise profiles;<br>▪ no noise complaints have been received in relation to the HCB project since establishment;<br>▪ monthly ambient noise measurements, recorded against EPL 2148 condition L5.2 of the licence, show that noise generated by the site is compliant and that background (non Orica) noise contributions dominate the noise environment at approximately 45-55 dB(A) during the night time periods, 20-30 dB(A) above the criteria specified in this condition. As a rule of thumb, a noise contribution 10dB(A) quieter than another results in the former having a negligible</td>
<td>Modify Condition 2.13 to align with condition L5.2 of EPL2148 as follows:<br><br>Noise emissions emanating from all active Plants in the BIP premises, including loading and unloading of<br>material in or above the premises and when determined as a sound level contribution, shall not exceed<br>the following amenity LAeq criteria when measured or computed at any point within one metre of the<br>nearest boundary of any residence in the vicinity of the premises, using the "FAST" response on the sound level meter.<br><br>
<table>
<tr><th>Time of Day</th><th>LAeq</th></tr>
<tr><td>Day</td><td>65</td></tr>
<tr><td>Evening</td><td>55</td></tr>
<tr><td>Night</td><td>50</td></tr>
</table>
</td>
</tr>
</table>

| Reference | Condition | Proposed amendment | Justification for proposed amendment | Alternative Option to align with EPL2148 |
|---|---|---|---|---|
| | | | contribution to the overall noise environment;<br>▪ BIP monthly noise survey results are consistently greater than 45 dBA during night time (see Appendix 4 for BIP Noise Monitoring Report),<br>▪ determination of noise levels emanating specifically from the HCB project, when measured at the nearest receivers is not feasible due to the significant background (non Orica) noise contributions; and<br>▪ to exceed the criterion at the nearest residential receivers it is predicted that, without any attenuation, the HCB repackaging plant would require a sound power level of approximately 90 dB(A) which is above the internal Orica noise design standard. | |

| Reference | Condition | Proposed amendment | Justification for proposed amendment | Alternative Option to align with EPL2148 |
|---|---|---|---|---|
| Condition 2.14 | For the purpose of assessment of noise contributions specified under condition 2.13 of this approval, noise from the project shall be:<br>a) at any point within the residential boundary, or at any point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary; and<br>b) subject to the modification factors provided in Section 4 of the *New South Wales Industrial Noise Policy* (EPA, 2000), where applicable<br>Notwithstanding, should direct measurement of noise from the project be impractical, the Proponent may employ an alternative noise assessment method deemed acceptable by the EPA (refer to Section 11 of the *New South Wales Industrial Noise Policy* (EPA, 2000)).<br><br>Details of such an alternative noise assessment method | Remove if Condition 2.13 is removed. | No longer relevant if condition 2.13 is removed. | |

<table>
<tr><th>Reference</th><th>Condition</th><th>Proposed amendment</th><th>Justification for proposed amendment</th><th>Alternative Option to align with EPL2148</th></tr>
<tr><td></td><td>accepted by the EPA shall be submitted to the Director-General prior to the implementation of the assessment method.</td><td></td><td></td><td></td></tr>
<tr><td>Condition 3.1</td><td>The Proponent shall monitor the concentration of each pollutant specified by sampling and obtaining results by analysis. The Proponent shall use the sampling method, units of measure and sampling frequency as indicated in Tables, 4, 2 and 3B.<br>Note: This refers to monitoring points 26, 27, 29, 30, 33, 34 and 35.</td><td>Remove or update to state that monitoring must occur in accordance with the requirements of EPL 2148.</td><td>This operating condition is essentially duplicated in EPL 2148 conditions M2.2 and M2.4.<br>The EPA amended the monitoring point numbers as a result of the establishment of other (non HCB project) licensed monitoring points. Point 27 and point 35 no longer aligns with the approval.<br>Refer to Figure 3 in Appendix 1 for a schematic of current air monitoring.</td><td>Modify Condition 3.1 to align with EPL2148 as follows:
<table>
<tr><th>Point</th><th>Pollutant</th><th>Unit of Measure</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>26</td><td>Hexachlorobenzene</td><td>mgm-3</td><td>Special Frequency 14</td><td>TM-34</td></tr>
<tr><td></td><td>Hexachlorobutadiene</td><td>mgm-3</td><td>Special Frequency 14</td><td>TM-34</td></tr>
<tr><td></td><td>Hexachloroethane</td><td>mgm-3</td><td>Special Frequency 14</td><td>TM-34</td></tr>
</table></td></tr>
</table>

| Reference | Condition | Proposed amendment | Justification for proposed amendment | Alternative Option to align with EPL2148 | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Total solids | mgm-3 | Special Frequency 14 | TM-15 |
| | | | | | Volatile organic compounds | mgm-3 | Special Frequency 14 | TM-34 |
| | | | | Point 29, 30 | Tetrachloroethene (tetrachloroethylene) | mgm-3 | Special Frequency 14 | Special Method 6 |
| | | | | Point 33,34 | Tetrachloroethene (tetrachloroethylene) | mgm-3 | Special Frequency 14 | TM-34 |
| | | | | Point 40 | Hexachlorobenzene | mgm-3 | Special Frequency 14 | TM-34 |
| | | | | | Hexachlorobutadiene | mgm-3 | Special Frequency 14 | TM-34 |
| | | | | | Hexachloroethane | mgm-3 | Special Frequency 14 | TM-34 |
| | | | | | Total solids | mgm-3 | Special Frequency 14 | TM-15 |
| | | | | | Volatile organic compounds | mgm-3 | Special Frequency 14 | TM-34 |

| Reference | Condition | Proposed amendment | Justification for proposed amendment | Alternative Option to align with EPL2148 |
|---|---|---|---|---|
| | | | | <table><tr><td>Point 41</td><td>1,2-Dichloroethane</td><td>mgm-3</td><td>Special Frequency 14</td><td>Special Method 6</td></tr><tr><td>Point 42</td><td>1,2-Dichloroethane</td><td>mgm-3</td><td>Special Frequency 14</td><td>TM-34</td></tr></table> |
| Condition 3.2 | For the purpose of condition 3.1 of this approval, special frequency monitoring is only required to be carried out during repackaging operations, and are defined as follows:<br>Special Frequency 14<br>a) for Store J, this frequency is defined as monitoring every quarter;<br>b) (deleted); and<br>c) for Store G & H, this frequency is defined as monitoring every quarter.<br>Special Frequency 15<br>d) for Store J, this frequency is defined as monitoring once annually;<br>e) (deleted); and<br>f) for Store G & H, this frequency is defined as | Remove or update to state that monitoring must occur in accordance with the requirements of EPL 2148. | This operating condition is essentially duplicated in EPL 2148 conditions M2.2 and M2.4. | Modify Condition 3.2 to align with EPL2148 as follows:<br><br>**Special Frequency 14** requires monitoring to be undertaken at the frequencies specified below, but only when repackaging is being undertaken in the HCB repackaging store to which the monitoring requirement applies.<br>The monitoring frequencies for Points 26, 29, 30, 33, 34, 40, 41 and 42 are defined as follows:<br><br>a) Points 26, 33 and 34 (Store J) is defined as:<br><br>• once during the first week of every plant restart following a shutdown period of greater than 3 months and every quarter thereafter and;<br>• if restart monitoring coincides with scheduled quarterly monitoring, then single scheduled monitoring event fulfils both restart and quarterly test requirements.<br><br>b) Points 29 and 30 (Store J) is defined as continuous operation of the monitoring apparatus, with operator checks, and results recorded two times daily;<br><br>c) Points 40 and 41 (Store G & H) is defined as:<br>• once during the first week of every plant restart following a shutdown period of greater than 3 months and every quarter thereafter and;<br>• if restart monitoring coincides with scheduled quarterly monitoring, then single scheduled monitoring |

| Reference | Condition | Proposed amendment | Justification for proposed amendment | Alternative Option to align with EPL2148 |
|---|---|---|---|---|
| | monitoring once annually. | | | event fulfils both restart and quarterly test requirements.<br><br>d) Point 42 (Store G & H) is defined as continuous operation of the monitoring apparatus with operator checks and results recorded two times daily.<br><br>**Special Method 6** means: CEM-8, CEM-9 or CEM-10 (as defined in Approved Methods for the Sampling and Analysis of Air Pollutants in NSW. EPA 2005), or a continuous monitoring method otherwise approved by the EPA. |
| Condition 3.3 | If, on receipt of a certificate of laboratory analysis, the laboratory analysis results demonstrate that the concentration of any discharge parameter has exceeded a limit described in conditions 2.6 or 2.7 at any of the monitoring / discharge points, then the Proponent shall notify the OEH within twenty-four hours of receipt of the certificate. | Remove. | This operating condition is essentially duplicated in EPL 2148 condition E4.5.<br><br>This is further detailed in the current Air Quality Management Plan, which has been reviewed and commented on by the EPA. A copy of the current Operation Environmental Management Plan, incorporating the Air Quality Management Plan is enclosed at Appendix 3. | If conditions 2.6 and 2.7 are aligned with EPL2148 as requested, then this condition does not have to be changed. |

# 4. CONCLUSION

Orica is continuing to repackage HCB and related wastes in minor campaigns as part of its proactive approach to maintain packaging in a condition suitable for export.

This repackaging process will continue to be operated for an extended period as Orica progresses export applications. Orica considers it timely to remove operating conditions included in the Project Approval, where they are inconsistent with its operating licence issued, and modified from time to time, by the EPA - EPL 2148.

This Proposal supports the 7th application for modification to the Project Approval under Section 75W of the Environmental Planning and Assessment Act. The modification request seeks administrative changes to a number of operating conditions where there are inconsistencies with conditions in EPL 2148.

There are no safety, environmental or community impacts as a result of the proposed amendments, as they are administrative only.

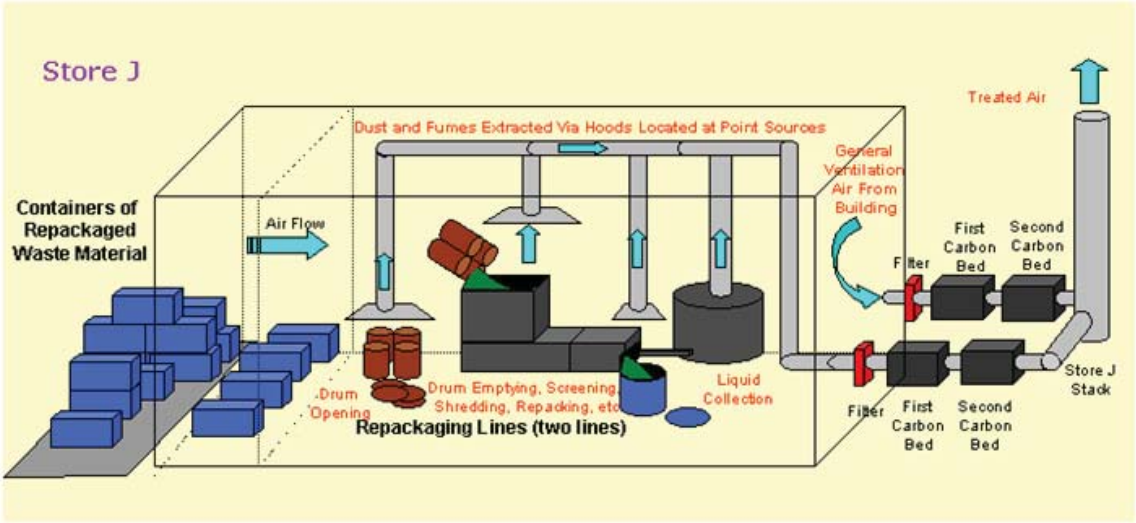
The proposed changes will:

- remove inconsistencies between the Project Approval and EPL 2148;
- simplify compliance tracking;
- ensure that future environmental auditing can be conducted with administrative clarity;
- provide project stakeholders with a sole source of reference for specific regulatory environmental monitoring requirements for operation of the HCB waste repackaging plant; and
- remove the need for further administration over time should aspects of the EPL 2148 conditions be modified over the coming years of repackaging required to facilitate export of the HCB waste.

# APPENDIX 1 – FIGURES

**Figure 1 – HCB Waste Repackaging Plant operations diagram.**

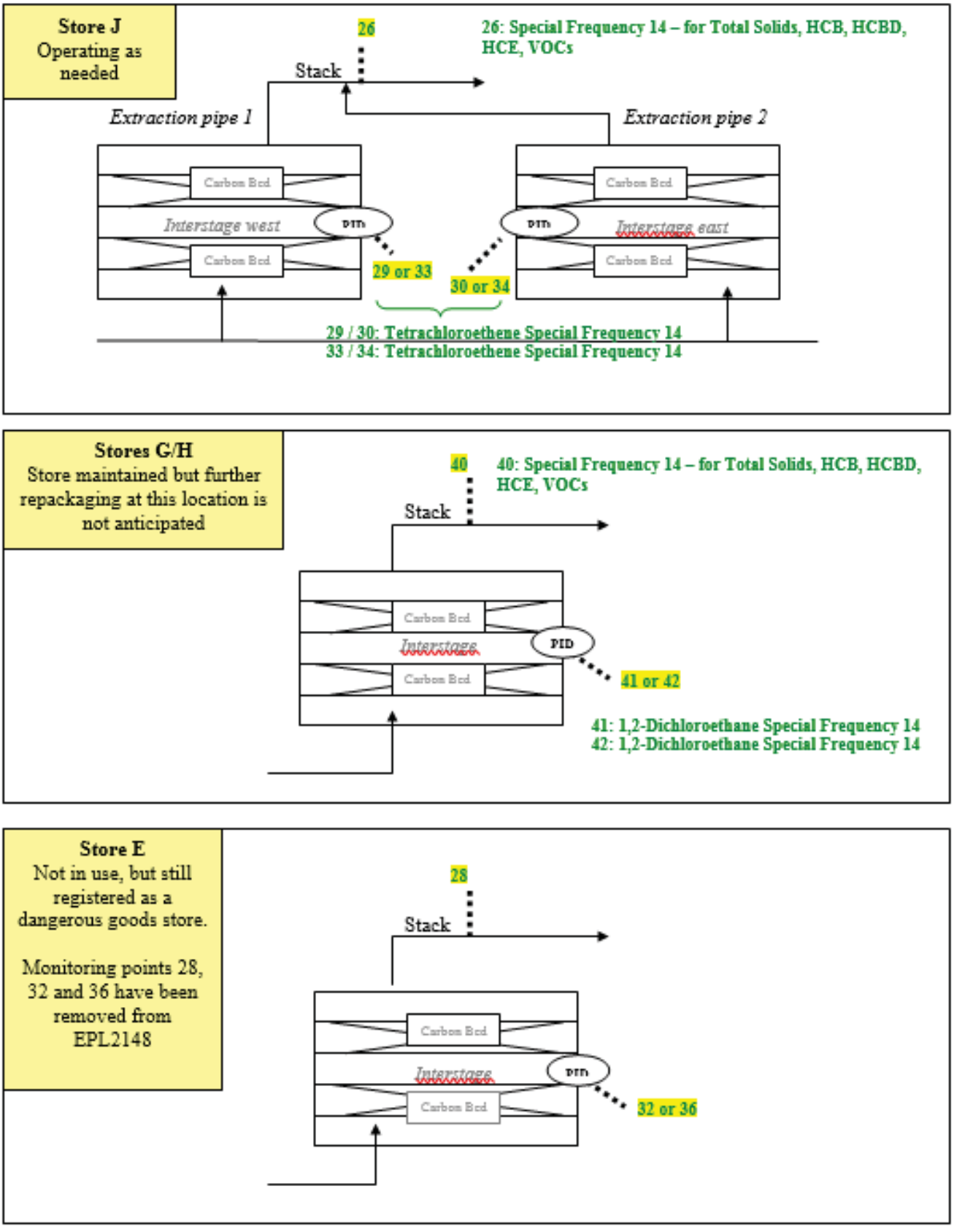
Note - the liquid separation equipment is no longer needed.



## Figure 2 - Environment Protection Licence points

Note - points 40,41 and 42 remain in EPL2148 but are no longer in use.

## Figure 3 – Current Air Monitoring at the HCB Repackaging Plant



# APPENDIX 2 – CORRESPONDENCE REGARDING RELEVANT EPL2148 MODIFICATIONS

Our Reference: DOC18/93157-02
Your Reference: HCB Repackaging Plant modification

Ms Lucy Archer
Community Relations Leader
Orica Australia Pty Ltd – Botany Industrial Park
lucy.archer@orica.com

Dear Ms Archer

**Re: HCB Repackaging Plant modification**

I refer to your e-mail dated 6 February 2018 requesting the NSW Environment Protection Authority (EPA) provide an explanation of changes that were made to monitoring and reporting conditions in Environment Protection Licence 2148 (the licence) in June 2012. The conditions were varied by Notice No. 1504087 and have resulted in inconsistencies with Orica's Project Approval.

A summary of the changes that were made, together with an explanation for the changes is provided below. A copy of the Variation Notice is attached.

*Identification of Air Monitoring and Discharge Points*

Point numbers 27, 31 and 35 in the Conditions of Approval were altered during the EPA's variation of the licence. These points are now referred to in the licence as Points 40, 41 and 42, respectively. The renaming of these points has not resulted in any material change to the condition.

*Discharge Limits*

The following pollutants were removed from the Limit Conditions at Point 26 and Point 40 of the licence: Hazardous Substances (aggregate of Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, and V), Cadmium, Mercury and Dioxins and Furans.

A review of the monitoring data in Orica's Annual Return documents over the period 2006 – 2011 showed these pollutants were either below the limits of detection or significantly lower than the limits of the licence. Further, the activities undertaken in the repackaging plant did not include combustion of materials. Therefore, the retention of monitoring for dioxins and furans on the licence was not justified.

If you have any further questions, please contact Larissa Borysko on (02) 9995 6843.

Yours sincerely

Erin Barker 22/2/18

**ERIN BARKER**
**Unit Head - Sydney Industry**
**NSW Environment Protection Authority**

**endix B**

Attachment: Variation Notice 1504087

Section 58(5) Protection of the Environment Operations Act 1997

# Licence Variation

Licence - 2148

ORICA AUSTRALIA PTY LTD

ABN 99 004 117 828

16-20 BEAUCHAMP ROAD

MATRAVILLE NSW 2036

Attention: Ben Lim

| | |
|---|---|
| Notice Number | 1504087 |
| File Number | 500755 |
| Date | 18-Jun-2012 |

## NOTICE OF VARIATION OF LICENCE NO. 2148

### BACKGROUND

A. ORICA AUSTRALIA PTY LTD ("the licensee") is the holder of Environment Protection Licence No. 2148 ("the licence") issued under the *Protection of the Environment Operations Act 1997* ("the Act"). The licence authorises the carrying out of activities at 16-20 BEAUCHAMP ROAD, MATRAVILLE, NSW, 2036 ("the premises")

B. Following extensive discussions and correspondence between the EPA and the licensee, variations have been made to the licence that reflect current operations on the site.

C. The changes have included: the removal of fee based activities (waste disposal / thermal treatment). Removal and modification of preceded monitoring and reporting conditions from the HCB packaging operations. Updates and amendments to conditions related to the Groundwater Treatment Plant and associated monitoring and sampling requirements for air and water. Updates and removal of completed Pollution Reduction Programs. Administrative changes have also been made, with many of these relating to the noise conditions on the licence.

### VARIATION OF LICENCE NO. 2148

1. By this notice the EPA varies licence No. 2148. The attached licence document contains all variations that are made to the licence by this notice.

The EPA has varied the licence by:

- Administration condition A1.1 has been edited and the fee based activity Waste Disposal (thermal treatment) has been removed.
- Limit condition L2.2-all assessable pollutants have been removed and are now listed as not applicable.

# Licence Variation

- Location of discharge points P1.1-HCB repackaging plant air discharge points 27, 28, 31, 32, 35 and 36 have been removed as these discharge points are no longer required.
- Location of discharge points P1.1-HCB repackaging plant air discharge points 40, 41 and 42 now replace points 27, 31 and 35.
- Point 11 has been deleted as all relative conditions were related to Point 14, Point 11 and Point 14 have been aligned.
- Monitoring and Reporting Conditions Special Frequency Monitoring definitions (1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, & 15) relating to the air emissions from the HCB packaging points have been removed.
- Amendments to E5 conditions to remove HCB repackaging plant references to deleted Points, Limits and Monitoring requirements.
- Condition O6.6 has been added to require the EPA to be notified if the licensee conducts repackaging or processing of any HCB waste.
- The Condition L3.3 air discharge Point 9 has been updated and the test methods are now reflective of the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales August 2005.* Notes and special conditions relating to the point 9 monitoring table primarily VOC monitoring have also been edited.
- The Condition L3.4 nitrate + nitrite (oxidised nitrogen) limit at water discharge point 14. Water and / or Land Concentration Limits have been reviewed and an increase in the limit has been provided.
- The Condition L6 noise limits have been re-numbered, and minor revisions have been completed.
- The Condition M2.3 Water and / or Land Monitoring Requirements water discharge limit for point 14, for has been amended.
- Water discharge monitoring point 16 has a temperature limit aligned. The temperature limit has remained between 10 and 30 degrees C.
- The Condition M2.5 for point 14 includes the removal of Special Method 2 and 7 to align with the monitoring requirements for M2.3.
- The Ground Water Treatment Plant audit cross reference condition limits have been modified to reflect changes to monitoring and sampling.
- Location of discharge points P1.1 for the mobile mercury vapour control system emissions point 25 (single, short stack, approx. 3m above ground) has been removed from the licence as it is no longer on the licence.
- Condition M2.5 Special Methods (SM) and Special Frequencies, (SF) have been edited and updated to reflect current operations.
- The Groundwater Injection and Recovery (GIR) trial has been completed and the condition E5.7 has been removed. The GIR trial has been noted as completed in the table condition Summary of Special Conditions completed.
- The Bioaugmentation trial is now complete and condition E5.8 has been removed. The Bioaugmentation trial has been noted as completed in the condition table Summary of Special Conditions completed.

.....

**James Goodwin**

# Licence Variation

**Unit Head**

**Metropolitan - Sydney Industry**

(by Delegation)

## INFORMATION ABOUT THIS NOTICE

- This notice is issued under section 58(5) of the Act.
- Details provided in this notice, along with an updated version of the licence, will be available on the EPA's Public Register (http://www.environment.nsw.gov.au/prpoeo/index.htm) in accordance with section 308 of the Act.

### Appeals against this decision

- You can appeal to the Land and Environment Court against this decision. The deadline for lodging the appeal is 21 days after you were given notice of this decision.

### When this notice begins to operate

- The variations to the licence specified in this notice begin to operate immediately from the date of this notice, unless another date is specified in this notice.
- If an appeal is made against this decision to vary the licence and the Land and Environment Court directs that the decision is stayed the decision does not operate until the stay ceases to have effect or the Land and Environment Court confirms the decision or the appeal is withdrawn (whichever occurs first).

# Environment Protection Licence

Licence - 2148

| Licence Details | |
|---|---|
| Number: | 2148 |
| Anniversary Date: | 21-July |

| Licensee |
|---|
| ORICA AUSTRALIA PTY LTD |
| 16-20 BEAUCHAMP ROAD |
| MATRAVILLE NSW 2036 |

| Premises |
|---|
| ORICA AUSTRALIA PTY LTD |
| 16-20 BEAUCHAMP ROAD |
| MATRAVILLE NSW 2036 |

| Scheduled Activity |
|---|
| Chemical Production |
| Chemical Storage |
| Contaminated Groundwater Treatment |
| Waste Processing (non-thermal treatment) |
| Waste Storage |

| Fee Based Activity | Scale |
|---|---|
| Contaminated groundwater treatment | Any handling capacity |
| Dangerous goods production | > 25000 T produced |
| General chemicals storage | > 5000-100000 kL stored |
| Non-thermal treatment of hazardous and other waste | > 0 T treated |
| Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste | > 0 T stored |

| Region |
|---|
| Metropolitan - Sydney Industry |
| Level 7, 79 George Street<br>PARRAMATTA NSW 2150 |
| Phone: (02) 9995 5000 |
| Fax: (02) 9995 6900 |
| |
| PO Box 668 PARRAMATTA |
| NSW 2124 |

# Environment Protection Licence

Licence - 2148

# Environment Protection Licence

Licence - 2148

# Environment Protection Licence

Licence - 2148

## Information about this licence

### Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

### Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act); and
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

### Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

### Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

### Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

### Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

# Environment Protection Licence

Licence - 2148

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

**Transfer of licence**

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

**Public register and access to monitoring data**

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

## This licence is issued to:

| |
|---|
| **ORICA AUSTRALIA PTY LTD** |
| **16-20 BEAUCHAMP ROAD** |
| **MATRAVILLE NSW 2036** |

subject to the conditions which follow.

# Environment Protection Licence

Licence - 2148

## 1 Administrative Conditions

### A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

| Scheduled Activity | Fee Based Activity | Scale |
|---|---|---|
| Contaminated Groundwater Treatment | Contaminated groundwater treatment | Any handling capacity |
| Chemical Production | Dangerous goods production | > 25000 T produced |
| Chemical Storage | General chemicals storage | > 5000 - 100000 kL stored |
| Waste Processing (non-thermal treatment) | Non-thermal treatment of hazardous and other waste | > 0 T treated |
| Waste Storage | Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste | > 0 T stored |

### A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

| Premises Details |
|---|
| **ORICA AUSTRALIA PTY LTD** |
| **16-20 BEAUCHAMP ROAD** |
| **MATRAVILLE** |
| **NSW 2036** |
| **LOT 1 DP 85542, LOT 11 DP 109505, LOT 2 DP 206413, LOT 5 DP 206413, LOT 1 DP 740704, LOT 2 DP 1016112, LOT 4 DP 1016112, LOT 11 DP 1039919, LOT 1 DP 1078077** |
| **AS DEFINED IN DRAWING NO B97290 REVA, TITLED "BOTANY INDUSTRIAL PARK SITE - ORICA LAND AREAS" AND DATED 29/01/07** |

### A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and

Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

# 2 Discharges to Air and Water and Applications to Land

## P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

***Air***

| EPA identification no. | Type of Monitoring Point | Type of Discharge Point | Location Description |
|---|---|---|---|
| 3 | Discharge to air<br>Air emissions monitoring | Discharge to air<br>Air emissions monitoring | Vent from the hypochlorite backing tower marked "point 3" on an aerial photograph submitted as an attachment an email from the licensee to the EPA on 8 February 2012. |
| 4 | Discharge to air<br>Air emissions monitoring | Discharge to air<br>Air emissions monitoring | Vent duct from the absorption tail tower marked "point 4" on an aerial photograph submitted as an attachment an email from the licensee to the EPA on 8 February 2012. |
| 7 | Discharge to air<br>Air emissions monitoring | Discharge to air<br>Air emissions monitoring | Emergency chlorine vent marked "point 7" on an aerial photograph submitted as an attachment an email from the licensee to the EPA on 8 February 2012. |
| 9 | Discharge to air<br>Air emissions monitoring | Discharge to air<br>Air emissions monitoring | Stack serving GTP labelled "Point 9 - Discharge to air" on drawing number B96283 Rev2 submitted to the EPA on 20 June 2006. |
| 10 | Parameter monitoring | | Thermal oxidation unit labelled "Point 10 - Parameter monitoring temperature" on drawing number B96283 Rev2 submitted to the EPA on 20 June 2006. |
| 12 | Weather monitoring | | Weather monitoring station labelled "Point 12 - Weather Monitoring" on drawing No B96283 Rev2 submitted to the EPA on 20 June 2006 |
| 13 | Parameter monitoring | | Pipe serving the GTP thermal oxidiser, labelled "Point 13 - Thermal Oxidiser Flow (Residence Time) Monitoring Point" on drawing number B96283 Rev2 submitted to the EPA on 20 June 2006 |
| 26 | Discharge to air. Air emissions monitoring | Discharge to air. Air emissions monitoring | Common stack from building housing HCB repackaging plant and new Store J |
| 29 | In-pipe monitoring | In-pipe monitoring | Store J interstage point between the two activated charcoal filters on extraction pipe 1. |

# Environment Protection Licence

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| | | | |
|---|---|---|---|
| 30 | In-pipe monitoring | In-pipe monitoring | Store J interstage point between the two activated charcoal filters on extraction pipe 2. |
| 33 | In-pipe monitoring | | Store J interstage point between the two activated charcoal filters on the extraction pipe. (Note - this is the same as Point 29). |
| 34 | In-pipe monitoring | | Store J interstage point between the two activated charcoal filters on the extraction pipe. (Note - this is the same as Point 30). |
| 37 | Discharge to air. | Discharge to air. | Stack serving ECS 1 on the mercury clean-up project TECE as depicted on drg No 050005-ECS1-PID-002 supplied to the EPA on 16 Feb 2011 |
| 38 | Discharge to Air | Discharge to Air | Stack serving ECS 2 on the mercury clean-up project TECE as depicted on drg No 050005-ECS2-PID-002 supplied to the EPA on 16 Feb 2011 |
| 39 | Ambient Air Monitoring Station - Mercury | | Point AS110 as described in the document titled revised Ambient Air Monitoring Program supplied to the EPA on 22 July 2011, or a suitable alternative as agreed in writing by the EPA. |
| 40 | Discharge to air. Air emissions monitoring | Discharge to air. Air emissions monitoring | Stack from temporary enclosure of Store G/H. |
| 41 | In-line pipe monitoring | In-line pipe monitoring | Store G/H interstage point between the activated charcoal filters on the extraction pipe (former point 35). |
| 42 | In-line pipe monitoring | In-line pipe monitoring | Store G/H interstage point between the activated charcoal filters on the extraction pipe (former point 31). |

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

P1.3 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

***Water and land***

| EPA Identification no. | Type of Monitoring Point | Type of Discharge Point | Location Description |
|---|---|---|---|
| 14 | Effluent quality monitoring and discharge to water | Effluent quality monitoring and discharge to water | Drain outlet serving the GTP labelled "Point 14 - Water Discharge Composition" on drawing No B96284 Rev1 submitted to the EPA on 14 Sep 2007 |
| 15 | Effluent quality monitoring | | Drain outlet serving the GTP labelled "Point 15 - Water Discharge Conductivity" on drawing No B96283 Rev2 submitted to the EPA on 20 June 2006 |

| | | |
|---|---|---|
| 16 | Effluent quality and volume monitoring | Drain outlet serving the GTP labelled "Point 16 - Water Discharge Temperature & Flow" on drawing No B96284 Rev0 submitted to the EPA on 14 September 2005 |

# 3 Limit Conditions

## L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

## L2 Concentration limits

L2.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L2.3 Air Concentration Limits

**POINT 3**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|
| Chlorine | milligrams per cubic metre | 200 | | | |

**POINT 4**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|
| Hydrogen chloride | milligrams per cubic metre | 30 | | | |

**POINT 9**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|
| Chlorine | milligrams per cubic metre | 30 | Dry 273K. 101.3kPa. | 11% O2. | As per test method |
| Dioxins & Furans | nanograms per cubic metre | 0.1 Note 2 | I-TEQ, Dry 273K. 101.3kPa. | 11% O2 | As per test method |

# Environment Protection Licence

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| | | | | | |
|---|---|---|---|---|---|
| Carbon monoxide | milligrams per cubic metre | 100 | Dry 273K. 101.3kPa. | 11% O2 | Rolling one hour average |
| 1,2-Dichloroethane | milligrams per cubic metre | 8 Note 3 | Dry 273K. 101.3kPa. | 11% O2. | Rolling one hour average |
| Sulphur dioxide | milligrams per cubic metre | 100 | Dry 273K. 101.3kPa. | 11% O2 | As per test method |
| Vinyl chloride | parts per million | 10 | Dry 273K. 101.3kPa. | 11% O2. | Rolling three hour average |
| Hydrogen Sulfide | milligrams per cubic metre | 2 | Dry 273K. 101.3kPa. | 11% O2. | As per test method |
| Solid Particles | milligrams per cubic metre | 20 | Dry 273K. 101.3kPa. | 11% O2. | As per test method |
| Hydrogen chloride | milligrams per cubic metre | 30 | Dry 273K. 101.3kPa. | 11% O2 | As per test method |
| Nitrogen Oxides | milligrams per cubic metre | 400 | Dry 273K. 101.3kPa. | 11% O2 | As per test method |
| Volatile organic compounds | milligrams per cubic metre | 10 Note 1 | Dry 273K. 101.3kPa. | 11% O2. | As per test method |

**POINT 26**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|
| Hexachloroethane | milligrams per cubic metre | 9.7 | Dry 273K. 101.3kPa. | | |
| Volatile organic compounds | milligrams per cubic metre | 10 | Dry 273K. 101.3kPa. | | |
| Hexachlorobenzene | milligrams per cubic metre | 0.002 | Dry 273K. 101.3kPa. | | |
| Total solids | milligrams per cubic metre | 10 | Dry 273K. 101.3kPa. | | |
| Hexachlorobutadiene | milligrams per cubic metre | 0.21 | Dry 273K. 101.3kPa. | | |

**POINT 29**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|
| Tetrachloroethene (tetrachloroethylene) | milligrams per cubic metre | 340 | | | |

**POINT 30**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|

# Environment Protection Licence

Licence - 2148

| | | |
|---|---|---|
| Tetrachloroethene (tetrachloroethylene) | milligrams per cubic metre | 340 |

**POINT 33**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|
| Tetrachloroethene (tetrachloroethylene) | milligrams per cubic metre | 340 | | | |

**POINT 34**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|
| Tetrachloroethene (tetrachloroethylene) | milligrams per cubic metre | 340 | | | |

**POINT 37,38**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|
| Mercury | milligrams per cubic metre | 0.1 | Dry 273K. 101.3kPa. | | |
| Solid Particles | milligrams per cubic metre | 10 | Dry 273K. 101.3kPa. | | |

**POINT 40**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|
| Hexachlorobenzene | milligrams per cubic metre | 0.002 | Dry 273K 101.3kPa | | |
| Hexachlorobutadiene | milligrams per cubic metre | 0.21 | Dry 273K 101.3kPa | | |
| Hexachloroethane | milligrams per cubic metre | 9.7 | Dry 273K.101.3Kpa | | |
| Total solids | milligrams per cubic metre | 10 | Dry 273K 101.3 kPa | | |
| Volatile organic compounds | milligrams per cubic metre | 10 | Dry 273K.101.3kPa | | |

**POINT 41**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|

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| | | | | | |
|---|---|---|---|---|---|
| 1,2-Dichloroethane | milligrams per cubic metre | 40 | Dry 273K 101.3kPa | | As per test method |

**POINT 42**

| Pollutant | Units of measure | 100 percentile concentration limit | Reference conditions | Oxygen correction | Averaging period |
|---|---|---|---|---|---|
| 1,2-Dichloroethane | milligrams per cubic metre | 40 | Dry 273K. 101.3kPa. | | As per test method |

Note: Note 1: For the purpose of the table(s) above, expressed as total organic carbon. This should be determined by summing all individual components.

Note 2: For the purposes of the table(s) above, Polychlorinated-dibenzo-p-dioxins (PCDD) and polychlorinated-dibenzofurans (PCDF) as 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD) equivalent calculated in accordance with the procedures included in Clause 40 of the POEO (Clean Air) Regulation 2010.

Note 3: For the purposes of the table(s) above, expressed as total orgranic carbon.

L2.4 Water and/or Land Concentration Limits

**POINT 14**

| Pollutant | Units of Measure | 50 percentile concentration limit | 90 percentile concentration limit | 3DGM concentration limit | 100 percentile concentration limit |
|---|---|---|---|---|---|
| 1,2-Dichloroethane | milligrams per litre | | | | 1.9 |
| Arsenic | milligrams per litre | | | | 0.013 |
| Benzene | milligrams per litre | | | | 0.95 |
| Biochemical oxygen demand | milligrams per litre | | | | 10 |
| Cadmium | milligrams per litre | | | | 0.001 |
| Carbon tetrachloride | milligrams per litre | | | | 0.24 |
| Chloroform | milligrams per litre | | | | 0.37 |
| Chromium (total) | milligrams per litre | | | | 0.01 |

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| | | |
|---|---|---|
| Copper | milligrams per litre | 0.01 |
| Iron | milligrams per litre | 0.3 |
| Lead | milligrams per litre | 0.0034 |
| Manganese | milligrams per litre | 1.9 |
| Mercury | milligrams per litre | 0.0005 |
| NH3-N | milligrams per litre | 1.35 |
| Nickel | milligrams per litre | 0.011 |
| Nitrate + nitrite (oxidised nitrogen) | milligrams per litre | 0.2 |
| Nitrogen (total) | milligrams per litre | 5 |
| pH | pH | 6.5-8.5 |
| Phosphorus (total) | milligrams per litre | 0.1 |
| Reactive Phosphorus | milligrams per litre | 0.05 |
| Tetrachloroethene (tetrachloroethylene) | milligrams per litre | 0.07 |
| Toluene | milligrams per litre | 0.18 |
| Total residual chlorine | milligrams per litre | 0.1 |
| Trichloroethene (Trichloroethylene) | milligrams per litre | 0.33 |
| Turbidity | nephelometric turbidity units | 10 |
| Vinyl chloride | milligrams per litre | 0.1 |

| | | | | | |
|---|---|---|---|---|---|
| Zinc | milligrams per litre | | | | 0.01 |

**POINT 16**

| Pollutant | Units of Measure | 50 percentile concentration limit | 90 percentile concentration limit | 3DGM concentration limit | 100 percentile concentration limit |
|---|---|---|---|---|---|
| Temperature | degrees Celsius | | | | 10-30 |

L2.5 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

L2.6 Thermal Oxidiser Lower Limits

For each monitoring/discharge point or utilisation area specified in the tables below (by point number), the parameter must be equal to or greater than the lower limits specified for that parameter in that table.

| Point No. | Parameter | Units of measure | Lower Limit | Averaging Period |
|---|---|---|---|---|
| 10 | Temperature | Celcius | 875 | Instantaneous |
| 13 | Residence time | s | 2 | Instantaneous |

L2.7 Whenever a combustion failure occurs in the thermal oxidiser, both the Air Stripping Unit and the Thermal Oxidiser must be shut down and all emissions must cease as soon as safely possible, but in no case later than 10 minutes after the start of the failure.

L2.8 Exemptions from concentration limits for Point 9 and temperature limit for Point 10

The concentration limits specified for Point 9 (above) and temperature limit for Point 10 (above) do not apply during the following periods:

a) a start-up period – that is, while the thermal oxidiser is being brought up to normal operation following a period of inactivity; or

b) a shutdown period – that is, while the thermal oxidiser is being taken out of service from normal operation to inactivity.

Note: While the concentration limits specified for Point 9 (above) do not apply, the licensee is subject to the requirements of section 128 (2) of the Protection of the Environment Operations Act in relation to the prevention and minimisation of air pollution.

Note: That only uncontaminated off-gas feed is processed by the thermal oxidiser when the temperature at the thermal oxidiser unit (Point 10) is below 875°C.

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## L3 Volume and mass limits

L3.1 For each discharge point or utilisation area specified below (by a point number), the volume/mass of:
a) liquids discharged to water; or;
b) solids or liquids applied to the area;
must not exceed the volume/mass limit specified for that discharge point or area.

| Point | Unit of Measure | Volume/Mass Limit |
|---|---|---|
| 15 | kilolitres per day | 13500 |

## L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

| Code | Waste | Description | Activity | Other Limits |
|---|---|---|---|---|
| B100 | Acidic solutions or acids in solid form | | Waste storage<br>Waste processing (non-thermal treatment) | B100 waste is limited to ferrous chloride (pickle liquor) |
| D120 | Mercury; mercury compounds | | Waste storage | |
| NA | General or Specific exempted waste | Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2005 | As specified in each particular resource recovery exemption | NA |
| NA | Waste | Any waste received on site that is below licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time | - | NA |

L4.2 The licensee is permitted to receive and treat extracted groundwater, the substances therein, and associated free phase contaminants originating from Orica’s (formerly ICI Australia) activities at the Botany Industrial Park (BIP). This includes but is not limited to groundwater

from:

1. The BIP, primary and secondary hydraulic containment lines;

2. Environmental investigation, monitoring and remediation activities conducted by, or on behalf of, Orica within areas impacted by Orica / ICI Australia's historic activities within the Groundwater Extraction Exclusion Area (GEEA); and

3. Short-term third party dewatering activities (for construction, pipe repairs, etc.) within the GEEA, in instances in which those waters have been affected by contaminants associated with Orica/ICI Australia's historic BIP operations.

For the purposes of licensing and the liquid waste levy, this material is deemed to have been generated onsite.

## L5 Noise limits

L5.1 For the area known as 'Southlands' and the associated wells and reticulation system for the primary containment area the noise limit conditions (a) to (d) inclusively, apply:

a) The operation of all plant and equipment must not give rise to an equivalent continuous (LAeq) sound pressure level at any point on any residential property greater than 5dB(A) above the existing background LA90 level (in the absence of the noise under consideration).

b) The operation of all plant and equipment must not give rise to an LA1, 1minute or LAMax sound pressure level at any point on any residential property greater than 15dB(A) above the existing background LA90 level (in the absence of the noise under consideration) during night time.

c) The operation of all plant and equipment when assessed on any residential property must not give rise to a sound pressure level that exceeds LAeq 50dB(A) day/evening time, and LAeq 40 dB(A) night time.

d) The operation of all plant and equipment when assessed on any neighbouring commercial/industrial premises must not give rise to a sound pressure level that exceeds LAeq 65dB(A) day/evening time and night time.

Note: For assessment purposes, the above LAeq sound levels must be assessed over a period of 10-15 minutes. The modification factors presented in Section 4 of the NSW Industrial Noise Policy must be applied to the measured noise levels where applicable.

Note: The area known as 'Southlands' and the associated wells and reticulation system is defined by Lot 1 DP 1078077; Lot 11, DP 109505; and Lot 1 DP85542 as shown on drawing titled "Botany Site Plan Sub-division Boundary Plots", drawing no. B87201 Rev 17 20/11/06 and the reticulation layout shown on drawing B100600 dated 15.11.11 submitted to the EPA on 15/11/11.

L5.2 **For the operation of plant and equipment located at Botany Industrial Park (BIP) premises the following conditions L5.3 to L5.12 inclusively apply:**

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L5.3 Noise emissions emanating from all active Plants in the BIP premises, including loading and unloading of material in or above the premises and when determined as a sound level contribution, shall not exceed the following amenity LAeq criteria when measured or computed at any point within one metre of the nearest boundary of any residence in the vicinity of the premises, using the "FAST" response on the sound level meter.

| Time of Day | LAeq |
|---|---|
| Day | 65 |
| Evening | 55 |
| Night | 50 |

L5.4 The intrusive noise criterion for all active plants in the BIP shall be that the LAeq15 minute noise levels shall not exceed the amenity LAeq noise levels by more than 5 dB(A) when measured or computed at any point within one metre of the nearest boundary of any residence in the vicinity of the premises, using the "FAST" response on the sound level meter.

L5.5 Each existing BIP Plant shall ensure that new or replacement equipment is selected and/or installed so that no increase in noise emissions is thereby created when measured or computed at any point within one metre of the nearest boundary of any residence in the vicinity of the premises, using the "FAST" response on the sound level meter.

L5.6 A report for all BIP Licences (L7494 Huntsman Corporation Australia Pty Ltd; L 2148 Orica Australia Pty Ltd and L10000 Qenos Pty Ltd) demonstrating compliance with the noise conditions listed at Condition L5.1 to L5.2 must be appended to the Annual Return for Qenos L10000.

L5.7 Noise generated by activities associated with the Groundwater Cleanup Project, other than those accepted by the EPA as being “construction” at the premises must not exceed the noise goal level presented in the 'Noise Design Goal Limits' Table below:

Noise Design Goal Limits (dB(A))

| Location | Day LAeq(15 minute) | Evening LAeq(15 minute) | Night LAeq(15 minute) |
|---|---|---|---|
| Nearest affected receivers surrounding the Groundwater Cleanup Project | 35 dB(A) | 35 dB(A) | 35 dB(A |

L5.8 For the purpose of Condition L5.1, L5.2 and L5.3:

a) Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays,

b) Evening is defined as the period from 6pm to 10pm, and

c) Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays.

L5.9 Noise from the premises is to be measured at the most affected point on or within the residential boundary to determine compliance with the LAeq(15 minute) noise limits in condition L5.3.

Where it can be demonstrated that direct measurement of noise from the premises is impractical, the EPA may accept alternative means of determining compliance. See Chapter 11 of the NSW Industrial Noise Policy.

The modification factors presented in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise level where applicable.

L5.10 The noise emission limits identified in condition L5.3 apply under meteorological conditions of:

a) wind speeds up to 3 m/s at 10 metres above ground level; or

b) temperature inversion conditions of up to 3 degreesC /100m and wind speeds up to 2m/s at 10 metres above ground level.

L5.11 Activities at the premises, other than construction work, that meet the noise goal provided in L5.3 may be conducted on a continuous basis.

L5.12 The following activities may be carried out at the premises outside the hours specified in conditions L5.8:

a) the delivery of materials as requested by Police or other authorities for safety reasons; and

b) emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

### L6 Hours of operation

L6.1 All construction work at the premises must only be conducted between 7:00am to 6:00pm Monday to Friday, 8:00am to 1:00pm Saturdays, with no construction activities on Sundays or Public Holidays. Construction is permitted any time if it is not audible at the nearest affected receivers. Audible means that it can be heard by a person at the nearest affected receivers.

### L7 Other limit conditions

Note: The licensee must comply with the conditions as specified in this licence or where no specific conditions are outlined in this licence, the licensee must comply with the "Chemical Control Order in Relation to Materials and Wastes Containing Polychlorinated Biphenyl, 1997".

## 4 Operating Conditions

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## O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

## O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

## O3 Dust

O3.1 Activities occurring at the premises must be carried out in a manner that will minimise emissions of dust from the premises.

O3.2 Loaded trucks must be covered at all times, except during loading and unloading of material.

## O4 Emergency response

O4.1 The licensee must maintain emergency response plans which document the procedures to deal with all types of incidents (eg spill, explosions or fire) that may occur at the premises or outside of the premises (eg during transfer) which are likely to cause harm to the environment.

## O5 Waste management

O5.1 The licensee must ensure that waste identified for recycling is stored separately from other waste.

O5.2 The licensee must manage any asbestos or asbestos-contaminated materials that may be uncovered during the construction, commissioning and operation of all activities undertaken at the premises strictly in accordance with the requirements under the Protection of the Environment Operations (Waste) Regulation 2005 and any guidelines or requirements issued by the EPA in relation to those materials.

O5.3 The licensee must ensure that any waste received and/or generated at the premises is assessed and classified in accordance with the EPA Waste Classification Guidelines as in force from time to time.

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### O6 Other operating conditions

O6.1 The licensee must not cause, permit or allow the emission of offensive odour beyond the boundary of the premises.

O6.2 No condition of this licence identifies a potentially offensive odour for the purposes of Section 129 of the Protection of the Environment Operations Act 1997.

O6.3 The licensee must ensure that only uncontaminated off-gas feed is sent to the thermal oxidiser when the temperature at the thermal oxidiser unit (Point 10) is below 875°C, subject to L2.8.

O6.4 The licensee must ensure that suitable measures (e.g. high/low alarms, control valves with interlock control, one way valves) are installed on all tanks, ponds or clarifiers and associated pipes and hoses to prevent the spillage of waste.

O6.5 All above ground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment system in place.

O6.6 The licensee must seek and receive written approval from the EPA prior to re-commencing or conducting the repackaging or processing of any HCB and related wastes in the HCB waste repackaging plant (Stores G, H & J).

Note: On recieving any request from the licensee to re-commence or conduct repackaging or processing of any HCB and related wastes, the EPA will assess the need for additional air monitoring. This may include additional monitoring during recommissioning emissions control systems and ambient air quality monitoring.

## 5 Monitoring and Recording Conditions

### M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

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## M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

**POINT 3**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Chlorine | milligrams per cubic metre | Continuous | In line instrumentation |

**POINT 4**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Hydrogen chloride | milligrams per cubic metre | Quarterly | Method approved in writing by the Authority |

**POINT 7**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Chlorine | milligrams per cubic metre | Continuous | In line instrumentation |

**POINT 9**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| 1,2-Dichloroethane | milligrams per cubic metre | Special Frequency 13 | CEM-10 |
| Carbon monoxide | milligrams per cubic metre | Special Frequency 13 | CEM-4 |
| Chlorine | milligrams per cubic metre | Yearly | TM-7 & TM-8 |
| Dioxins & Furans | nanograms per cubic metre | Yearly | TM-18 |
| Dry gas density | kilograms per cubic metre | Quarterly | TM-23 |
| Hydrogen chloride | milligrams per cubic metre | Yearly | TM-8 |
| Hydrogen Sulfide | milligrams per normalised cubic metre | Yearly | TM-5 |
| Moisture content | percent | Quarterly | TM-22 |
| Molecular weight of stack gases | grams per gram mole | Quarterly | TM-23 |
| Nitrogen Oxides | milligrams per cubic metre | Quarterly | TM-11 |
| Oxygen (O2) | percent | Continuous | CEM-3 |
| Solid Particles | milligrams per cubic metre | Yearly | TM-15 |

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| | | | |
|---|---|---|---|
| Sulphur dioxide | milligrams per cubic metre | Yearly | TM-4 |
| Temperature | degrees Celsius | Continuous | TM-2 |
| Velocity | metres per second | Continuous | CEM-6 |
| Vinyl chloride | parts per million | Special Frequency 13 | CEM-10 |
| Volatile organic compounds | milligrams per cubic metre | Quarterly | TM-34 |
| Volumetric flowrate | cubic metres per second | Continuous | CEM-6 |

**POINT 10**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Temperature | degrees Celsius | Continuous | TM-2 |

**POINT 13**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Volumetric flowrate | cubic metres per second | Continuous | CEM-6 |

**POINT 26**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Hexachlorobenzene | milligrams per cubic metre | Special Frequency 14 | TM-34 |
| Hexachlorobutadiene | milligrams per cubic metre | Special Frequency 14 | TM-34 |
| Hexachloroethane | milligrams per cubic metre | Special Frequency 14 | TM-34 |
| Total solids | milligrams per cubic metre | Special Frequency 14 | TM-15 |
| Volatile organic compounds | milligrams per cubic metre | Special Frequency 14 | TM-34 |

**POINT 29,30**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Volatile organic compounds | milligrams per cubic metre | Special Frequency 14 | Special Method 6 |

**POINT 33,34**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Volatile organic compounds | milligrams per cubic metre | Special Frequency 14 | TM-34 |

**POINT 37,38**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Mercury | milligrams per cubic metre | Monthly | TM-12, TM-13 & TM-14 |
| Moisture | percent | Monthly | TM-22 |
| Pressure of stack gases | kilopascals | Monthly | TM-2 |
| Solid Particles | milligrams per cubic metre | Monthly | TM-15 |
| Temperature | degrees Celsius | Monthly | TM-2 |
| Velocity | metres per second | Continuous during discharge | Method approved in writing by the Authority |

**POINT 39**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Mercury | nanograms per cubic metre | Special Frequency 18 | Method approved in writing by the Authority |

**POINT 40**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Hexachlorobenzene | milligrams per cubic metre | Special Frequency 14 | TM-34 |
| Hexachlorobutadiene | milligrams per cubic metre | Special Frequency 14 | TM-34 |
| Hexachloroethane | milligrams per cubic metre | Special Frequency 14 | TM-34 |
| Total solids | milligrams per cubic metre | Special Frequency 14 | TM-15 |
| Volatile organic compounds | milligrams per cubic metre | Special Frequency 14 | TM-34 |

**POINT 41**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| 1,2-Dichloroethane | milligrams per cubic metre | Special Frequency 14 | Special Method 6 |

**POINT 42**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| 1,2-Dichloroethane | milligrams per cubic metre | Special Frequency 14 | TM-34 |

M2.3 Water and/ or Land Monitoring Requirements

**POINT 14**

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| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| 1,2-Dichloroethane | milligrams per litre | Monthly | Grab sample |
| Arsenic | milligrams per litre | Monthly | Grab sample |
| Benzene | milligrams per litre | Monthly | Grab sample |
| Biochemical oxygen demand | milligrams per litre | Monthly | Grab sample |
| Cadmium | milligrams per litre | Monthly | Grab sample |
| Carbon tetrachloride | milligrams per litre | Monthly | Grab sample |
| Chloroform | milligrams per litre | Monthly | Grab sample |
| Chromium (total) | milligrams per litre | Monthly | Grab sample |
| Copper | milligrams per litre | Monthly | Grab sample |
| Iron | milligrams per litre | Monthly | Grab sample |
| Lead | milligrams per litre | Monthly | Grab sample |
| Manganese | milligrams per litre | Monthly | Grab sample |
| Mercury | milligrams per litre | Monthly | Grab sample |
| Nickel | milligrams per litre | Monthly | Grab sample |
| Nitrate + nitrite (oxidised nitrogen) | milligrams per litre | Monthly | Grab sample |
| Nitrogen (ammonia) | milligrams per litre | Monthly | Grab sample |
| Nitrogen (total) | milligrams per litre | Monthly | Grab sample |
| pH | pH | Monthly | Grab sample |
| Phosphorus (total) | milligrams per litre | Monthly | Grab sample |
| Reactive Phosphorus | milligrams per litre | Monthly | Grab sample |
| Tetrachloroethene (tetrachloroethylene) | milligrams per litre | Monthly | Grab sample |
| Toluene | milligrams per litre | Monthly | Grab sample |
| Total residual chlorine | milligrams per litre | Monthly | Grab sample |
| Trichloroethene (Trichloroethylene) | milligrams per litre | Monthly | Grab sample |
| Turbidity | nephelometric turbidity units | Monthly | Grab sample |
| Vinyl chloride | milligrams per litre | Monthly | Grab sample |
| Zinc | milligrams per litre | Monthly | Grab sample |

**POINT 15**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Conductivity | microsiemens per centimetre | Continuous | In line instrumentation |

**POINT 16**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Temperature | degrees Celsius | Continuous during discharge | In line instrumentation |

M2.4 For the purposes of monitoring at points 37, 38 and 39:
For the purposes of measurement of velocity of stack gases (ECS - point 37 and 38) in the table above, the sampling method may be either CEM 6 or a predictive surrogate approved in writing by EPA.

M2.5 For the purpose of the table(s) above:

• Emission monitoring for hydrogen chloride in point 4 must be undertaken when the burner is on line at such a steady rate as will facilitate sampling in accordance with the EPA's letter dated 20 August 2002.

• Emission monitoring for hydrogen chloride is TM 7 & TM 8 using site specific variations as outlined in the EPA's letter dated 20 August 2002 or any other methods approved in writing by the EPA.

• Minor variations to those sampling methods as specified in the DECC's 'Approved Methods for the Sampling and Analysis of Air Pollutants in NSW' and 'Approved Methods for the Sampling and Analysis of Water Pollutants in NSW' , as approved by the National Association of Testing Authorities' (NATA) endorsement of Laboratories, are deemed to be appropriate.

**Special Frequency 13** is defined as monitoring continuously at all times except when the Fourier Transform Infrared Spectrometer (FTIR) is taken off-line for service, repair, maintenance and/or calibration purposes only. During this off-line period, monitoring must be carried out on a daily basis for 1-hour composite samples in accordance with the EPA's Approved Methods. In these exceptional circumstances, the licensee may use the in-house laboratory for analysis of these samples.

**Special Frequency 14** requires monitoring to be undertaken at the frequencies specified below, but only when repackaging is being undertaken in the HCB repackaging store to which the monitoring requirement applies. The monitoring frequencies for Points 26, 29, 30, 33, 34, 40, 41 and 42 are defiined as follows:
a) Points 26, 33 and 34 (Store J) is defined as monitoring every quarter;
b) Points 29 and 30 (Store J) is defined as monitoring two times daily;
c) Points 40 and 41 (Store G & H) is defined as monitoring every quarter; and
d) Point 42 (Store G & H) is defined as monitoring two times daily.
**Special Frequency 18** means continuous monitoring for a 24 hour period each week except where more frequent monitoring is required by Condition E2.7. The licensee must ensure that monitoring commences at the same day and time each week wherever practicable and that the monitoring data is downloaded at the conclusion of each monitoring event.
**Special Method 6** means CEM-8, CEM-9 or CEM-10 (as defined in *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW. EPA 2005*), or a continuous monitoring method otherwise approved by the EPA.

M2.6 At Point 4, the licensee is required to take a grab sample during 4 startups and shutdowns to determine the concentration of HCl emissions during startup or shutdown conditions. In these circumstances, the licensee may use the in-house HCl sampling method.

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## M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

## M4 Weather monitoring

M4.1 For each monitoring point specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the parameter specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns:

**POINT 12**

| Parameter | Units of measure | Averaging period | Frequency | Sampling Method |
|---|---|---|---|---|
| Wind speed @ 10 m | m/s | 1 hour | Continuously | AM-2 & AM-4 |
| Wind direction @ 10 m | degrees | 1 hour | Continuously | AM-2 & AM-4 |
| Sigma Theta @ 10 m | degrees | 1 hour | Continuously | AM-2 & AM-4 |
| Additional Requirements | | | | |
| Siting | | | | AM-1 & AM-4 |
| Measurement | | | | AM-1 & AM-4 |

Note: Due to technical and topographical difficulties associated with the installation of the weather monitoring station, the licensee is required to align as close as possible to the sampling methods included in this condition for point 12.

# Environment Protection Licence

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## M5 Recording of pollution complaints

M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M5.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

## M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 3 months after:
a) the date of the issue of this licence or
b) if this licence is a replacement licence within the meaning of the Protection of the Environment Operations (Savings and Transitional) Regulation 1998, the date on which a copy of the licence was served on the licensee under clause 10 of that regulation.

## M7 Requirement to monitor volume or mass

M7.1 For each discharge point or utilisation area specified below, the licensee must monitor:
a) the volume of liquids discharged to water or applied to the area;
b) the mass of solids applied to the area;
c) the mass of pollutants emitted to the air;
at the frequency and using the method and units of measure, specified below.

POINT 16

| Frequency | Unit of Measure | Sampling Method |
|---|---|---|

| | | |
|---|---|---|
| Continuous during discharge | kilolitres per day | Wedge Flow Meter |

# 6 Reporting Conditions

## R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
a) a Statement of Compliance; and
b) a Monitoring and Complaints Summary.
At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

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R1.8 A person who has been given written approval to certify a certificate of compliance under a licence issued under the Pollution Control Act 1970 is taken to be approved for the purpose of this condition until the date of first review of this licence.

## R2 Notification of environmental harm

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

## R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

# Environment Protection Licence

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## 7 General Conditions

### G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

### G2 Signage

G2.1 Each monitoring and discharge point, located within the premises as defined in this licence, must be clearly marked by a sign that indicates the EPA point identification number used in this licence and be located as close as practical to the point.

### G3 Other general conditions

G3.1 **Completed Pollution Studies and Reduction Programs (PRPs)**

| PRP | Description | Completed Date |
|---|---|---|
| PRP 1 - HCBD delineation | HCBD delineation. ground water protection , control of off site contamination | 23-April-2004 |
| PRP 2 - Weekly Remediation Progress Reporting | Weekly progress reporting on remediaiton of HCBD, ground water protection and control of off-site contamination. | 01-December-2004 |
| PRP 3 - Submission of Progress Report at 6-Monthly | submission of progress report at 6-monthly interval or until completion of car park remediation describing ongoing monitoring to confirm cell integrity for HCB at car park. ground water protection, control of off-site contamination | 30-March-2011 |
| PRP 4 - Proposals for future works | Proposals for future works, ground water protection and control of off-site contamination | 01-December-2004 |
| PRP 5 - Ammonia Concentration Reduction Strategy | Preparation and submission of an ammonia concentration reduction strategy - to reduce ammonia concentrations in treated discharge from the Groundwater Treatment Plant (Point 11) into the Perry St Canal system. | 30-August-2007 |
| PRP 6 - Dilutions Determination | Determination of the range of dilutions likely at Point 11, Groundwater Treatment Plant discharge point into Perry Street Canal. | 06-May-2008 |

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| | | |
|---|---|---|
| PRP 7 - Ammonia Reduction Progress Report | Submission of a progress report to detail the progress of works to achieve longer term reduction in ammonia discharge concentration at Point 11, so as to achieve protection of aquatic ecosystems in Perry St Canal (95% spp protection). | 29-February-2008 |
| PRP 8 - Ammonia Reduction PRP Progress Report | Submission of a report to confirm progress of works proposed in report titled 'ammonia concentration reduction pollution reduction program. 30 august 2007'. | 03-July-2008 |
| PRP 9 - Ammonia Concentration Reduction Strategy | Submission of a report to confirm progress of works proposed in report titled 'Ammonia Concentration Reduction PRP. 30 Aug 07' submitted to DECC on 30 Aug 07. | 01-July-2009 |
| PRP 10 - Treated Water Temperature Reduction | Reduce the temperarture of treated effluent from the GTP prior to discharge to waters to achieve better protection of aquatic ecosystems in Perry Street Canal. | 31-December-2009 |
| PRP 11 - Stormwater Pollution Reduction Program | Continuous improvement of BIP stormwater systems. Consistent with Qenos and Huntsman licence requirement. | 31-March-2011 |

## 8 Special Conditions

### E1 Financial assurance

E1.1 The objective of this condition is to secure or guarantee funding for or towards the ongoing operating costs of the Groundwater Treatment Plant and associated groundwater collection infrastructure.

E1.2 **Unconditional and irrevocable bank guarantee**

A financial assurance, in favour of the EPA, in the form of an unconditional and irrevocable bank guarantee dated 7 February 2007 for the amount of fourteen million four hundred thousand dollars ($14,400,000) must be maintained for or towards the ongoing operating costs of the Groundwater Treatment Plant (GTP) and associated groundwater collection infrastructure and thereafter until such time as the EPA is satisfied the premises are environmentally secure.

Note: $14.4 million is 20% of the net present value of the outstanding provision ($72 million) of the long term operating costs identified in the licensee's submission on the appropriate form or amount of the financial assurance, dated 30 September 2006.

E1.3 Requirement to increase the amount of the financial assurance

The licensee must increase the amount of financial assurance in accordance with the following schedule based on the financial position of Orica Limited as determined by its Standard & Poors credit rating:

i) While a Standard & Poors credit rating remains at BBB+ or above, the bank guarantee

required will be $14.4 million; and

ii) If the Standard & Poors credit rating falls to BBB the bank guarantee required will be $35 million; and

iii) If the Standard & Poors credit rating below BBB the bank guarantee required will be $72 million.

E1.4 **Requirement to report credit rating in each annual return**

The licensee must include in each licence annual return evidence of Orica Limited's credit rating for the whole period of the licence year.

E1.5 **Requirement to report any changes in credit rating**

The licensee must advise the EPA as soon as practical and in any event within five days of receiving advice from Standard & Poors of any change to the credit rating of Orica Limited.

Note: Orica Australia Pty Ltd is the licensee and Orica Limited is the parent company. The credit rating relates to Orica Limited.

E1.6 **Varying the magnitude of the financial assurance**

a) The EPA reserves the right to vary the magnitude of the financial assurance at any time depending upon any reassessment of possible cost(s) of rehabilitation of the premises or any other reason which the EPA deems to be appropriate and reasonable to ensure environmental security.

Note: The EPA will review the above arrangement every three years including consideration of Consumer Price Index (CPI) adjustments, or more frequently if considered necessary by the EPA or if requested by the licensee, in light of the remaining works required to complete the remediation.

b) The EPA will only draw on the Financial Assurance to fund or recover the reasonable costs in carrying out, or directing or supervising the carrying out by another person, of any work or program, including the likely costs and expenses in directing and supervising the carrying out of the work or program, to meet the requirements of the licence relating to the Groundwater Treatment Plant and associated infrastructure where in the opinion of the EPA the licensee has failed to meet these requirements.

E1.7 **Requirement to submit a review every three years**

The licensee must provide the EPA with a review of the outstanding capital and operating costs for the Groundwater Treatment Plant and associated groundwater collection infrastructure **every three years commencing 5 February 2010.**

E1.8 **Requirement to advise of changes to deed of cross guarantee**

The Licensee must advise the EPA in advance if it proposes to change and as soon as possible if it does change its deed of cross guarantee lodged with the Australian Securities

and Investment Commission, whereby financial liabilities are shared across the Orica group of companies.

E1.9 **Requirement to advise of any changes which may affect ability to fund**

The licensee must notify the EPA of any proposed corporate restructure, scheme of arrangement or appointment of an external administrator that will or may directly or indirectly affect the licensee's short or long term ability to fund the operation of the Groundwater Treatment Plant and associated groundwater collection infrastructure.

## E2 Former Chlor-Alkali Plant

E2.1 **The conditions hereunder relate to the remediation of the site of the former chlor-alkali plant**

E2.2 **DISCHARGES TO AIR AND WATER AND APPLICATIONS TO LAND**

**Location of monitoring/discharge points and areas**

The following points referred to in the table below are identified for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

***AIR***

| EPA Identification No. | Type of Monitoring Point | Type of Discharge Point | Description of Location |
|---|---|---|---|
| 37 | Air Emission Monitoring | Discharge to air | Emission control system stack 1 as depicted on drawing No 050005-ECS1-PID-002 supplied to the EPA on 15 Feb 2011 |
| 38 | Air Emission Monitoring | Discharge to air | Emission control system stack 2 as depicted on drawing No 050005-ECS2-PID-002 supplied to the EPA on 15 Feb 2011 |
| 39 | Ambient Air Monitoring Mercury | | Point AS110 as described in the document titled Revised Ambient Air Monitoring Plan supplied to the EPA on 22 August 2011, or a suitable altenative as agreed in writing by the EPA. |

E2.3 **LIMIT CONDITIONS**

**Concentration limits**

For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

**Points 37 and 38**

| Pollutant | Units of Measurement | 100 percentile limit | Reference conditions |
|---|---|---|---|
| Mercury | mg/m³ | 0.1 | dry, 273 K, 101.3 kPa |
| Solid particles | mg/m³ | 10 | dry, 273 K, 101.3 kPa |

E2.4 **OPERATING CONDITIONS - GENERAL**

**Dust control**

The licensee must design, construct, commission, operate, maintain and decommission the scheduled development works and scheduled activities covered under this heading in a manner that minimises or prevents dust emissions from the site, including wind-blown, excavation and wheel-generated dust;

All activities on the site must be undertaken with the objective of preventing visible emissions of dust from the site. Should visible dust emissions occur at any time, the licensee must identify and implement all practicable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease;

**Potentially offensive odour**

The licensee must not cause or permit the emission of offensive odour beyond the boundary of the premises.

Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour

**Ambient air monitoring program**

The licensee must develop and implement an ambient air monitoring program to monitor fugitive emissions from the treatment building (Block G) and Block M excavations / earthworks. A report detailing the type, location and frequency of monitoring must be submitted to the EPA for comment prior to the commencement of works at Block G and Block M respectively.

E2.5 **OPERATING CONDITIONS - Block G Works**

**Mercury breakthrough**

Prior to the commencement of contaminated material treatment, the licensee must submit a

mercury breakthrough action plan to the EPA for approval. As a minimum the plan must:
• propose a preferred method for continuously monitoring mercury breakthrough in the ECS. As a minimum, the report must consider USEPA performance specification 12A and 12B. The preferred method must have an adequate lower detection limit to achieve meaningful comparison with licensee defined carbon breakthrough trigger(s)
• nominate a mercury breakthrough trigger(s); and
• define, in detail, breakthrough actions for implementation upon measurement of a mercury concentration at and above the nominated breakthrough trigger level.

The plan must be implemented upon commencement of contaminated material treatment.

E2.6 **Block M Works**

Unless otherwise agreed in writing by the EPA the licensee must not undertake any excavation on Block M except for the purposes of characterising the soil properties and contaminant concentrations.

E2.7 **Air Quality Monitoring within the Temporary Emission Control Enclosure**

1. The licensee must conduct monitoring of the mercury levels in air within the Temporary Emission Control Enclosure.

2. This monitoring must be conducted at least daily on all weekdays that are not public holidays.

3. The monitoring must be undertaken at all pedestrian doorways in the Temporary Emission Control Enclosure and the licensee must calculate the arithmetic average of measured mercury levels for each doorway.

4. If the daily arithmetic average of measured mercury levels determined in accordance with condition E2.7(3) is equal to or greater than 1.0 milligram per cubic metre for any round of monitoring then the licensee must:

(i) Review operation of the Emission Control Systems;

(ii) Implement a program to manage the Temporary Emission Control Enclosure louvres and air inlets, including targeted louvre monitoring;

(iii) Review activities within the Temporary Emission Control Enclosure;

(iv) Undertake continuous ambient air monitoring of mercury at EPA point no. 39, with the results being  downloaded at least once every 24 hours; and

(v) Provide written advice to the EPA within 24 hours to the address listed in condition E2.11.

5. If the daily arithmetic average of measured mercury levels determined in accordance with condition E2.7(3) is equal to or greater than 2.0 milligrams per cubic metre for any round of monitoring, then the licensee must, in addition to fulfilling the requirements of the conditions above:

(i) Commence operation of the standby emission control system; and

(ii) Undertake continuous ambient air monitoring of mercury at point no. 39, with the results being downloaded at least hourly, or undertake frequent monitoring using a method approved in writing by the EPA.

Note: for the purposes of the conditions above which require continuous monitoring at point 39, the monitoring must be continuous except for those times when the mercury monitor must be taken off line to calibrate or download data.

E2.8 **Management Requirements for Measured Mercury Levels at Points 37 and 38**

1. If the measured mercury level at either Point 37 or Point 38, or the respective in-line monitoring locations as agreed in writing by EPA, exceeds 0.075 milligrams per cubic metre, then the licensee must:

(i) Use an independent monitoring device to verify the mercury level readings at the relevant Emission Control System; and

(ii) Undertake hourly inspections of mercury level readings for the relevant Emission Control System.

2. If the measured mercury level at either Point 37 or Point 38, or the respective in-line monitoring locations as agreed in writing by EPA, exceeds 0.090 milligrams per cubic metre, then the licensee must:

(i) Shut down the relevant Emission Control System;

(ii) Close all relevant Temporary Emission Control Enclosure louvers and air inlets; and

(iii) Provide written advice to the EPA within 24 hours to the address listed in condition E2.11.

3. If the measured mercury level at either Point 37 or Point 38, or the respective in-line monitoring locations as agreed in writing by EPA, exceeds 0.100 milligrams per cubic metre, then the licensee must:

(i) Shut down the relevant Emission Control System;

(ii) Close all relevant Temporary Emission Control Enclosure louvers and air inlets; and

(iii) Report the event to the EPA immediately by telephoning 131 555.

E2.9 **Requirement to use Best Available Technology and Best Environmental Practice**

The licensee must use Best Available Technology and Best Environmental Practice to reduce, with the aim of eliminating, emissions of mercury from the Temporary Emission Control Enclosure (TECE).

**Requirement to operate Emission Control Systems (ECS)**

At least one ECS must be operating at all times and the minimum velocity must be 15 m/s unless otherwise agreed in writing by the EPA.

**Requirement to monitor concentration of pollutants discharged**

For each monitoring/discharge point specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

| Pollutant at points 37 and 38 | Units of measure | Frequency | Sampling method |
|---|---|---|---|
| Mercury | Milligrams per cubic metre | Monthly | TM12, TM13 and TM 14 |
| Moisture content | Percent | Monthly | TM-22 |
| Pressure of stack gases | Kilopascals | Monthly | TM-2 |
| Solid particles | Milligrams per cubic metre | Monthly | TM-15 |
| Temperature | Degrees Celsius | Monthly | TM-2 |
| Velocity of stack gases | Metres per second | Continuous | CEM 6 - see note 1 below |
| - | - | - | - |
| Mercury at point 39 (AS110) | nanograms per cubic metre | Special Frequency 18 | Lumex meter - See notes 2 & 3 below |

Note: 1. For the purposes of measurement of velocity of stack gases in the table above, the sampling method may be either CEM 6 or a predictive surrogate approved in writing by EPA.

2. For the purposes of the measurement of mercury at point 39, Special Frequency 18 means continuous monitoring for a 24 hour period each week except where more frequent monitoring is required by Condition E2.7. Where Special Frequency 18 requires monitoring each week, the licensee must ensure that monitoring commences at the same day and time each week wherever practicable and that the monitoring data is downloaded at the conclusion of each monitoring event.

3. For the purposes of the measurement of mercury at point AS110 in the table above, if any exceedances of the mercury levels of 1800ng/m3 as a 30 minute average are detected at AS110, the licensee must report the exceedances to the EPA immediately by telephoning 131 555.

E2.10 **Requirement to report monitoring results**

1. The licensee must prepare and submit to the EPA a report which includes but is not limited to all monitoring results required by the licence conditions for the Former Chlor-Alkali Plant.

2. The report must be submitted at the following dates and times:

(i) If the arithmetic average of measured mercury levels determined in accordance with condition E2.7(3) is less than 1.0 milligram per cubic metre, the report must be submitted on or before the 5th day of each month and cover the period of the previous calendar month; or

(ii) If the arithmetic average of measured mercury levels determined in accordance with condition E2.7(3) is equal to or greater than 1.0 milligram per cubic metre, the report must be submitted every Wednesday and cover the period of between 12:00 pm on the preceding Wednesday and the 12:00 pm on the day of reporting.

Note: The report for due on 5 January 2012 may be submitted on any day prior to 18 January 2012.

E2.11 **Submission of written reports**

Where a Special Condition in Condition E2 of this Licence requires submission of a written report, the report is to be submitted to:
Manager Sydney Industry
Environment Protection Authority
PO Box 668
PARRAMATTA NSW 2124
e-mail: eprg.parramatta@environment.nsw.gov.au

## E3 GTP SPECIAL CONDITIONS

E3.1 AUDITS AND REVIEWS

The objective of this condition is:

To conduct a series of ongoing independent audits to validate the predictions contained in the Environmental Impact Statement (EIS) submitted to the EPA on 15 November 2004 and compliance with this licence, and to the extent required by any other approval, compliance with those approval conditions relating to the project;

To conduct environmental reviews with the aim of optimising performance;

To conduct engineering audits to ensure the performance of the plant will not deteriorate in the longer term; and

To identify remedial measures that can be implemented in the event an audit shows a discrepancy between actual and predicted performance.

This condition comprises two parts:

# Environment Protection Licence

Licence - 2148

Part A - Environmental Review and Independent Audit

Part B - Engineering Audit

PART A - ENVIRONMENTAL REVIEW AND INDEPENDENT AUDIT REQUIREMENTS

General Requirement

The licensee must undertake comprehensive environmental reviews and independent audits of the works undertaken in accordance with the EIS.

Each Environmental Review and Independent Audit must include the components specified in Conditions E3.2 and E3.3.

E3.2 ENVIRONMENTAL REVIEW

The licensee must conduct an Environmental Review for submission with each Annual Return.

The Environmental Review must include the following programs:

- Dioxin Monitoring Technical Review
- Groundwater Treatment Plant Water Reuse Strategy
- Groundwater Monitoring Program

1) Dioxin Monitoring Technical Review

The licensee must conduct a program that includes, but is not limited to the following:
A review of technical options and scientific developments relating to discrete and continuous dioxin monitoring technologies.

2) Groundwater Treatment Plant (GTP) Water Reuse Strategy

The licensee must conduct a program that includes, but is not limited to the following:
An investigation into opportunities to maximize the reuse of treated water from the groundwater treatment plant and reduce the amount of treated water discharged to waters provided the reuse or reduction can be achieved in a safe and practical manner and it will provide the best environmental outcome, in the circumstances.

3) Groundwater Monitoring Program

The licensee must conduct a Groundwater Monitoring Program which must include but not be limited to the following:

(a) Monitoring of groundwater to assess whether the extraction of groundwater will result in any actual or potential impacts to surface waters or habitats in the locality;

(b) Review the conclusions of the groundwater assessments and modelling that was undertaken as part of the EIS, including using all monitoring data collected under this license or other approvals for this project;

(c) include a mechanism to regularly review the effectiveness of the monitoring program to ensure it is effective in detecting the presence of actual or potential impacts not already identified; and

(d) Make recommendations about changes to existing monitoring and frequency of monitoring.
The program must be prepared and implemented in consultation with OEH.

E3.3 INDEPENDENT AUDIT

The EPA has considered the need for further Independent Validation Audits in light of the environmental performance of the GTP and on that basis no further Audits under this condition are required.

E3.4 PART B - ENGINEERING AUDIT

General requirement

The licensee must make arrangements for, and bear the full cost of, an independent auditor to undertake engineering audits of the groundwater treatment plant and associated plant and equipment (including all control systems) to ensure it is maintained in a proper and efficient condition and operated in a proper and efficient manner with respect to its environmental and safety capability and performance.

Matters to be addressed in the audits must include but not be limited to;

(a) Review of the frequency of inspections and maintenance programs to ensure they are effective in detecting actual or potential changes in the environmental and safety performance;

(b) Review of procedures for detecting changes to  the equipment which could impact on performance, including corrosion and wear; and

(c) Review of results of internal inspections of all equipment, using video techniques where appropriate.

The licensee must consult with the Independent Monitoring Committee in the selection of the auditor.

The engineering audits must generate a report for submission to the DECC, DEW, Sydney Water Corporation, City of Botany Council, Orica Groundwater Community Liaison Committee and be available for public inspection on request.

The report must be submitted with each Annual Return

• At the end of every 5th reporting period, for the first 15 years of operation of the groundwater treatment plant (ie September 2012, September 2017 and September 2022); and then

• Every 2nd reporting period in which the plant remains in operation (ie September 2024 and then every two years thereafter).
The EPA may require the licensee to undertake works to address the findings or recommendations presented in the Report as a requirement of this licence. Any such works shall be completed within such time as the EPA may agree.

## E4 INDEPENDENT MONITORING COMMITTEE

E4.1 The licensee must service an Independent Monitoring Committee with technical and community representatives relating to the Groundwater Treatment Plant and its operation. The licensee must provide monitoring information and reports and consult with this Committee as required by the relevant conditions of this licence.

Note: *The Independent Monitoring Committee will be serviced by the licensee in conjunction with the existing Orica Groundwater Community Liaison Committee which is also serviced by the licensee.*

## E5 Hexachlorobenzene (HCB) Waste Repackaging Plant Special Conditions

E5.1 **Fugitive Emissions**

The licensee must design, construct, operate and maintain ventilation systems for the buildings in which the operation of the HCB waste repackaging lines is to occur so that the pressure within the building lies below atmospheric pressure at all times.

E5.2 **Concentration Limits**

HCB concentration limit have been established. Note: The licensee provided information regarding breakthrough limits for Points 29 and 30 in correspondence dated 4 July 2008.

E5.3 **Shutdown Requirements**

a) If the break-through limit at monitoring/discharge points 29 or 30 is exceeded after completion of commissioning, the HCB repackaging facility must shutdown as soon as practical after the exceedance is reported (twice daily checks are undertaken during operation). The licensee must only restart the HCB repackaging facility after the carbon bed is replaced with a new or regenerated activated carbon bed. Replacement carbon is not required in the event that the exceedance is found to be a technical error and is unjustified.
b) If any concentration limit described in condition L3.3 at monitoring/discharge point 26 is exceeded after completion of commissioning, the HCB repackaging facility must shutdown on receipt of the relevant monitoring data. The licensee can only restart the HCB repackaging facility after receiving written approval from the EPA.

E5.4 **Repackaging Process Trials Plan**

N/A - Trials complete - condition now redundant.

E5.5 **Notification Requirements**

If on receipt of a certificate of laboratory analysis, the laboratory analysis results demonstrate that the concentration of any discharge parameter has exceeded a limit specified in condition L3.3 for any of the monitoring / discharge Points 26, 29, 30, 33, 34, 40, 41 or 42 then the licensee must notify the EPA within 24 hours of receipt of the certificate.

E5.6 **Waste Generation and Management**

This Environment Protection Licence does not permit the removal of hexachlorobenzene waste from the premises unless and until the necessary separate approvals are obtained by the licensee for an ultimate destruction / disposal location for these wastes.

E5.7 Groundwater Injection and Recovery Trial

N/A - Trial complete - condition now redundant.

E5.8 Bioaugmentation Trial

N/A Trial complete - condition now redundant

## E6 Summary of Special Conditions - Completed and Ongoing

E6.1 Summary of Special Conditions - Completed and Ongoing

| Special Condition | Description | Completed Date |
|---|---|---|
| | Timetable for Remediation of Car Park Waste and Impacted Materials | CPWE Redundant now reproduced in EPL 13263 |
| | Progress reporting on remediation works to remove the source of HCBD and associated compounds. | Redundant now reproduced in EPL 13263 |
| | Ongoing monitoring to confirm the integrity of the Car Park Waste Encapsulation. | Redundant now reproduced in EPL 13263 |
| | Completion reporting | Redundant now reproduced in EPL 13263 |
| | Independent Auditor to conduct annual Audits and Reviews | Ongoing |
| | Independent Monitoring Committee | Ongoing |
| | Financial Assurance for ongoing costs of the Groundwater Treatment Plant established 31 January 2007. | Ongoing |
| | Hexachlorobenzene (HCB) Waste Repackaging Plant. | Ongoing |
| | Repacking Process Trials Plan | Most recent plan completed 2007. No further plans required while repackaging plant activites are suspended. |
| | Groundwater Injection and Recovery | Completed March 2011 - condition now redundant |

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| | | |
|---|---|---|
| | Bioaugmentation Trial | Completed October 2010 - condition now redundant. |

# Environment Protection Licence

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## Dictionary

### General Dictionary

| | |
|---|---|
| **3DGM [in relation to a concentration limit]** | Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples |
| **Act** | Means the Protection of the Environment Operations Act 1997 |
| **activity** | Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997 |
| **actual load** | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| **AM** | Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*. |
| **AMG** | Australian Map Grid |
| **anniversary date** | The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act. |
| **annual return** | Is defined in R1.1 |
| **Approved Methods Publication** | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| **assessable pollutants** | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| **BOD** | Means biochemical oxygen demand |
| **CEM** | Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*. |
| **COD** | Means chemical oxygen demand |
| **composite sample** | Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume. |
| **cond.** | Means conductivity |
| **environment** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **environment protection legislation** | Has the same meaning as in the Protection of the Environment Administration Act 1991 |
| **EPA** | Means Environment Protection Authority of New South Wales. |
| **fee-based activity classification** | Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009. |
| **general solid waste (non-putrescible)** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |

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| | |
|---|---|
| **flow weighted composite sample** | Means a sample whose composites are sized in proportion to the flow at each composites time of collection. |
| **general solid waste (putrescible)** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997 |
| **grab sample** | Means a single sample taken at a point at a single time |
| **hazardous waste** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| **licensee** | Means the licence holder describe d at the front of this licence |
| **load calculation protocol** | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| **local authority** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **material harm** | Has the same meaning as in section 147 Protection of the Environment Operations Act 1997 |
| **MBAS** | Means methylene blue active substances |
| **Minister** | Means the Minister administering the Protection of the Environment Operations Act 1997 |
| **mobile plant** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| **motor vehicle** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **O&G** | Means oil and grease |
| **percentile [in relation to a concentration limit of a sample]** | Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence. |
| **plant** | Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles. |
| **pollution of waters [or water pollution]** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **premises** | Means the premises described in condition A2.1 |
| **public authority** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **regional office** | Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence |
| **reporting period** | For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act. |
| **restricted solid waste** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| **scheduled activity** | Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997 |
| **special waste** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| **TM** | Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*. |

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| | |
|---|---|
| **TSP** | Means total suspended particles |
| **TSS** | Means total suspended solids |
| **Type 1 substance** | Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements |
| **Type 2 substance** | Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements |
| **utilisation area** | Means any area shown as a utilisation area on a map submitted with the application for this licence |
| **waste** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **waste type** | Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste |

Mr Mark Gifford

Environment Protection Authority

(By Delegation)

Date of this edition: 29-June-2000

# Environment Protection Licence

Licence - 2148

## End Notes

| | |
|---|---|
| 1 | Licence varied by notice 1000723, issued on 01-Aug-2000, which came into effect on 22-Aug-2000. |
| 2 | Licence varied by 010937 (ALaN) s.58 notice, issued on 01-Sep-2000, which came into effect on 26-Sep-2000. |
| 3 | Licence varied by notice 1008660, issued on 27-Jul-2001, which came into effect on 21-Aug-2001. |
| 4 | Licence varied by notice 1014464, issued on 15-Jan-2003, which came into effect on 09-Feb-2003. |
| 5 | Licence varied by notice 1025431, issued on 24-Dec-2003, which came into effect on 18-Jan-2004. |
| 6 | Licence varied by notice 1035261, issued on 30-Apr-2004, which came into effect on 30-Apr-2004. |
| 7 | Licence varied by notice 1040183, issued on 07-Sep-2004, which came into effect on 07-Sep-2004. |
| 8 | Licence varied by notice 1041498, issued on 26-Oct-2004, which came into effect on 27-Oct-2004. |
| 9 | Licence varied by notice 1041954, issued on 03-Nov-2004, which came into effect on 03-Nov-2004. |
| 10 | Licence varied by notice 1043560, issued on 14-Feb-2005, which came into effect on 22-Feb-2005. |
| 11 | Licence varied by notice 1048337, issued on 23-Aug-2005, which came into effect on 17-Sep-2005. |
| 12 | Licence varied by notice 1052073, issued on 14-Nov-2005, which came into effect on 25-Nov-2005. |
| 13 | Licence varied by notice 1060389, issued on 12-May-2006, which came into effect on 12-May-2006. |
| 14 | Licence varied by notice 1060540, issued on 22-May-2006, which came into effect on 22-May-2006. |
| 15 | Licence varied by notice 1061917, issued on 10-Jul-2006, which came into effect on 10-Jul-2006. |
| 16 | Licence varied by updating references to the Clean Air Reg, issued on 25-Jul-2006, which came into effect on 25-Jul-2006. |
| 17 | Licence varied by notice 1063885, issued on 11-Aug-2006, which came into effect on 11-Aug-2006. |
| 18 | Licence varied by notice 1067354, issued on 30-Nov-2006, which came into effect on 30-Nov-2006. |

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| | |
|---|---|
| 19 | Licence varied by notice 1068717, issued on 24-Jan-2007, which came into effect on 24-Jan-2007. |
| 20 | Licence varied by notice 1069198, issued on 30-Jan-2007, which came into effect on 30-Jan-2007. |
| 21 | Licence varied by notice 1072335, issued on 13-Jun-2007, which came into effect on 13-Jun-2007. |
| 22 | Licence varied by notice 1074666, issued on 02-Jul-2007, which came into effect on 02-Jul-2007. |
| 23 | Licence varied by notice 1075713, issued on 10-Jul-2007, which came into effect on 10-Jul-2007. |
| 24 | Licence varied by repair to Annual Return Archive, issued on 17-Jul-2007, which came into effect on 17-Jul-2007. |
| 25 | Licence varied by notice 1076456, issued on 01-Aug-2007, which came into effect on 01-Aug-2007. |
| 26 | Licence varied by notice 1077124, issued on 17-Aug-2007, which came into effect on 17-Aug-2007. |
| 27 | Licence varied by notice 1079428, issued on 15-Nov-2007, which came into effect on 15-Nov-2007. |
| 28 | Licence varied by notice 1080326, issued on 28-Nov-2007, which came into effect on 28-Nov-2007. |
| 29 | Licence varied by notice 1082555, issued on 05-Feb-2008, which came into effect on 05-Feb-2008. |
| 30 | Licence varied by notice 1084923, issued on 29-Apr-2008, which came into effect on 29-Apr-2008. |
| 31 | Licence varied by notice 1085288, issued on 19-Jun-2008, which came into effect on 19-Jun-2008. |
| 32 | Licence varied by notice 1089856, issued on 01-Jul-2008, which came into effect on 01-Jul-2008. |
| 33 | Licence varied by notice 1090610, issued on 20-Aug-2008, which came into effect on 20-Aug-2008. |
| 34 | Licence varied by notice 1091819, issued on 12-Sep-2008, which came into effect on 12-Sep-2008. |
| 35 | Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date> |
| 36 | Licence varied by notice 1093630, issued on 12-Dec-2008, which came into effect on 12-Dec-2008. |
| 37 | Licence varied by notice 1095981, issued on 06-Jan-2009, which came into effect on 06-Jan-2009. |

# Environment Protection Licence

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| | |
|---|---|
| 38 | Licence varied by notice 1098432, issued on 22-Apr-2009, which came into effect on 22-Apr-2009. |
| 39 | Licence varied by notice 1100329, issued on 10-Jun-2009, which came into effect on 10-Jun-2009. |
| 40 | Licence varied by notice 1103282, issued on 10-Jul-2009, which came into effect on 10-Jul-2009. |
| 41 | Licence varied by notice 1106600, issued on 10-Dec-2009, which came into effect on 10-Dec-2009. |
| 42 | Licence varied by notice 1110616, issued on 29-Jan-2010, which came into effect on 29-Jan-2010. |
| 43 | Licence varied by correction to scheduled activity name, issued on 22-Dec-2010, which came into effect on 22-Dec-2010. |
| 44 | Licence varied by notice 1123216, issued on 30-Mar-2011, which came into effect on 30-Mar-2011. |
| 45 | Licence varied by notice 1127420, issued on 10-May-2011, which came into effect on 10-May-2011. |
| 46 | Licence varied by notice 1500849 issued on 21-Dec-2011 |

# APPENDIX 3 – OEMP

# OPERATION ENVIRONMENTAL MANAGEMENT PLAN HCB WASTE REPACKAGING PLANT PROJECT

## BOTANY INDUSTRIAL PARK

## ORICA AUSTRALIA PTY LTD

**REVISION: 4.3**

**DATE: 22 February 2018**

**DOCUMENT REVISION RECORD**

| REV | DATE | PREPARED | CHECKED | APPROVED |
|---|---|---|---|---|
| DRAFT | 14 Nov 07 | J Polich | - | - |
| A | 11 Dec 07 | J Polich | S Chia | J Polich |
| B | 5 Feb 08 | J Polich | S Chia | J Polich |
| 0 | 18 March 08 | J Polich | S Chia | J Polich |
| 1 | 14 October 08 | D Cappelli | M Thatcher | C Wiley |
| 2 | 31 August 09 | T Nightingale | D Cappelli | C Wiley |
| 3 | 19 October 12 | D Low | D Cappelli | C Wiley |
| 4 | 14 October 2014 | D Low | D Cappelli | C Wiley |
| 4.1 | 20 November 2015 | D Low | - | C Wiley |
| 4.2 | 20 September 2016 | L Archer | D Cappelli | C Wiley |
| 4.3 | 22 February 2018 | L Archer | D Cappelli | C Wiley |

# Contents

**ABBREVIATIONS**

| | |
|---|---|
| BIP | Botany Industrial Park |
| CCO | Chemical Control Order |
| CEMP | Construction Environmental Management Plan |
| CPRC | Community Participation and Review Committee |
| DP&E | NSW Department of Planning and Environment |
| DG | Dangerous Good |
| DIPNR | This NSW government department is now the DP&E |
| DMS | (Orica Lotus Notes) Document Management System |
| EA | Environmental Assessment |
| EDC | Ethylene Dichloride |
| EHC | Environmentally Hazardous Chemicals |
| EMP | Environmental Management Plan |
| Enablon | Orica SHEC Incident Management System |
| EPA | NSW Environment Protection Authority |
| EPL | Environmental Protection Licence |
| ERP | Emergency Response Plan |
| ERS | Emergency Response Service |
| FB | Fire & Rescue NSW |
| HAZOP | Hazard and Operability Study |
| HCB | Hexachlorobenzene |
| HCBD | Hexachlorobutadiene |
| HCE | Hexachloroethane |
| HCl | Hydrochloric Acid |
| HIPAP | Hazardous Industry Planning Advisory Paper |
| IBC | Intermediate Bulk Container |
| IRP | (HCB) Independent Review Panel |
| KPI | Key Performance Indicator |

| | |
|---|---|
| OBLC | OBLC Orica Botany Liaison Committee |
| OEMP | Operations Environmental Management Plan |
| PID | Photo Ionisation Detection |
| PPE | Personal Protection Equipment |
| QA | Quality Assurance |
| SHE | Safety, Health and Environment |
| SHECMS | Orica Safety, Health, Environment and Community Management System |
| TWA | Time Weighted Average |
| TWSA | Orica Trade Waste Services Agreement |
| UN | United Nations |
| VEC | Vapour Emissions Control |
| VOCs | Volatile Organic Carbons |
| WHS | Occupational Health and Safety |

# 1. INTRODUCTION

## 1.1. Context and Background

This Operation Environmental Management Plan (OEMP) covers the operations of the Hexachlorobenzene (HCB) Waste Repackaging Plant (Store J) and HCB Wastes Stores at the Botany Industrial Park (BIP) site by Orica Australia Pty Ltd.

These activities, combined, are known as the Project.

The Project involves the transfer of waste from existing drums into new, UN-approved containers suitable for transport to a remote waste disposal facility. Repackaged waste is then held at approved Dangerous Goods (DG) stores across the BIP until transported for destruction.

The Repackaging Plant was commissioned in May 2007. It semi-automates HCB waste repackaging operations, improving the repackaging capacity and operator working conditions compared with previous manual repackaging methods. Full scale repackaging was completed in 2011. The Project is now in a maintenance phase of storage, inspection and periodic rounds of minor repackaging as required to ready waste for export.

In 2016 a significant milestone was reached when an application to export 135 tonnes of HCB to Finland for destruction at a facility operated by Finnish environmental management company, Fortum Waste Solutions (previously Ekokem) was approved by Australian and Finnish governments. That first waste shipment was dispatched and an application to export a further 1,500 tonnes was approved by the Australian Department of the Environment and Energy and the Finnish government in August/September 2017 and has subsequently been dispatched.

Orica will progress further export applications and it is anticipated that it will take in the order of five years to export the high-level HCB waste stored at BIP.

## 1.2. Approvals

An Environment Assessment for the Repackaging Plant Project was prepared and submitted to the now NSW Department of Planning and Environment (DP&E) in April 2006. Approval for construction and operation of the Repackaging Plant, pursuant to the NSW Environmental Planning and Assessment Act 1979 was received from the NSW Minister of Planning in August 2006 (Application no 06_0028), with conditions attached (Project Approval). A number of modifications have been processed since that time.

The Project Approval required that an OEMP be prepared and implemented as per the following extract.

**Operation Environmental Management Plan**

5.2 The Proponent shall prepare and implement an **Operation Environmental Management Plan** to detail an environmental management framework, practices and procedures to be followed during operation of the project. The Plan shall be consistent with *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004) and shall include, but not necessarily be limited to:

a) identification of all statutory and other obligations that the Proponent is required to fulfil in relation to operation of the project, including all approvals, licences, approvals and consultations;
b) a description of the roles and responsibilities for all relevant employees involved in the operation of the project;
c) overall environmental policies and principles to be applied to the operation of the project;
d) standards and performance measures to be applied to the project, and a means by which environmental performance can be periodically reviewed and improved, where appropriate;
e) management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval;
f) the additional studies listed under condition 5.3 of this approval; and
g) the environmental monitoring requirements outlined under conditions 3.1 to 3.7 of this approval, inclusive.

The Plan shall be submitted for the approval of the Director-General no later than one month prior to the commencement of the Repackaging Process Trial, or within such period otherwise agreed by the Director-General. The Repackaging Process Trial shall not commence until written approval of the Operation Environment Management Plan has been received from the Director-General.

5.3 As part of the Operation Environmental Management Plan for the project, required under condition 5.2 of this approval, the Proponent shall prepare and implement an **Air Quality Management Plan** to outline measures to minimise impacts from the project on local and regional air quality. The Plan shall include, but not necessarily be limited to:

a) identification of all major sources of particulate and gaseous air pollutants that may be emitted from the repackaging facility, being both point-source and diffuse emissions, including identification of the major components and quantities of these emissions;
b) monitoring for gaseous and particulate emissions from the repackaging facility, in accordance with any requirements of the DEC;
c) procedures for the minimisation of gaseous and particulate emissions from the repackaging facility;
d) protocols for regular maintenance of process equipment to minimise the potential for leaks and fugitive emissions; and
e) a contingency plan should an incident, process upset or other initiating factor lead to elevated air quality impacts, whether above normal operating conditions or environmental performance goals/ limits.

## 1.3. Scope

This OEMP covers:

- Repackaging activities in Store J; and
- Storage of repackaged waste material in shipping containers and stores at the BIP.

This OEMP does not cover:

- Any disposal or destruction options for the HCB waste. Any transport activities outside the BIP as these are dependent on the disposal option; or

- Work Health and Safety matters, these are addressed separately under WHS regulatory risk assessment requirements.

Wastes continue to be stored, maintained and if required repackaged, prior to export for destruction.

Separate Construction Environment Management Plans (CEMPs) are prepared for construction works as required.

## 1.4. Objectives

The objectives of the OEMP are to:

- Ensure that the plant is operated in accordance with statutory environmental requirements, including licences, permits and approvals relevant to the plant;
- Ensure that the plant is operated in accordance with the commitments made in the EA for the project;
- Ensure that the plant is operated in such a way as to minimise any environmental impacts;
- Identify management roles, responsibilities and reporting requirements to ensure implementation of the OEMP; and
- Provide a user-friendly document detailing the environmental management framework, practices and procedures and additional information for use by all personnel involved in the operation of the Project.

## 1.5. Audience

The OEMP is intended for use by personnel involved with the Project including managers, operations personnel, contractors and auditors.

## 1.6. Methodology

The OEMP has been prepared in accordance with the *Guideline for the Preparation of Environmental Management Plans* (DIPNR 2004) and included review of the Project EA, and relevant licences, approvals and permits.

## 1.7. Responsibility and Review

The OEMP is not a static document and will be reviewed as follows:

- If significant changes to the Project operations occur.
- Following an environmental incident.
- If environmental performance requires improvement.

The Legacy Operations Leader is responsible for ensuring that appropriate review and update of the OEMP occurs.

# 2. PROJECT DESCRIPTION

## 2.1. Overview

HCB was produced on the BIP site as a by-product from manufacture of chemical solvents and plastics from the 1960s to 1991. HCB is a bioaccumulative Class 6.1 material, a Scheduled Waste and Scheduled Poison (S7), and is also a suspected carcinogen. It is not flammable.

As a result of these historical operations, Orica has accumulated approximately 15,000 tonnes of waste materials (including contaminated packaging) contaminated with HCB and other chlorinated compounds. The waste material is corrosive so periodic repackaging at the BIP site is required for safe storage until a final disposal or destruction method is determined.

Since its commissioning in May 2007, the majority of HCB repackaging operations has taken place in the main Repackaging Plant (Store J). The Plant handles three main groups of wastes:

- High level solid waste (primarily HCB crystals with small amounts of liquids).
- High level liquid waste (primarily Hexachlorobutadiene or HCBD).
- Low level solid waste (HCB < 1wt%) such as contaminated soil, concrete, storage drums and pallets.

All HCB wastes are repackaged into UN approved containers including new 100 and 200 litre polythene lined metal drums for high level solid waste (HLW), $1m^3$.

Intermediate Bulk Containers (IBCs) for high level waste or low level HCB- contaminated waste (LLW) such as shredded drums, $1m^3$ plywood box with a woven bag liner (Composite IBC) for LLW such as spent catalyst and woven bags with a polythene liner (FIBC) for LLW such as used pallets.

Waste types are presented in Table 2.1.

Table 2.1: Descriptions of wastes.

| Waste Type | Description |
|---|---|
| Chlorinated solvents byproduct wastes | Hexachlorobenzene (HCB) with minor amounts of other chlorinated hydrocarbons stored in lined 200L drums. Dry, crystalline solid and mixtures of HCB and other materials classed as UN2729. Repackaged into 100L and 200L drums. |
| | Mixtures of HCB, hexachlorobutadiene (HCBD), hexachloroethane (HCE) and other chlorinated hydrocarbons stored in lined 200L drums. These wastes are primarily liquids repackaged into 205L drums. |
| Vinyls byproduct wastes | Polymerised materials that settled in tanks containing liquid light and heavy fractions from the Ethylene Dichloride (EDC) purification process streams. When the tanks were cleaned the polymers were removed and stored in 205L polythene lined steel drums and concrete tanks. The scheduled chemical concentrations vary between about 0.5% and <0.1%. All of the wastes have been repackaged in 1000L polythene intermediate bulk containers. Wastes with a high proportion of free liquid have been repackaged in 205L polythene lined steel drums. |
| Demolition wastes | Redundant production equipment from the former Vinyls and Solvents Plants. |
| | Spent oxychlorinator catalyst from the former Vinyls Plant |
| | Contaminated blasting grit from routine maintenance of storage tanks formerly used for storage of EDC. |

| Waste Type | Description |
|---|---|
| | Wastes from the demolition of the Solvents plant not listed under other categories, mainly, cable, fibreglass, small valves and lines. |
| | Largely carbonaceous material from various sources, including char containing about 0.4% hexachlorobenzene which arose from operation of a flash evaporator at the former Vinyls Plant, spent activated carbon containing about 0.003% HCB which arose from purification of hydrochloric acid from the former Solvents Plant, graphite process components, other carbonaceous residues from maintenance clean outs of the former Solvents and Vinyls Plants and storage tanks. All of this waste has now been repackaged into intermediate bulk containers. |
| Contaminated process wastes | Spent carbon arising from operation of the Vapour Emission Control (VEC) System for the old Steam Stripping Unit, and more recently from the operation of the VEC systems for Stores J and G/H. All spent carbon is repackaged into intermediate bulk containers as it is removed from the VEC. |
| | Solids and water collected from the former Solvents Plant Settling Tanks and pits that contain HCB, HCBD, HCE and other chlorinated hydrocarbons originally stored in 200L drums. All of this waste has now been repackaged into intermediate bulk containers. |
| | Effluent sludges containing about 0.08% HCB arising from periodic cleaning of the former Solvents and Vinyls Plants' effluent settling pits. Stored in 200L drums. These are included under 'Soil, Sludge, Concrete' in the table above and account for nearly all the organochlorine content of that group. All of this waste has now been repackaged into intermediate bulk containers. |
| | CPWE Remediation wastes not suitable for treatment or disposal to landfill, transferred to HCB Stores. Primarily the Hypalon liner, filter canisters and activated carbon. |
| | Used personal protective equipment from re-drumming campaigns. |
| Contaminated packaging wastes | Pallets used for storing drums of waste. Whole pallets are strapped together in bundles and placed in woven bulker bags. Broken up or shredded pallets are placed in Plywood box IBC. |
| | 200L and 205L steel drums previously containing the HCB waste, plus plastic overdrums and the plastic liners in the drums. This also includes crushed drums from past re-drumming campaigns. The old drums are mostly shredded as soon as they're emptied of waste. |

## 2.2. Location

The BIP was formerly a single site (ICI Australia), however has been subdivided into a number of areas corresponding to the main chemical complexes on the site. These areas are owned by/leased to the various operators including Orica, Ixom, Qenos and Huntsman, as well as other non-manufacturing companies.

The HCB Repackaging Plant is located within an Orica area of the BIP, adjacent to existing HCB Stores A, B and C. The area is bounded by an elevated pipe bridge and the internal BIP roadway 2nd Street in the east, 1st Street (west of Store A), Springvale drain in the north and 12th Avenue in the south. The boundary of the Orica site within the BIP is effectively the fence running along 1st Street, 12th Avenue and 2nd Street.

The location of the HCB Stores within BIP and the transport routes from the Stores to the Repackaging Plant (Store J) is provided at Appendix 1.

**BIP Neighbours**

The nearest BIP neighbours are Qenos Alkatuff on the eastern side of 2nd St, (about 10m across the road from the Orica fence to the Qenos property boundary), and about 30m across 12th Ave south to the Qenos Site Utilities boundary.

**External Neighbours**

The Botany–Sydenham Goods Railway is the nearest BIP site boundary, running parallel to the BIP approximately 80 metres from the plant.

The Denison St boundary is approximately 500m away to the east. Eastlakes/Pagewood is about 500m away to the north. These are the nearest residential areas.

## 2.3. Operating Hours

When repackaging is required, the facility is able to operate 5 days per week, up to 8 hours per day. Maintenance activities may occur on the sixth day.

## 2.4. Security

The BIP is a secure site with controlled access for vehicles via a security gatehouse at Gate 3 and turnstile access for inducted personnel with swipe cards at other points. Access for visitors must be pre-arranged with security and visitors escorted from the security gate into the site by a BIP-inducted person with a current access pass.

HCB wastes are Scheduled Wastes and Scheduled Poisons, hence must be kept secure from access by unauthorised personnel. A security system (intruder alarms to Gate 3 outside normal working hours) and fire detection system are provided for Store J. The store and container storage area are within a fenced area that is locked at the end of each working day. Security checks are made overnight as per the arrangements for other HCB Stores A, B & C.

## 2.5. Waste Stores

Repackaged wastes are stored at a number of approved locations on the BIP. These stores are maintained through the HCB Stores Management Procedure. The procedure outlines among other things, the following:

- Inspections (monthly) to assess physical condition of the Stores;
- Maintaining package integrity (any deteriorated or damaged package shall be assessed by the Logistics Coordinator as it is identified. It will be repaired or the contents will be transferred to new packaging);
- Labeling (all Stores and drums are to be correctly labeled);
- Stock control (all stock levels are maintained and recorded in a register);
- Emergency Response (refer section 4.7 for further detail); and
- Audits against the procedure.

## 2.6. Transport within BIP

Transport of pallets and containers takes place in daylight hours in accordance with the HCB Internal

Transport Procedure. A Job Safety Environmental Risk Assessment (JSERA) shall be undertaken for any relocating activities which do not have a set procedure.

Pallets of drums, 1m$^3$ 'IBC's and bulk HCB contaminated waste are transported by truck between stores, typically via the following routes:

- Stores I, F and D: 7th Avenue, 4th Street, 10th Avenue and 2nd Street
- Stores G/H and Stores K/L: 5th Street, 10th Avenue, 2nd Street
- Stores A, B and C are directly adjacent to Store J.

The procedure includes the following controls to minimise the likelihood and severity of any spills:

- Drums to be transported shall be sound and labeled with the type of waste.
- The truck shall have a sound steel tray and combing.
- The drums shall be transported in pallets no more than two high and must be secured to the chassis.
- The driver shall carry a two way radio or mobile phone to enable contact with the Logistics Coordinator.
- The truck shall be equipped with a fire extinguisher and absorbent media. In case of a spill, spill containment and trained personnel equipped to contain and clean up waste HCB spills shall be deployed to the location.

Drivers shall be trained in toxic properties of HCB, emergency and standard procedures and BIP vehicle speed limit and road rules.

## 2.7. HCB Waste Repackaging Plant

As of April 2011 all the wastes had been repackaged and are being stored and maintained across various stores. Minor repackaging campaigns are conducted as required at the HCB Repackaging Plant at Store J. Flow charts, indicative of the repackaging process, are presented in Appendix 2.

### 2.7.1 HCB Repackaging Plant (Store J)

The HCB repackaging process is a semi-automated materials handling facility. There is no chemical processing of the waste. Broadly the HCB Repackaging Plant consists of three repackaging lines inside a building with the following main activities:

- Receival areas where forklifts transfer waste packages to the repackaging lines.
- Drum emptying equipment (drum tippers for concentrated drummed waste, shredder and screw conveyor for drums and pallets).
- A liquid collection system consisting of a small baffled tank for the separation of liquid HCBD from water. Contaminated water is transferred to separating tanks prior to discharge through the site effluent system. The site effluent system includes 100 micron and 6 micron filters, as well as activated carbon filters.
- Conveyors for moving empty new packages and repackaged material.
- Weighing equipment.
- Palletiser
- Stretch wrapping and labeling.

- Load out area where forklifts transfer repackaged material from conveyor to shipping container storage area.

A local programmable logic control system with an operator control panel at each repackaging line controls the materials handling equipment and tracks containers of repackaged material (via an indexing system commonly used in conveyor systems).

Store J is divided into 2 main sections:

- The north end is dedicated to HCB repackaging equipment (the "Repackaging Area") and is capable of repackaging 60-75 tonnes of waste per day into UN approved containers. This operational area is partitioned from the rest of the warehouse to minimise noise, fume and dust emissions.
- The south end ("Warehouse Area") is used for storing repackaged material ready to load into transport containers. There is space for up to 4 transport containers in the external storage area.

### 2.7.2. Repackaging Area Fume Extraction and Building Ventilation

Fume hoods installed over drum tipping points, shredder, hoppers and conveying equipment capture fumes and dust. These are vented to a 2-stage activated carbon unit connected to an extraction fan and stack. Pressure vacuum (PV) vents on the liquid recovery tank are also vented to this system.

Since commissioning, this system has been improved to include fine water sprays over the drum tipping hopper and a filter at the shredder conveyor.

During repackaging campaigns, emissions are tested (at monitoring points between the carbon beds and also in the stack as outlined in EPL2148) and the carbon replaced as required. Spent carbon is processed as waste in the Repackaging Plant.

To control the atmosphere in the Repackaging Area and also to ensure potentially contaminated air does not pass into the clean area, a building ventilation fan draws air from Store J through the Repackaging Area and exhausts through a separate dual bed carbon adsorption system (i.e. independent of the fume extraction carbon beds) connected to the common stack.

Further detail is provided in the Air Quality Management Plan in Appendix 4.

### 2.7.4. Store J 'Warehouse Area'

The Warehouse Area is separated from the Repackaging Area via a wall with access tunnels (the tunnel openings have PVC swing doors and the VEC system draws clean area from the warehouse through the tunnel into the repackaging area). Repackaged material passes through the doors of the tunnels to the clean area. Separate forklifts are used in the clean and repackaging areas to avoid contamination of the clean area.

Repackaged material is labeled, the pallets of drums stretch wrapped and pallets stacked in the warehouse pending placement into designated Stores or 20-foot transport containers. If wastes are being loaded into shipping containers for export they are inspected by an independent cargo surveyor. The containers are then closed up, the surveyor places a seal on the doors and the container is labeled with the dangerous goods signage. A shipping container forklift moves the containers onto trucks or to the

storage area as required.

### 2.7.5. Stores G/H

Store H has a temporary enclosure to provide protection from wind and rain during repackaging at that location. Store G has been enclosed and vented to the ventilation fan and activated carbon bed system. Repackaging of the materials held in these stores is complete, however the facility could be utilized for future repackaging if required. This would be done in consultation with the EPA. The Store remains a registered dangerous goods depot and waste store.

### 2.7.5. PPE and Worker Health Monitoring

Note that monitoring activities associated with worker health (i.e. within the Repackaging Plant) are not covered by this OEMP. These are addressed separately under Work Health and Safety regulatory risk assessment requirements.

## 2.8. Redundant Shipping Containers

The relocation of repackaged drums from shipping containers to Stores K/L means that many of the containers will no longer be required. As the containers are emptied, they are inspected by both Orica and an independent inspector prior to return to the owners. Contamination is not expected as the drums have been packaged in preparation for the proposed export. In the unlikely event the container is contaminated, it will remain onsite for decontamination.

# 3. STATUTORY REQUIREMENTS

## 3.1. Approvals and Licences

The Project operates under the approvals, licences and permits outlined in Table 3.1. These may be updated or revised from time to time. Tracking of compliance tasks is currently managed through the Botany Document Management System Compliance Planner in Lotus Notes but is planned to transition into Enablon.

Table 3.1: Statutory requirements summary

| Legislation | Licence / Approval / Permit | Authority | Required for | Comments |
|---|---|---|---|---|
| NSW Environmental Planning and Assessment Act 1979 | Project Approval 06_0028 under Part 3A of the Act. | DP&E | Construction and operation of plant. | Approval was granted in 2006 and has been modified on a number of occasions since to reflect changing nature of operation. |
| NSW Environmentally Hazardous Chemicals Act 1985. | EHC Act Licence (No. 26). | NSW EPA | Keeping, conveying and processing scheduled chemical wastes. | Licence was updated in July 2015 and remains in force until July 2018. |
| Chemical Control Order in Relation to Scheduled Chemical Wastes (2004) | EHC Act Licence (No. 26). | NSW EPA | Keeping, conveying and processing scheduled chemical wastes. | Licence was updated in July 2015 and remains in force until July 2018. |
| NSW Protection of the Environment Operations Act 1997 | Environment Protection Licence (EPL no 2148) | NSW EPA | Operation of the HCB Repackaging Plant and repackaging activity at Stores G, H. | Licence was updated to cover new emission points associated with HCB Repackaging Plant and has been modified periodically to reflect changing nature of Project. This licence also covers a wide range of other activities on the Orica Botany site. |

# 4. MANAGEMENT SYSTEMS

## 4.1. Environmental Management Systems

Orica operates under an integrated corporate Safety, Health, Environment and Community Management System (SHECMS). Orica's SH&E Policy defines the company's overall objectives with respect to our operations. The Policy can be located via Orica's intranet.

# POLICY

MARCH 2017

# SAFETY, HEALTH AND ENVIRONMENT

We care about the health and safety of each other, our customers, our communities and take our responsibility to the environment seriously. We understand that operating safely, responsibly and sustainably is material to our business success, and want to be a recognised leader in Safety, Health and Environment.

Safety is a value enshrined in Our Charter. It is everyone's responsibility to do everything possible to keep ourselves safe.

## OUR SAFETY, HEALTH AND ENVIRONMENT ASPIRATION

To conduct our business in a way that causes no harm to the health and safety of our people, our customers or the community, and minimises our impact on the environment.

## OUR SAFETY, HEALTH AND ENVIRONMENT ACTIONS

We will achieve our Safety, Health and Environment aspiration by: always being mindful of risk; ensuring our people are capable and empowered; and focusing on always improving.

### Always mindful of risk

- We implement rigorous Standards and Procedures to ensure our people succeed in their work.
- We seek to eliminate or minimise our Safety, Health and Environment risk, leveraging the hierarchy of controls.
- We reduce our environmental footprint through minimising waste and fresh water use, minimising pollution and efficiently using resources.
- We verify and monitor how our risks are being managed at the frontline and comply with all relevant Safety, Health and Environment legislation, internal policies and standards.

### Capable & empowered

- Our people are engaged, understand their responsibilities and have the resources, training, competency and systems to successfully execute their tasks.
- Our people have all Safety, Health and Environment information that is relevant to their work and their wellbeing.
- We only proceed with work when we know we can do it safely, and we are empowered to stop work if unsafe.

### Always improving

- We create and maximise opportunities to learn and improve.
- We investigate and manage Safety, Health and Environment incidents and implement actions to prevent recurrence in order to drive continuous improvement.
- We monitor, report and drive continual improvement of our Safety, Health and Environment performance including the setting of objectives, targets and KPIs.

We do all this, because we care.

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ORICA

**Approved by**
**Orica Limited Board**
**March 2017**

The SHECMS has been developed to manage the interaction between people and the work environment and to ensure sustained compliance with legislative requirements, the Orica Standards, Codes of Practice and other external standards. It consists of a series of Management Procedures which define the key requirements of the SHEC Policies and provides guidance on how the requirements can be met. The Management Procedures capture good practice across the company.

The requirements of the procedures are followed through local work instructions and local practice.

## 4.2. Operating Procedures

Detailed operating procedures have been developed covering all aspects of the Project. These are periodically reviewed and revised and are available to all personnel associated with the plant via Orica's Lotus Notes Document Management System (DMS). The functionality of DMS allows for review, approval and distribution to relevant personnel. All staff have access to the DMS relevant to their roles. See also Section 4.11 (Document Control).

A list of operating procedures is given in Appendix 3. These may be subject to change during operations.

## 4.3. Training

All people working on the BIP undertake site induction and safety training. All people working on repackaging operations are trained in a plant specific induction appropriate for their role. Training includes as appropriate:

- Site familiarization;
- Operating procedures;
- Site environmental controls, monitoring and reporting requirements; and
- Emergency response.

Training is recorded including name of person trained, trainer details and date.

## 4.4. Roles and Responsibilities

The organisational structure for HCB Repackaging Plant is shown in Figure 4.1. Broad environmental management responsibilities for HCB Repackaging Plant personnel are summarised in Table 4.1. Specific responsibilities addressing requirements of approvals, licences and permits are detailed in the plans in subsequent sections of the OEMP.

Table 4.1: Roles and responsibilities

| Role | General Responsibility |
|---|---|
| Legacy Operations Lead | Ensure SHEC policy is implemented.<br>Ensure all activities meet legislative requirements.<br>Approve allocation of environmental resources, including training.<br>Incident investigation and corrective action closeout |
| Operations Coordinator | Ensure SHEC policy is implemented.<br>Definition and provision of required training (including environmental training).<br>Ensure all activities meet legislative requirements.<br>Ensure and verify competence of any contractors.<br>Incident investigation and corrective action closeout.<br>Review and report environmental monitoring data.<br>Develop and maintain project environmental plans. |
| EMS Lead | Assist with the maintenance of project environmental plans.<br>Verify HCB operations compliance with regulatory requirements. |
| Logistics / Stores Coordinators / Leading hands | Instruct team members in the SHEC requirements of their work.<br>Ensure team members attend required training sessions.<br>Issue / review Permits to Work, JSERAs.<br>Participate in Toolbox meetings.<br>Complete inspections, checklists and logsheets. |
| Laboratories | Adhere to SHEC requirements.<br>Undertake monitoring / sampling, analysis in accordance with approved test methods.<br>Report results to project personnel. |
| All personnel | Individuals are responsible for their own actions and observing all site environmental requirements, including participation in required training, incident reporting etc. |

## 4.5. Communications and Information

Orica has an open and transparent approach to community consultation. Community feedback and involvement is encouraged through a comprehensive communication framework that uses:

- Signage;
- Fact sheets/frequently asked questions/technical summaries;
- website http://www.orica.com;
- Community engagement meetings;
- Site tours; and
- 1800 025 138 (freecall number)

## 4.6. Stakeholder and Community Liaison

Throughout the duration of the Project extensive consultation is undertaken with a range of stakeholders including:

- NSW DP&E;
- NSW EPA;
- NSW Health;
- NSW WorkCover (now SafeWork NSW);

- City of Botany Bay Council (now Bayside Council); and
- Community

The community engagement group, the Orica Botany Liaison Committee (OBLC) formerly called the CPRC, was established in 1997 under the HCB Waste Management Plan to "receive, request and distribute information; consult the local community; participate in relevant processes; and review and advise the NSW EPA and Orica on relevant proposals, including monitoring and implementation of the management plan.

The OBLC, comprising representatives of local community groups, local industry, independent experts, local and state government and Orica continues to meets regularly. The committee provides an inclusive consultation process so that any member of the public can become involved.

As per the requirements of the Project Approval, regular updates are made to the website: http://www.orica.com

## 4.7. Emergencies and Pollution Incidents

The Project operates under the Orica Botany Major Hazard Facility Emergency Response Plan (ERP).

The ERP is designed to meet the Industry Emergency Planning Guidelines Hazardous Industry Planning Advisory Paper: No. 1 Industry Emergency Planning Guidelines, the NSW Environmentally Hazardous Chemicals Act, 1985 and the Work Health and Safety Regulation 2011 – Major Hazard facility requirements. It addresses scenarios, inventories, controls, actions, responsibilities and training requirements with respect to the management of emergencies and is tested at regular intervals.

In accordance with Section 5.7A of the POEO Act 1997, Orica Botany may implement the Pollution Incident Response Management Plan (PIRMP). The PIRMP incorporates the NSW EPA's *Environmental guidelines: Preparation of pollution incident response management plans* and outlines the processes to prevent and minimise the risk of pollution incidents and ensure comprehensive and timely information is provided to relevant authorities and stakeholders.

The PIRMP is integrated with the ERP and is available to all personnel via the Botany Legacy DMS. The PIRMP is tested at least once per year. Personnel with responsibilities under the Plans are trained in their requirements.

Orica also trains personnel to follow the basic principles below in managing an incident:

- Protect people / environment / property;
- Notify your supervisor immediately;
- Combat the incident if it is safe to do so.

All incidents at Orica sites are reported, investigated and managed using the Orica SH&E Reporting Management Information System (Enablon). Enablon includes allocation of actions and action tracking capacity. The reporting tool is used for EPA and any other internal reporting requiring incident information or statistics. All Project personnel can raise an incident. The Legacy Operations Leader is responsible for monitoring and closeout of actions for the Project.

## 4.8. Emergency Contact

For externally detected incidents, the National Emergency Response Service (ERS) can be contacted at any time on 1800 033 111. This number is displayed on labels affixed to transport containers (but it is not required on shipping containers being transported to port for export) and can also be accessed via the community hotline (1800 025 138) displayed on signage at strategic positions along BIP fencing and entrance points.

On receiving a call affecting the Project, the ERS would notify the HCB Repackaging Plant Operator who would initiate shutdown procedures and / or the ERP as required.

## 4.9. Complaints

Complaints from community members are treated as per any other incident, and are documented using the same process as described for incident reporting. All complaints are investigated and documented. Any corrective measures are tracked for completion.

The BIP maintains a Community Hotline for complaints, enquiries and feedback (1800 025 138). Complaint details (name of person making complaint, contact details, nature of complaint) are entered into a register by the person receiving the complaint and allocated to the relevant Operations Leader for investigation and response.

## 4.11. Document Control

New documents are circulated in draft form for comment to relevant Orica project personnel. Once approved, the new document is saved to the Botany Legacy Operations DMS. A revision number and date is allocated.

Documents for revision are circulated for review by relevant Orica project personnel. Once finalised, the revision is saved to the Botany Legacy Operations DMS. The revision status and date of the document is altered accordingly. A copy of the superseded document should be systematically retained.

When a new document is saved to the DMS or any document is revised, personnel affected by the document, or their superiors, are made aware of the change by the Operations Coordinator.

The DMS can be used to check the revision status of all documents in the system and all project personnel have access to it. All project personnel have access to the DMS relevant for their work.

All final records and reports associated with the Project shall be saved on the L: drive or in the Plant Dossier on the DMS.

# 5. MANAGEMENT OF ENVIRONMENTAL IMPACTS

## 5.1. Overview

The EA for the project identified areas where a potential environmental impact could occur. To minimise potential adverse impacts, environmental management processes and control measures applicable to the Project have been developed by:

- Preparation of the project EA which identified and committed to a number of safeguards and control measures to control environmental impacts from the HCB Repackaging Plant. Orica notes that this OEMP has been reviewed to reflect current operations, rather than full scale repackaging as specified in the EA. As such some of the controls have been amended.
- Reviews during the detail design process including HAZOPs, risk assessments, fire safety study, machinery safety studies, trials to ensure materials handling equipment operated successfully and laboratory testing to determine the efficacy of the carbon beds for scrubbing exhaust air from the ventilation system.
- Conditions of Project Approval and the EPL which set the statutory framework and limits within which the plant must operate.

In some cases there is negligible or very minor potential for an adverse environmental impact (e.g. visual amenity) and no specific management activities occur. For other categories detailed management and monitoring activities occur and a specific management plan is in place to ensure that control measures function as designed, and that monitoring is in place to demonstrate that required environmental performance is achieved (e.g. air quality).

Table 5.1 summarises the main controls in place to minimise potential impacts and also provides the reference to more detailed management plans where relevant.

## 5.2. Monitoring of Controls

The implementation of the environmental management controls is monitored through regular plant inspections, monitoring programmes and incident investigations (as required). These activities are either part of general plant operation activities and are covered by standard operating procedures, or are defined in specific management plans where relevant.

Key Performance Indicators (KPI) are defined for many of the potential impact areas and are used to monitor compliance. These are summarised in Table 5.1 and specific management plans where relevant.

## 5.3. Responsibilities

Responsibilities for the management of each environmental impact category are specified in Table 5.1 and, also in specific management plans where relevant.

Table 5.1: Summary of management of potential environmental impacts.

| Aspect / impact | Potential Impact | Controls | Monitoring | KPI | Responsibility | Approval reference | EPL reference |
|---|---|---|---|---|---|---|---|
| Air quality | Emission of gases / vapours (chlorinated hydrocarbons including HCB, HCBD, HCE). | All repackaging activities occur in controlled buildings.<br><br>Enclosures equipped with forced ventilation system with buildings under fan suction exhausting to filters with fabric filter followed by carbon beds exhausted to elevated stacks.<br><br>Shutdown requirements and procedures.<br><br>AQMP (Appendix 4) | Fan failure alarms (audible and visible).<br><br>Interstage carbon bed monitoring to store during repackaging.<br><br>Stack monitoring during repackaging. | Comply with EPL | Legacy Operations Leader. | 2.4 – 2.10 3.1 – 3.3 | P1, L2 and M2. |
| | Dust (HCB contaminated). | | | | | 2.1. | O3. |
| | Odours. | | Reporting by BIP personnel and neighbours.<br><br>Reports on Enablon. | | | 2.2. | O5. |
| Surface waters | Contamination of surrounding area (e.g. Springvale Drain) | Segregation of potentially contaminated and clean areas using bunding and kerbing. All process areas are hardstanding. Contaminated areas directed to effluent system.<br><br>BIP site and HCB transport procedures include container integrity checks, steel sheeting on truck trays, covers on loads, rigid vehicles, speed limits.<br><br>Spill cleanup equipment and procedures. | Regular plant logs.<br><br>Monitoring and diversion for treatment (if required) of BIP effluent (common to other HCB stores and other areas of BIP). | No incidents / spills resulting in contamination.<br><br>Compliance with Trade Waste Service Agreement Specifications. | | 2.15, 2.16, 2.23. | L1.1, O5. |

| Aspect / impact | Potential Impact | Controls | Monitoring | KPI | Responsibility | Approval reference | EPL reference |
|---|---|---|---|---|---|---|---|
| Soil and groundwater | Contamination of surrounding soil / groundwater. | Segregation of potentially contaminated and clean areas using bunding and kerbing.<br><br>All process areas are hardstanding.<br><br>Contaminated areas directed to effluent system.<br><br>BIP site and HCB transport procedures include inspection of containers before transferring to vehicle, speed limits.<br><br>Proper use of approved Dangerous Goods Stores.<br><br>Spill cleanup equipment and procedures. | Regular plant logs.<br><br>Monitoring and diversion for treatment (if required) of BIP effluent (common to other HCB stores and other areas of BIP). | No incidents / spills resulting in contamination. | | 2.15, 2.16, 2.23. | L1.1, O4 and O5. |
| Noise and Vibration | Offense to surrounding receptors. | Most processing equipment inside buildings.<br><br>Fans shielded by buildings.<br><br>Noise Management Plan (Appendix 5). | Operations during standard hours only.<br><br>Noise survey was carried out during commissioning period with all equipment operating.<br><br>Periodic community noise monitoring (not exclusive to HCB, rather for all activities on BIP). | No noise complaints.<br><br>Comply with EPL conditions. | BIP Site Engineer. | 2.13, 2.14. | L5. |
| Waste | Potential contamination due to inappropriate disposal. | Plant designed to generate minimal waste.<br><br>All scheduled waste goes back through Repackaging process, or sent to licenced waste facility.<br><br>EPA approved Online Waste Tracking. | All wastes to be sent off site are classified.<br><br>No scheduled waste to go offsite unless to facility licenced to receive it.<br><br>Stock levels recorded. | All waste held or disposed of to facilities lawfully permitted to receive it. | Legacy Operations Leader. | 2.17 – 2.21. | O4, E5.6. |

| Aspect / impact | Potential Impact | Controls | Monitoring | KPI | Responsibility | Approval reference | EPL reference |
|---|---|---|---|---|---|---|---|
| | | Wastes to be sent off site are classified.<br><br>WMP (Appendix 6). | | | | | |
| Traffic | Increased traffic loading on local road network. | Required traffic loading is negligible compared with existing BIP and local traffic loading.<br><br>BIP site and specific HCB transport procedures.<br><br>Any movements for waste relocations to occur on internal BIP roads only. | NA | NA | | NA | NA |
| **Notes:** | | | | | | | |
| 1. No specific impacts were identified for Land Use Planning, Visual Amenity, Flora and Fauna or Cultural Heritage due to the site being highly industrialised. | | | | | | | |
| 2. Acid Sulfate soils were not detected during the construction period so will not be an issue during the operational phase. | | | | | | | |

# 6. REPORTING AND AUDITING

The EPL and the Project Approval contain various reporting and audit requirements for the HCB Repackaging Plant (some of which duplicate each other). The timing, scope and responsibility for reports and audits are summarised in this section of the OEMP.

## 6.1. Reporting

Many of the reporting requirements associated with the project have been completed. These include pre-construction studies, pre-commissioning, repackaging trials plans and reports, relocation management plans and Air Quality Performance Verification Report. The following reports are still required and are prepared in accordance with the Project Approval, EPL and EHC Act Licence:

- EPL Annual Returns for EPA due August each year.
- EHC Act Licence Annual Report due August each year.
- Immediate notification in the event of an incident with the potential to cause environmental harm (or requiring an investment of >$10,000 to manage and clean up).
- Written incident reports (within 7 days of an incident occurring).

For some aspects of the required reporting, HCB Repackaging Plant information is integrated into reports already submitted to the relevant authority, rather than being a standalone report.

## 6.2. Auditing

The conditions of the Project Approval require that the following audits be carried out by independent auditors approved by the Director-General:

- an Environment Audit; and
- a Hazard Audit.

A Hazard Audit was last conducted in 2015. Environmental audits were conducted in late 2007 and late 2008. Orica will continue to liaise with the DP&E on these requirements from time to time.

## 6.3. Internal Inspections and Audits

Orica conducts monthly inspections and an annual internal audit in accordance with the HCB Store Management Procedure.

Orica also completes internal reviews against the requirements of EPL 2148, Project Approval 06_0028 and EHC Act Licence 26 at least once per year.

Refer to Table 6.1 for additional details and responsibility. Note that this may change from time to time as agreed with EPA or DP&E. Tables 6.2 and 6.3 provide examples of internal Inspection and Audit checklists.

Table 6.1: Project audit requirements

| Audit | Scope | Orica Responsibility | Auditor | Responsibility for Organising Audit | Frequency | Reporting | Ref |
|---|---|---|---|---|---|---|---|
| Independent Environmental Audit. | In accordance with ISO 19011.<br><br>Assess compliance with approvals, licences.<br><br>Assess performance against predictions made at planning stage (EA studies). | Arrange auditor.<br><br>Action recommendations. | Independent, qualified person approved by the Director General of NSW DP&E. | Legacy Operations Leader. | Annually or as agreed by DP&E.<br><br>DP&E advised in 2011 that further Environmental Audits were not required until export or significant repackaging campaigns recommence. Orica has requested that the next audit occur after modifications to the Project Approval are made to remove inconsistencies with EPL2148. | Provide report to DP&E within 1 month of completion of audit. | Project Approval Condition 3.7 |
| Hazard Audit | As per *Hazardous Industry Planning Advisory Paper No. 5 - Hazard Audit Guidelines.* | Arrange auditor.<br><br>Action recommendations | Independent, qualified person approved by the Director General of NSW DP&E. | Legacy Operations Leader. | Every 3 years or as otherwise agreed by DP&E.<br><br>Completed in 2008 and 2015. | Provide report to DP&E within 1 month of completion of audit. | Project Approval Condition 3.8 |
| Fire Safety System Audit | Effectiveness of the BIP Fire Safety System, including the Project. | Arrange Auditor.<br><br>Action recommendations. | Independent qualified auditor. | Legacy Operations Leader. | Annually. | Submit statement to Council and NSW Fire & Rescue. | EHC Act Licence 26 Condition 16.2.3. |

| Audit | Scope | Orica Responsibility | Auditor | Responsibility for Organising Audit | Frequency | Reporting | Ref |
|---|---|---|---|---|---|---|---|
| HCB Store Inspections | All HCB Stores as per HCB Store Management Procedure checklists. | Conduct inspections as per checklists.<br><br>Action recommendations. | HCB Stores / Logistics Coordinator. | Legacy Operations Leader. | Monthly. | Completed Checklists maintained on record. | EHC Act Licence 26 Condition 9. |
| HCB Store Audit | All HCB Stores as per HCB Store Management Procedure checklists. | Conduct audit as per checklists.<br><br>Action recommendations. | HCB Stores / Logistics Coordinator. | Legacy Operations Leader. | Once per Orica financial year. | Completed Checklists maintained on record. | HCB Store Management Procedure |
| HCB Compliance Review | EPL 2148 and Project Approval 06_0028, active CEMPs (as relevant) and this OEMP. | Conduct audit as per checklists.<br><br>Action recommendations. | EMS Lead. | Legacy Operations Leader. | Once per Orica financial year. | Completed Checklists maintained on record. | EPL 2148 and Project Approval 06_0028, active CEMPs (as relevant) and this OEMP. |

Table 6.2: Inspection checklist template example

Inspected by: _____ Date: _____

This audit included the following stores and depots

| Store/Container depot | A | B | C | D | F | G | H | I | J | J Yard | K-L | Car park | PPY | FBT Yard |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **11/DG depot** | 38 | 39 | 40 | 37 | 44 | 45 | 27 | 47 | IP/1 | 50 | 51 | 54 | 52 | 57 |
| **Inspected** | * | * | * | * | * | * | * | * | * | * | * | * | | * |

| Stores | Standard | Findings and actions |
|---|---|---|
| Packaging | No leaks or corrosion | |
| Pallet racks | No damage of deformation | |
| Storm water ingress | No stormwater | |
| Water collection pit | Pump to settling tanks | |
| Water tank full notification | Message sent to nominated phones | |
| Signs: | In place and legible | |
| Scheduled waste | Every door | |
| Restricted access | Every door | |
| EIP | Every door | |
| Door numbers | Every door | |
| Depot number | At approaches | |
| Store name | At approaches | |
| Doors | Secure, locked and exit lights operating | |
| Fire Indicator Panel inspection | Inspection and service on schedule | |
| Fire fighting equipment inspection | Inspection and service on schedule | |
| Housekeeping | No litter, access for people and vehicles | |
| Grass and plants | No fire or security hazard | |
| Asbestos | No fragments in traffic or work areas. | |

| General | |
|---|---|

| CTU Depots | Standard | Findings and actions |
|---|---|---|
| Housekeeping | No litter, access for people and vehicles | |
| Grass and plants | No fire or security hazard | |
| Depot number | At approaches | |
| Safety showers monthly check | Adequate flow of clean water.<br>Clear access.<br>No leaks. | Date of last check |
| Intruder alarm six monthly check | Alarm at Gate 3 registered on Forcefield system. | Date of last check |

| | | |
|---|---|---|
| **Master keys** | All Accounted for | |
| **Spill kit** | Available for use | |
| **PPE Stock** | Adequate supply | |

Table 6.3: Audit checklist template example

**INTERNAL ANNUAL AUDIT CHECKLIST**

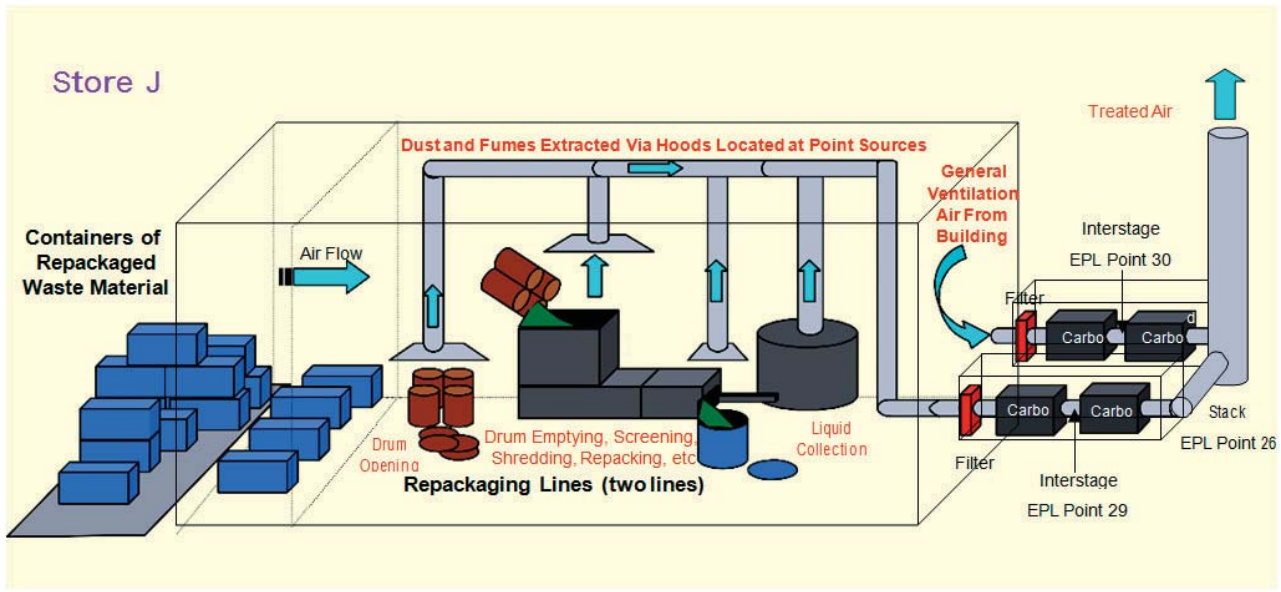
**HCB STORE MANAGEMENT PROCEDURE**

**AUDIT Nº:**
**DATE:**
**AUDIT CONDUCTED BY:**

| CLAUSE | ITEM | COMPLIANCE | REMARKS |
|---|---|---|---|
| 5.1 | Is there an HCB Store record system? | | |
| 5.2 | Is there a copy of the current chemical control order? | | |
| 5.12, 5.13 | Have the necessary atmospheric and personnel sampling and analyses been conducted during the last re-drumming campaign? | | |
| 5.11 | Have the results from the most recent atmospheric testing been recorded? | | |
| 5.6 | Have the necessary inspections been conducted and recorded? | | |
| 5.9 | Has the integrity of the packaging been maintained? | | |
| 5.4 | Have the personnel responsible for issuing clearances for the HCB Store been trained and assessed in the requirements of the HCB Store? | | |
| 5.4 | Was the correct level of personal protective equipment specified on the Permit? | | |
| 5.16 | Is the HCB Store labelled in accordance with the chemical control order? | | |
| 6.3 | Has there been a simulated emergency in the HCB Store? Are there any records of the simulation? | | |
| 5.1, 5.4, 5.8 | Are maintenance activities controlled by Permit to work? AND Are the Permits issued by an authorised person? | | |

# APPENDIX 1. SITE LAYOUT

## APPENDIX 2. INDICATIVE PROCESS FLOW CHART




Note - the liquid separation equipment is no longer needed.

# APPENDIX 3. LIST OF RELEVANT OPERATING PROCEDURES

The list of operating procedures relevant for the project at the time of writing of this Plan are presented below. The latest revision of all relevant and current procedures is available in the Orica Lotus Notes DMS. These can be accessed by Orica personnel as required.

**Operating Procedures**

OEM01 Operating Manual, ALTAIR® 4 – Four Gas Multigas Detector
SOP Development, Risk Assessment, Review, Training and Competency Assessment
SOP01-HCB Stores Pallet Racking Installation, Dismantling and Operations
SOP02 Internal Transport Procedure
SOP03 HCB Store Management Procedure
SOP04 Settling Tanks
SOP05 Isolate and restore power in Store J switch room.
SOP06 HCB Wastes Stores Forklift Truck Training
SOP07 - Settling tank cleaning
SOP08 - FLT LPG Leaks Check
SOP09 VCM Contaminated Wastes Management
SOP10 - Bundwater Tank Level
SOP12 Loading and unloading of HCB wastes Containers
SOP14 Correct use and disposal of PPE
SOP15 Drum repackaging line operation
SOP15 Drum Repackaging Operation
SOP18-Standard Drums Lidding Operations
SOP18 Drum lidding
SOP22 VEC System operation
SOP24 Panel View operation
SOP25 Packaging labelling and marking
SOP26 Decontamination and Repackaging of HCB Contaminated Materials
SOP27 Compaction of Decontaminated HCB Steel Drums
SOP28 Machine guarding system
SOP29 Multigas meter calibration and use
SOP30 Drum recycling
SOP31 Construction of Composite IBC
SOP32 Fill composite timber IBC and prepare for storage

**Checksheets and Logsheets**

CONVEYOR LINE EMERGENCY STOPS SAFETY SYSYTEMS INTERLOCK CHECKS
HCB Stores - Weekly Checksheet
HCB Stores Monthly Inspection
HCB Waste Packages- Repackaging and Tracking Log Sheet
Light Curtain Conveyor B1501 Test Check Sheet
Light Curtain Conveyor B1601 Test Check Sheet

Light Curtain Conveyor B1608 Test Check Sheet
Master key register
PID BUMP TEST AND/OR CALIBRATION RECORD, STORE J
ROUTINE DAILY OPERATOR CHECKS
Startup Check list HCB Rep-packaging Plant
Store doors reed switch test sheet
Used Drum Batch Sheet
Used Drum Sampling Batch Sheet
Wastes Stores Safety Shower Checks

# APPENDIX 4. AIR QUALITY MANAGEMENT PLAN

The primary environmental risks relate to the emission of airborne contaminants from the repackaging plant. To verify that emissions that may be generated by the repackaging process are effectively controlled, the following measures shall be applied.

## A4.1 Emission controls

### A4.1.1 VECS

There are two VECS in the repackaging plant. One covers the building air, and the other, vapour and dust extraction air from processing equipment. Each VECS consists of a fabric filter and two stage activated carbon beds in series (refer Figure A4.1), with ducting combined after the carbon beds into a common stack discharging to atmosphere 12m above ground level (EPL 2148 monitoring point 26). Each system has its own suction fan with the filter and carbon on the fan discharge side. Both the building and dust hood fans have a capacity of 6000 m3/hr, a total of 12000 m3/hr giving about 2.5 air changes per hour for the repackaging building.

The fans draw air through a pair of conveyor tunnels into the repackaging plant building from the clean warehouse area of Store J. Doors are kept closed during operations. There are airlocks for transferring wastes and materials into and out of the repackaging plant. The air pollution controls have proven very effective in controlling discharge and fugitive emissions during the full scale repackaging campaign between 2007 and 2011.

Bed life varies with the type and quantity of wastes processed. A PID analyser is installed in the plenum chamber between the carbon beds on the two lines (EPL 2148 monitoring points 29 and 30). The PID runs continuously during repackaging operations, and during these periods has the readings checked twice daily. The VOCs measured at these interstage points (VOCs as Tetrachloroethene) act as a predictive “marker” for break-through of contaminants. If the specified trigger levels are exceeded then corrective actions are implemented (refer Section A4.3).

Failure of either fan on the VECS is indicated by an alarm. If a fan fails the process will be stopped, exposed wastes resealed and the building vacated till the air extraction system is restored.

### A4.1.2 Safe start up, operation and shutdown

Standard Operating Procedures (SOP), primarily covered under *SOP 15 – Drum Repackaging Line Operation, SOP 22 – VEC System Operation* and *HCB Plant Operator Check Sheets*, have been established for the safe start up, operation and shutdown of the repackaging plant. The procedures provide step by step guides for plant operators to undertake and the check sheets allow verification that the steps have been followed and equipment is functioning correctly. The steps and checks include:

- Check the operation of airlocks and doors;
- Prepare VECS for start up;
    - Check that baffles on extraction hoods are open to their correct position;
    - Check that the bypass suction valve between the building vent fan and the Extraction Hood fan is closed and locked;

    - Check pre-filter and charging beds are fitted prior to running;
    - Start the Building vent fan and check for surging or noisy operation;
    - Turn on main and fan switches;
    - Check bed and filter pressures;
    - Check alarms (failure of fans trigger alarms and divert flow to the internal of the building);
    - Check fan pressures;
    - Check air compressor;
    - Conduct visual inspections of vapour emission control systems to identify any potential leaks;
- Calibrate (bump and zero check) PID instruments at Points 29 and 30;
- Complete a VECS run period prior to commencement of repackaging wastes; and
- Report any out of specification results to management for action.

Cessation of repackaging and the shutting down of the repackaging line and VECS, either planned or in response to an unplanned event, is done in a controlled manner, consistent with the aforementioned SOPs, to ensure that waste material in process does not act as an ongoing source of emissions. Before leaving the repackaging plant, the following tasks shall be completed:

- Run the contents of the hopper and conveyor into drums and secure lids;
- Clean up any loose material, place into drums and secure lids; and
- Ensure all packages waiting to be processed are appropriately sealed.

## A4.2 Air quality monitoring

Air quality monitoring at the repackaging plant must be carried out in accordance with EPL 2148. Tables A4.1 and A4.2 present the monitoring required at the repackaging plant during operations.

**Table A4.1: Point 26 - Common stack from building housing the repackaging plant – discharge to air (as specified by EPL 2148).**

| Pollutant | Limit (mg/m3) | Ref cond / oxy correction/ Avg period | Frequency | Sample method |
|---|---|---|---|---|
| HCB | 0.002 | dry, 273K, 101.3kPa | Special frequency 14[1] | TM-34 |
| HCBD | 0.21 | | | TM-34 |
| Hexachloroethane | 9.7 | | | TM-34 |
| Total Volatile Organic Compounds | 10 | | | TM-34 |
| Total solids | 10 | | | TM-15 |

Note 1: Special Frequency 14 requires monitoring to be undertaken at Point 26 at the frequencies specified below, but only when repackaging is being undertaken in the HCB repackaging store:
- Once during the first week of every plant restart following a shutdown period of greater than 3 months and every quarter thereafter.
- If restart monitoring coincides with scheduled quarterly monitoring, then the single scheduled monitoring event fulfils both restart and quarterly test requirements.

**Table A4.2: Points 29, 30, 33 and 34 – repackaging plant interstage points between the two activated charcoal filters on the extraction pipes 1 and 2 (as specified by EPL 2148).**

| Monitoring Point No. | Description | Pollutant | Limit (mg/m3) | Ref cond / oxy correction/ Avg period | Frequency | Sample method |
|---|---|---|---|---|---|---|
| 29 | Store J interstage point between the two activated charcoal filters on extraction pipe 1. | VOCs as Tetrachloroethene | 340 | NA | Special frequency 14[1] | Special Method 6 |
| 30 | Store J interstage point between the two activated charcoal filters on extraction pipe 2. | VOCs as Tetrachloroethene | 340 | | | Special Method 6 |
| 33 | Store J interstage point between the two activated charcoal filters on the extraction pipe 1. (Note - this is the same as Point 29). | VOCs as Tetrachloroethene | 340 | | | TM-34 |
| 34 | Store J interstage point between the two activated charcoal filters on the extraction pipe 2. (Note - this is the same as Point 30). | VOCs as Tetrachloroethene | 340 | | | TM-34 |

Note 1: Special Frequency 14 requires monitoring to be undertaken at the frequencies specified below, but only when repackaging is being undertaken in the HCB repackaging plant. The monitoring frequencies for 29, 30, 33 and 34 are defined as follows:

a) Points 33 and 34 (Store J) is defined as monitoring
   - Once during the first week of every plant restart following a shutdown period of greater than 3 months and every quarter thereafter.
   - If restart monitoring coincides with scheduled quarterly monitoring, then the single scheduled monitoring event fulfils both restart and quarterly test requirements.

b) Points 29 and 30 (Store J) is defined as monitoring
   - Continuous operation of the monitoring apparatus with operator checks and results recorded two times daily.

Random monitoring of targeted semivolatile chlorinated hydrocarbons in ambient air shall also occur at various locations for occupational hygiene purposes.

## A4.3 Corrective actions - VECS breakthrough plan

Based on the likely compounds in the waste, tetrachloroethylene (i.e.: perchloroethylene - PCE, with chemical formula $C_2Cl_4$) has been selected as a suitable organic compound equivalent for VOC measurement at the repackaging plant VECS interstage monitoring points (Points 29, 30, 33 and 34). The pollutant was selected in part due to its high vapour pressure, relative to the primary contaminants

of concern (HCB, HCBD, HCE). PCE will pass through the first carbon filter prior to the other contaminants and therefore act as an early (or predictive) marker of contaminant breakthrough.

A number of action levels and responses shall be adopted to ensure the lead and lag carbon beds are adequately filtering emissions prior to discharge to air. Concentrations recorded above the specified concentrations indicate that the first carbon bed is experiencing partial or complete saturation. Monitoring is also undertaken at the repackaging plant stack (EPL 2148 Point 26 - discharge to air) to verify that both carbon beds are functioning correctly.

The breakthrough plan is outlined in Table A4.3. Where monitoring (specified in Section A4.2) detects pollutants at concentrations above the specified action level, Orica shall undertake the specified response.

**Table A4.3: VECS Breakthrough Plan**

| Monitoring point number | Action Level | Concentration | Response[2] |
|---|---|---|---|
| 29, 30, 33, 34 | 1 | (VOCs as PCE)<br><br>140 mg/m3 (20 ppm) | Check PID unit functionality.<br><br>If reading valid, undertake bump test and calibration.<br><br>If reading valid, consider undertaking sample and laboratory analysis (TM-34) to verify result.<br><br>If result confirmed cease repackaging works, clean up material in process, shut down VECS in accordance with SOP 22 – VEC System Operation, and investigate.<br><br>Consider replacing lead and lag carbon bed with new or regenerated carbon (unless another cause can be identified).<br><br>Restart VECS in accordance with SOP 22 – VEC System Operation. |
| | 2 | (VOCs as PCE)<br><br>240 mg/m3 (35 ppm) | Cease repackaging works, clean up material in process.<br><br>Check PID unit functionality.<br><br>If reading valid, undertake bump test and calibration.<br><br>If reading valid, undertake sample and laboratory analysis (TM-34) to verify result.<br><br>If results confirmed, shut down VECS in accordance with SOP 22 – VEC System Operation and investigate.<br><br>Replace lead and lag carbon bed with new or regenerated carbon (unless another cause can be identified).<br><br>Restart VECS in accordance with SOP 22 – VEC System Operation procedure. |

| Monitoring point number | Action Level | Concentration | Response[2] |
|---|---|---|---|
| | 3[1] | (VOCs as PCE)<br><br>340 mg/m3<br>(50 ppm) | Cease repackaging works, clean up material in process, shut down VECS in accordance with SOP 22 – VEC System Operation.<br><br>Check PID unit functionality.<br><br>If reading valid, undertake bump test and calibration.<br><br>If reading valid, undertake sample and laboratory analysis (TM-34) to verify result.<br><br>If reading valid, notify the EPA[3]<br><br>If results are valid, replace lead and lag carbon bed with new or regenerated carbon (unless another cause can be identified).<br><br>Only recommence operations once written approval is received from the EPA.<br><br>Restart VECS in accordance with SOP 22 – VEC System Operation procedure. |
| 26 | 3[1] | HCB 0.002 mg/m3<br>HCBD 0.21 mg/m3<br>HCE 9.7 mg/m3<br>Total VOCs 10 mg/m3<br>Total solids 10 mg/m3 | Cease repackaging works, clean up material in process, shut down VECS in accordance with shut down procedure and notify the EPA[3].<br><br>Verify results and investigate cause.<br><br>If results are valid, replace lead and lag carbon bed with new or regenerated carbon (unless another cause can be identified).<br><br>Only recommence operations once written approval is received from the EPA.<br><br>Restart VECS in accordance with SOP 22 – VEC System Operation procedure. |

Note 1: Action Level 3 is the 100 percentile licensed concentration limit specified in EPL 2148.

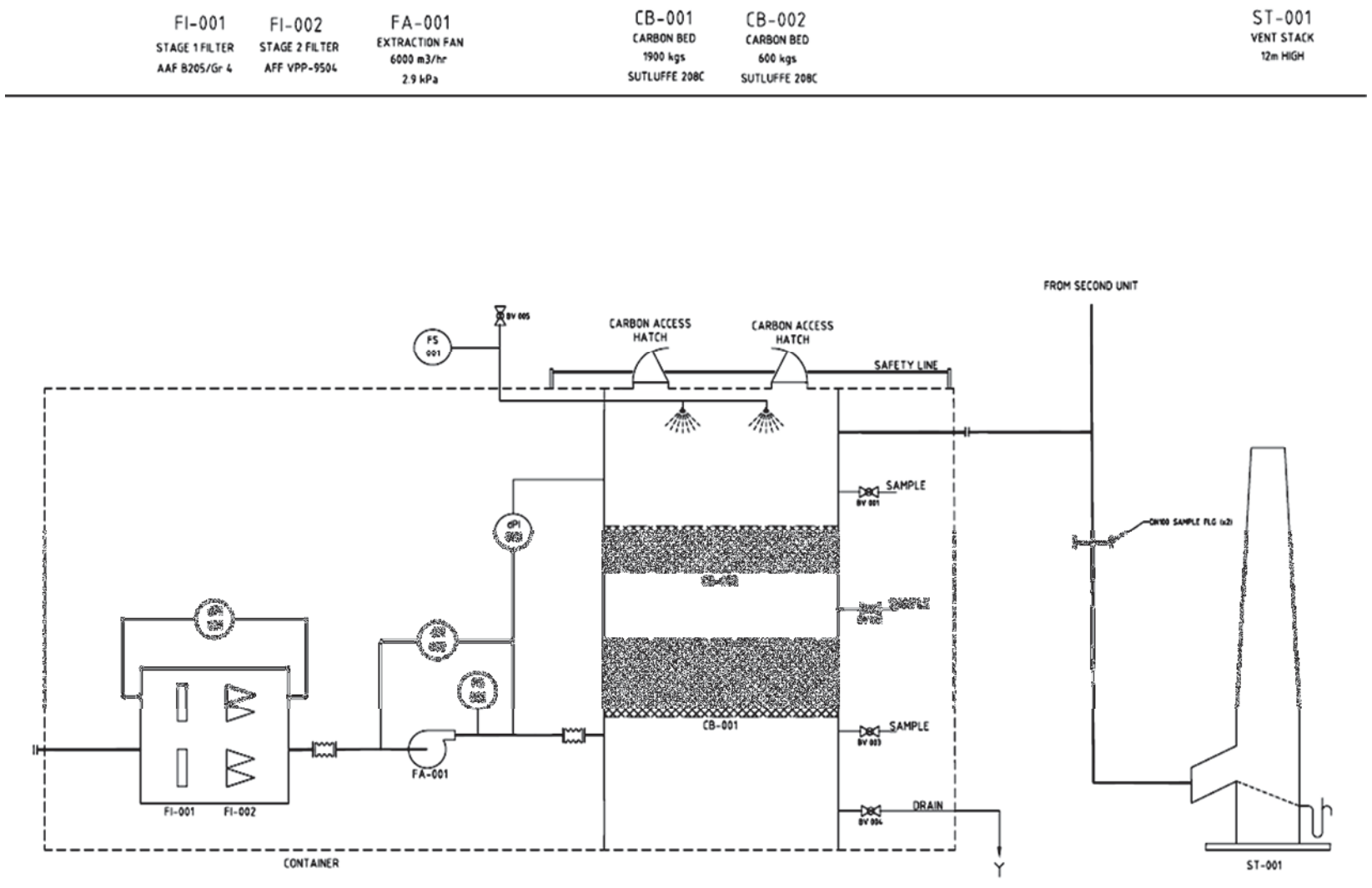
Note 2: EPL 2148 specifies the following shutdown requirements in the event the 100 percentile licensed concentration limits are exceeded:

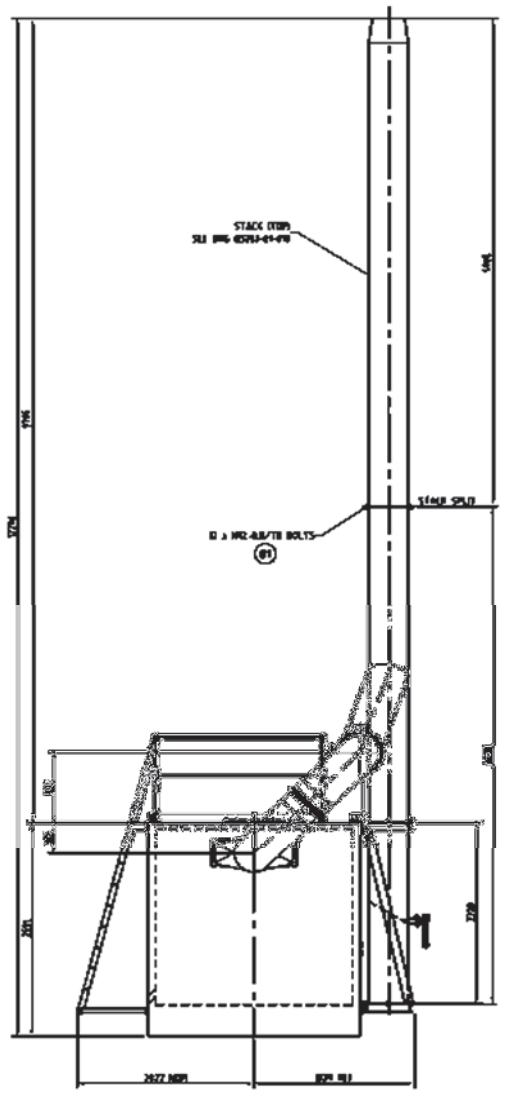
a) If the break-through limit at monitoring/discharge points 29 or 30 is exceeded after completion of commissioning, the HCB repackaging facility must shutdown as soon as practical after the exceedance is reported (twice daily checks are undertaken during operation). The licensee must only restart the HCB repackaging facility after the carbon bed is replaced with a new or regenerated activated carbon bed. Replacement carbon is not required in the event that the exceedance is found to be a technical error and is unjustified.

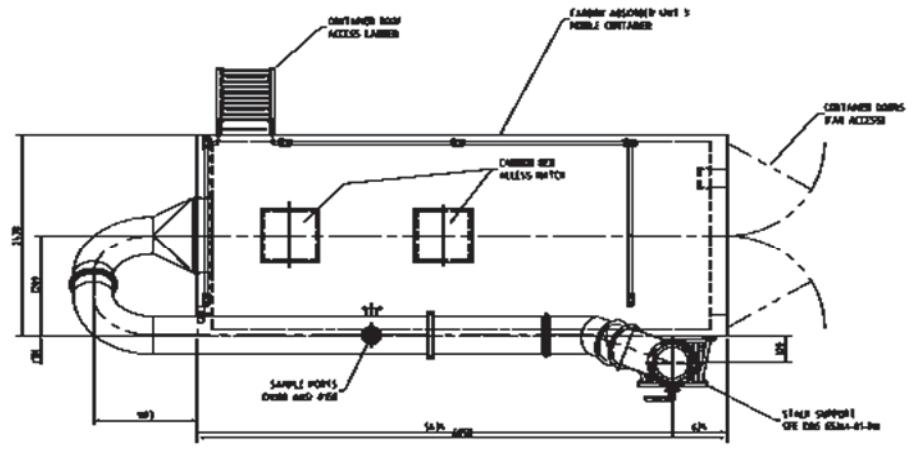
b) If any concentration limit described in condition L2.3 (shown in Table 5 above as Action Level 3) at monitoring/discharge point 26 is exceeded after completion of commissioning, the HCB repackaging facility must shutdown on receipt of the relevant monitoring data. The licensee can only restart the HCB repackaging facility after receiving written approval from the EPA.

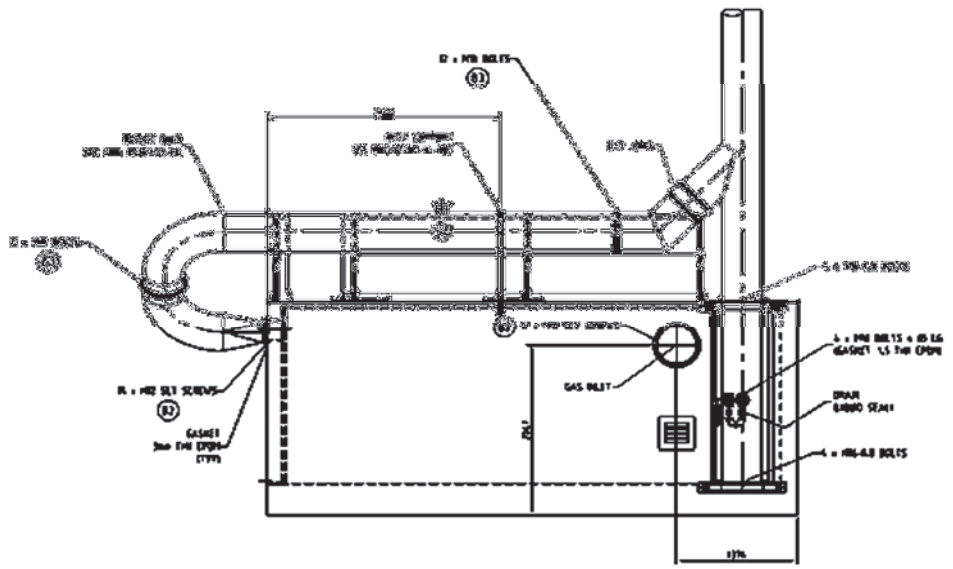
Note 3: If on receipt of a certificate of laboratory analysis, the laboratory analysis results demonstrate that the concentration of any discharge parameter has exceeded a limit specified in condition L2.3 for any of the monitoring / discharge Points 26, 29, 30, 33, 34, 40, 41 or 42 then the licensee must notify the EPA within 24 hours of receipt of the certificate.

**Figure A4.1: Activated carbon bed design.**









# APPENDIX 5. NOISE MANAGEMENT PLAN

## A 5.1. Responsible Person

The BIP Environment Engineer is responsible for the overall Noise Management Plan.

The Legacy Operations Leader is responsible for monitoring equipment (fans etc) to ensure that it is in reasonable mechanical condition and operating correctly, hence minimising noise generation.

## A 5.2. Objectives

The objectives of the Noise Management Plan are to:

- Ensure no unacceptable off-site noise impacts as a result of the HCB Repackaging Plant operations
- Meet relevant requirements of the EPL 2148 and Conditions of the Project Approval for the HCB Repackaging Plant

Note that Work Health and Safety management of noise exposures is not specifically covered by this plan.

## A 5.3. Requirements

The following Condition of the Project Approval is relevant to operational noise:

***Operation Noise***

2.13 The Proponent shall design, construct, operate and maintain the project to ensure that the noise contributions from the project to the background acoustic environment do not exceed the maximum allowable noise contributions specified in Table 3, at those locations and during those periods indicated. The maximum allowable noise contributions apply under wind speeds up to 3 $ms^{-1}$ (measured at 10 metres above ground level), and under temperature inversion conditions of up to 3 °C/ 100.

**Table 3 - Maximum Allowable Noise Contribution**

| Location | Day<br>7:00am to 6:00pm Mondays to Saturdays<br>8:00am to 6:00pm Sundays and public holidays | Evening<br>6:00pm to 10:00pm on any day | Night<br>10:00pm to 7:00am Mondays to Saturdays<br>10:00pm to 8:00am Sundays and public holidays | |
|---|---|---|---|---|
| | $L_{Aeq(15\ minute)}$ | $L_{Aeq(15\ minute)}$ | $L_{Aeq(15\ minute)}$ | $L_{Aeq(1\ minute)}$ |
| Nearest affected receivers surrounding the re-packaging plant and Stores E and H | 35 dB(A) | 35 dB(A) | 35 dB(A) | 45 dB(A) |

Note Store E materials were relocated. No repackaging occurred at this location. This is consistent with overall EPL and BIP Noise Reduction Program requirements. Potentially affected receivers are the rail corridor or residential areas in Denison St.

## A 5.4. Controls

The main noise controls are the enclosure of equipment in buildings or other enclosures, and plant location at rear of BIP reduces the potential for noise impact in adjacent residential areas.

- On the railway side of the Store J, Stores A, B and C provide an effective noise barrier.
- Design standard of 82 dB(A) for new plant and equipment. This applies to the sum of all noises in any work area. Hence, where several potentially noise items may be co-located, their individual noise limits are significantly lower than 82 dB(A).
- Low speed equipment selected where possible.
- Sandwich panel walls used for re-packaging area.

Equipment is inspected as part of regular plant logs and maintained in accordance with manufacturer recommendations.

## A 5.5. Monitoring

A noise survey was carried out during the Projects commissioning period with all equipment running. (Ref: Occupational Noise Survey HCB Repackaging Process Orica (Australia) Pty Ltd Matraville, NSW Project No.: 3763/S11301/07 Date of Survey: April 2007 Date Of Issue: May 2007). This concluded (pg 6):

*"Measurements taken outside the HCB Repackaging building were influenced by other sources on the BIP site rather than the HCB processes. Hence the acoustic controls utilised in the construction of the HCB building appear to be attenuating the noise generated by the repackaging operation".*

No changes have occurred to the facility since the study, which would have an upward influence on noise.

Monthly noise surveys are conducted to demonstrate compliance with the noise limits set out in EPL 2148. These surveys assess the total noise impact from BIP operations, including the Project.

# APPENDIX 6. WASTE MANAGEMENT PLAN

## A 6.1. Responsible Person

The Legacy Operations Leader is responsible for implementation of the Waste Management Plan (WMP).

## A 6.2. Objectives

The objectives of the plan are to:

- Minimise the generation of waste; and
- Ensure waste is disposed of in an appropriate and lawful manner.

## A 6.3. Requirements

The following Condition of the Project Approval is relevant to waste management

**Waste Generation and Management**

2.17 All waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.

This is consistent with the requirements of EPL 2148 and EHC Act Licence No. 26.

## A 6.4. Controls

### A 6.4.1. Solid wastes

The main control is the design of the plant, i.e. all waste generated by the process is repackaged via the packaging line for eventual disposal.

Any wastes contaminated with HCB or HCB related compounds (such as carbon or PPE) classed as hazardous are required to be managed as per the HCB waste (i.e.: packaged and managed until final destruction destination secured).

There are minimal waste streams generated that require off-site disposal. However these wastes will be subject to testing, classification, segregation and disposal to a licenced landfill. Orica typically engages a licensed contractor for its waste transport and disposal.

### A 6.4.2. Liquid wastes

**Store J**

The process uses minimal water and the buildings are designed to prevent ingress of water, hence liquid wastes are minimal. Any water applied within Store J would be potentially contaminated with HCB and other chlorinated compounds, and in the case of a fire, also with acidic combustion products such as HCl. Any potentially contaminated areas are fully sealed and bunded, with drainage directed to the Store A effluent pit (27m3 maximum capacity) and then via an overflow weir on to the Store A bund which has a free capacity of 388m3 (after taking into account the volume occupied by stored drums in Store A. If store A were empty the capacity would be much larger).

Hence any spills or firewater applied inside the Store J will flow via the effluent pit to the Store A bunded area.

There is no rainwater collection by the Store A effluent containment system and store housekeeping checklists include checks of level, hence the available containment capacity is unlikely to be compromised. Rainwater from roofed store areas or other clean area hard surfaces is directed to the storm water system.

Depending on the amount and magnitude of contamination, contaminated water may be able to be released from the Store A bund at a controlled rate for treatment by the existing HCB effluent system which includes HCB separation, particulate filters and carbon filters for chlorinated hydrocarbon removal.

HCB contaminated materials from the effluent system will be packaged and disposed of via the same disposal process as other HCB wastes.

As for the existing stores, only uncontaminated rainwater (from Store J roof) can flow to stormwater drains. Stormwater is discharged to the existing BIP system, as is the existing stormwater run-off from the area.

## A 6.5. Monitoring

Wastes being sent off are classified in accordance with EPA's Waste Classification Guidelines.

No scheduled waste to go offsite unless to facility licenced to receive it. Stock levels, test results and transport records are maintained.

Regular plant logs are maintained. Monitoring and diversion for treatment (if required) of BIP effluent (common to other HCB stores and other areas of BIP).

# APPENDIX 7. REFERENCES


Chemical Control Order in Relation to Scheduled Chemical Wastes (EPA, 11 June 2004) made under the NSW Environmentally Hazardous Chemicals Act 1985.

Environmentally Hazardous Chemicals Act 1985 Licence No. 26.

Environment Protection Licence (EPL 2148) under Section 55 of the protection of the Environment Operations Act 1997.

NSW DIPNR Guideline for the Preparation of Environmental Management Plans, 2004.

Orica HCB Waste Repackaging Process Recommissioning Plan, 2014.

Project Approval 06_0028 and modifications 1-6, under Section 75J of the Environmental Planning and Assessment Act 1979.

Proposed Hexachlorobenzene (HCB) Waste Re-Packaging Plant Botany Industrial Park Environmental Assessment under Part 3A of the Environmental Planning and Assessment Act 1979 Final Revision 0, 2006.

# APPENDIX 4 – BIP NOISE MONITORING REPORT- NOT PUBLIC