

**Community Liaison Committee  
Botany Groundwater Cleanup Project  
Briefing Paper for 16 December 2008 Meeting**

## **1. INTRODUCTION**

This briefing paper is prepared for the Community Liaison Committee (CLC), a community forum established for Orica's Botany Groundwater Cleanup (BGC) Project. It aims to update the CLC on the progress of the BGC Project, actions required of Orica as recorded at previous CLC meetings, as well as other matters of interest to the CLC. It covers the period from September 2008 until early December 2008. At the December CLC meeting Orica will present details about the key issues arising this quarter. Orica welcomes discussion on any of the matters in this briefing paper or the Groundwater Cleanup Plan Progress Report No. 20 at the meeting.

## **2. PROGRESS OF BGC PROJECT**

Each quarter Orica provides a Groundwater Cleanup Plan Progress Report to the Department of Environment and Climate Change (DECC). The most recent report, No.20, was submitted on 28 November 2008. The reporting period for Progress Report No.20 is from 1 July 2008 to 30 September 2008. However, more recent information is included in the report. The report is distributed to stakeholders and regulators as requested. Section 2 of this CLC briefing paper includes a summary of key points from the recent quarterly report.

### **2.1. Notice of Clean Up Action (NCUA)**

Orica has achieved compliance with all ten conditions of the NCUA that had specific completion deadlines, and has also achieved ongoing compliance with 15 more conditions of the NCUA that typically relate to recurring or routine timeframes (e.g. progress reports). Two further conditions are works in progress:

- Condition 5: Remedial measures to ensure groundwater and surface water flows into Botany Bay and Penrhyn Estuary achieve ANZECC Guidelines for slightly to moderately disturbed ecosystems. Progress against this condition is discussed in Sections 2.3 and 2.4 below.
- Condition 6: Emissions from the works and measures required by the NCUA must be strictly controlled through adoption of best practice. Works and operations to be carried out in a controlled and competent manner. Ongoing monitoring is performed and compliance reported in Orica's annual return.

### **2.2. Environmental Protection Licence (EPL)**

Orica reports to the DECC against its EPL requirements via an annual return due each September. The EPL includes requirements for the BGC Project and other Orica legacy projects at Botany. The following points provide a summary of EPL activity during the reporting period:

- A meeting was held with the DECC to discuss technical matters in relation to monitoring at the GTP stack.
- Licence variations were issued regarding the following:
  - Staggering the timing of submission of the annual return and the independent audit report to the DECC.
  - Information submitted for the ammonia concentration reduction program.
  - Clarification of GTP start-up and shut-down definitions.
  - Frequency of moisture content monitoring in the GTP stack gas.
- Ken Holmes from KMH Environmental Pty Ltd undertook the third independent validation audit of the BGC Project in September 2008. The report was submitted to the DECC in mid November. The percentage compliance against auditable conditions was over 90% and the auditor determined that sufficient actions were in place to address the recorded non-compliances. Ken will present his findings to the December CLC meeting.

### **2.3. Hydraulic Containment**

#### **Botany Industrial Park (BIP) Containment Line**

The primary purpose of the BIP containment line is to contain contaminated groundwater migrating from source areas located on BIP. If groundwater extraction is temporarily reduced due to periodic GTP capacity limitations, this reduction occurs at sections of the BIP containment line based on a predetermined order of priorities.

Data collected on deep groundwater flow infer that hydraulic containment was achieved during the monitoring period. Some groundwater flow past the northern and southern ends of the BIP containment line was observed during the monitoring period.

#### **Primary Containment Area (PCA) Containment Line**

The primary purposes of the PCA containment line is mass removal and hydraulic containment on Block 2, Southlands.

Hydraulic containment was achieved in the deep aquifer for the entire monitoring period. While it is not currently possible to conclusively demonstrate hydraulic containment of shallow groundwater at PCA, it has been demonstrated for portions of the containment line. For the remaining areas the rate of migration of shallow groundwater has been significantly reduced.

#### **Secondary Containment Area (SCA) Containment Line**

The primary purpose of the SCA is to minimise migration of groundwater contamination to Botany Bay. Data on shallow and deep groundwater flow at the SCA infer that hydraulic containment of both the deep and shallow aquifers was achieved during the monitoring period. Results of salinity monitoring downgradient of the SCA indicate similar levels to those observed during previous monitoring rounds.

### **2.4. Chemical Monitoring**

With the exception of EDC, the regional distribution of contaminants is consistent with that presented in September 2007. This observation reflects both the implementation of hydraulic containment (and associated development of large areas of very slow groundwater movement) and the inherently slow migration of groundwater contamination. Due to these factors it is unlikely that groundwater contaminant concentrations will significantly change in the short to medium term.

While the distribution of EDC is largely the same as previous monitoring reports, the leading edge of the Central Plume continues to migrate towards the SCA containment line and minor decreases in concentrations are being observed at Southlands due to hydraulic containment.

In general, volatile CHC concentrations in pore water within Penrhyn Estuary were similar to or lower than historical concentrations.

Concentrations of volatile CHCs in surface water collected during September 2008 were mostly lower than long-term averages and in many cases less than the short-term (twelve month) averages, and were similar to the concentrations determined for the previous monitoring round in June 2008.

#### **Implications for Human Health Risk Assessment (HHRA)**

The exposure concentrations for contaminants of potential concern (COPC) considered in the HHRA within the inner estuary have changed slightly with the inclusion of the data collected in September 2008. No changes have been made to previous calculations for the outer estuary, as the exposure concentrations are essentially equivalent. Overall, the conclusions presented within the HHRA associated with exposures within the estuary remain unchanged.

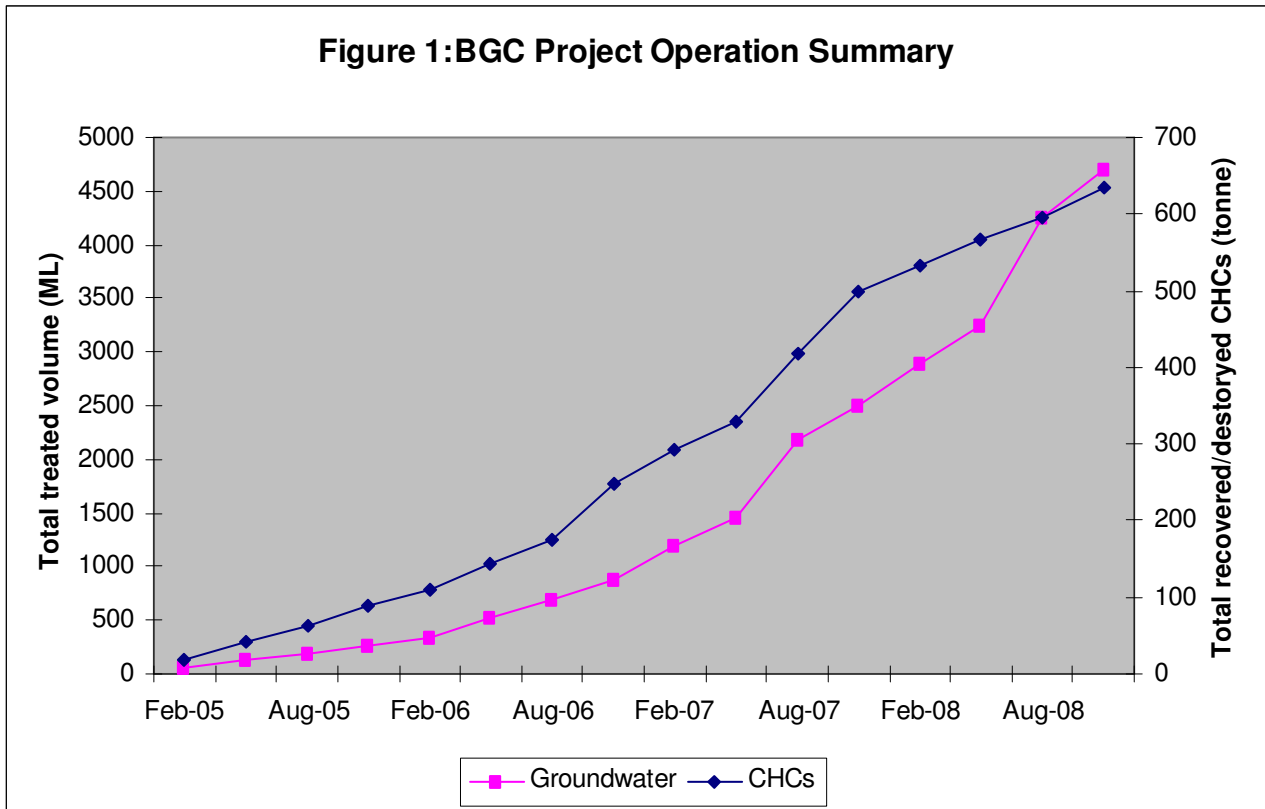
### **2.5. Recommendations**

Orica is considering recommendations outlined by URS on the basis of the September monitoring program. Recommendations include replacement and repair of some monitoring equipment (loggers and transducers and one monitoring well) and the installation of additional shallow groundwater monitoring wells downgradient of the PCA to improve interpretation of shallow groundwater flow.

### **2.6. Groundwater Treatment Plant Operation Update**

Since commencing the BGC Project, Orica has treated over 4.52 GL of contaminated groundwater and has recovered and destroyed 621 tonnes of chlorinated hydrocarbons (CHCs) in the thermal oxidiser. Figure 1 provides a graph over time of the volume of groundwater treated and tonnes of CHC's destroyed.

**Figure 1: BGC Project Operation Summary**



**2.6.1 Progress Against Key GTP Operating Matters**

The following table summarises the key operating matters at the GTP that Orica has worked on during this reporting period prior to the annual maintenance shutdown. These matters have been previously reported to the CLC and the table below provides a status update.

Key matters worked on during this reporting period	Progress	Comment
Biological fouling in air stripping unit.	<ul style="list-style-type: none"> <li>The addition of chlorine dioxide (a disinfectant used in water treatment) was trialled and found successful.</li> <li>Orica is now planning a larger scale trial with a view to installing a permanent chloride dioxide dosing system.</li> </ul>	<ul style="list-style-type: none"> <li>With regular cleaning the air stripping system is working effectively.</li> </ul>
Stripped Water Treatment Plant	<ul style="list-style-type: none"> <li>Five Biological Aerated Filter (BAF) units are working well.</li> <li>A program to identify reverse osmosis (RO) membranes needing replacement (to reduce minor internal leakages caused by frequent cleaning) has complemented the reduced organic concentration in the RO feed (due to good BAF operation), leading to improved product water quality (lower organic concentration in product water).</li> </ul>	<ul style="list-style-type: none"> <li>Further improvements are being sought through the use of finer filter media (zeolite).</li> <li>Further improvements will need to be made in the future re iron/aluminium removal.</li> </ul>
Steam regulator on GTP stack	<ul style="list-style-type: none"> <li>The steam regulator underwent repairs on 10 October so a steam plume was visible for one day. No calls were received on the community hotline.</li> </ul>	<ul style="list-style-type: none"> <li>Work completed successfully.</li> </ul>

<b>Key matters worked on during this reporting period</b>	<b>Progress</b>	<b>Comment</b>
Chloramine in GTP discharge water.	<ul style="list-style-type: none"> <li>• Following the May self-reported exceedence, Orica has:               <ul style="list-style-type: none"> <li>○ made modifications to the computer code and hardware</li> <li>○ reviewed reporting procedures</li> <li>○ Orica has engaged URS to review procedures and develop refresher training for all GTP staff on compliance and reporting requirements. Training is to be conducted in 2009</li> </ul> </li> </ul>	
Ammonia Pollution Reduction Program. Ammonia is resulting from chemically eliminating chloramine in discharged treated water, by using sodium bisulphite.	<ul style="list-style-type: none"> <li>• A progress report is due to be provided to the DECC on 12 December 2008 and an update will be provided at the CLC meeting.</li> </ul>	<ul style="list-style-type: none"> <li>• Reducing the chloramine concentration should lead to a reduction of the ammonia in the discharge water.</li> </ul>
Biological fouling of shallow wells on Foreshore Road.	Trials have shown that use of Mono pumps for shallow groundwater extraction looks to be the best option to minimise fouling impact. A program is being developed to install more Mono pumps in 2009.	<ul style="list-style-type: none"> <li>• The current maintenance program has allowed excellent containment to be achieved over the quarter.</li> </ul>

### 2.6.2 Thermal Oxidiser

The thermal oxidiser continues to operate within licence specifications. A six monthly dioxin measurement was taken on 14 October 2008 and was well within the licence specification (of 0.1 ng/m<sup>3</sup>) at 0.011 ng/m<sup>3</sup>. An extra sample was taken during DEAC destruction on 10 November 2008 and was again within specification at 0.023 ng/m<sup>3</sup>.

### 2.6.3 NATA Accreditation

Orica's GTP laboratory is still in the process of seeking accreditation with the National Analytical Testing Authority (NATA). Orica is expecting accreditation to be granted in early 2009. There are some parameters that need frequent sampling and analysis, for which it is not feasible to use an external laboratory. Orica has had an exemption from the EPA for NATA accreditation for these parameters, while it sought accreditation.

### 2.6.4 Treated Water Recycling Program

Orica, Solvay Interlox and Qenos continue to use treated water from the GTP in cooling tower applications. In this reporting period, modifications to the BAFs and maintenance of the RO membranes resulted in lower organic (carbon) content in the treated water making it suitable for demineralisation (demin) plant use. Use of treated water in the Orica ChlorAlkali and Solvay Interlox demin plants began in October 2008 (in addition to other uses of the treated water). Qenos is looking to commence using treated water in its demin plant early next year.

### 2.6.5 Temporary Aquifer Storage and Recovery (TASR)

As previously reported, Orica is proposing to replace the SSU with TASR as a backup for the GTP in the event of a significant plant shutdown. A planning application, incorporating a Review of Environmental Factors (REF), was submitted to DECC in July 2008. DECC is currently reviewing the document.

### **2.6.6 DEAC Contaminated Waste Treatment**

Prior to the GTP shutdown, and after a detailed technical review and hazard study, four containers (approximately 3.1 tonnes) of DEAC contaminated waste were treated in the GTP. The waste contained an average of 7.5% DEAC in heptane (a solvent similar to petrol). The waste was a legacy from the former Propathene Plant, which produced polypropylene at the northern end of the BIP from 1979 to 1998, and had been stored at the BIP since 1996. Orica had been searching for a technically and environmentally sound and safe disposal method for the DEAC contaminated waste and the GTP presented a safe on-site solution for the one-off treatment of this waste. The destruction occurred over 13 days and has removed the risks associated with ongoing storage.

The waste was treated with the agreement of the DECC. At DECC's request, the CLC Chair was notified in advance of commencing the waste treatment. The timing of the waste treatment was driven by the GTP annual maintenance shutdown schedule. A major part of this year's shutdown included the cleaning and repair of the thermal oxidiser. Fouling or build-up in the thermal oxidiser created as a result of treating the DEAC contaminated waste was readily removed during the recent GTP shutdown.

Further information regarding the DEAC waste history and treatment and the results of monitoring performed during the waste destruction will be presented at the CLC meeting. Following feedback from the CLC, discussion and development of community notification protocols is on the CLC meeting agenda for December.

## **3. ENVIRONMENTAL MONITORING**

### **3.1. Air Emissions Monitoring**

Since 1995 air emission monitoring has been conducted on a nominally 15-month cycle (targeting different seasons every year). Sampling locations are on and off the BIP and are usually adjacent to shallow groundwater-monitoring points. Some air monitoring locations – such as the Car Park Waste Encapsulation – are not directly relevant to the Botany Groundwater Project. Sampling was last performed in March 2008 and the next round is scheduled for July 2009.

### **3.2. Community Air Monitoring**

The final report for the community ambient air-monitoring program developed for the BGC Project is being finalised. The report will include results for all the sampling undertaken at Pagewood, Matraville and Banksmeadow Schools and Discovery Cove Business Park since the commencement of the program in September 2005. The final report will be presented to the schools and Discovery Cove, submitted to the DECC and made available to the community.

### **3.3. Springvale Drain Air Monitoring**

Previous GTP reports have detailed the monitoring of chlorinated solvent vapours in air close to Springvale Drain caused by the influx of contaminated groundwater into the drain. At the time of writing, a report detailing the results of 18 months of monitoring was almost complete. The findings are summarised below:

- There is a strong correlation between groundwater levels and contaminant concentrations in the surface water and ambient air near Springvale Drain. Reducing the groundwater level at Southlands (through pumping at the BIP and PCA containment lines) has decreased groundwater levels and hence decreased CHC concentrations in the surface water in Springvale Drain.
- Higher surface water concentrations are associated with higher ambient air concentrations. Therefore, it is considered that reducing the level of the groundwater to below the elevation of the base of Springvale Drain is likely to reduce the total concentration of CHCs in the surface water of Springvale Drain and ambient air in the vicinity of Springvale Drain.
- The operation of the GTP and associated groundwater extraction has also effectively reduced CHC concentrations in air in the vicinity of Springvale Drain at Southlands, north of Southlands, MCS and Discovery Cove such that long-term exposures are considered low and acceptable.

## **4. DNAPL SOURCE AREA DEPLETION**

The DECC will provide feedback to the CLC on Orica's presentation on its Remediation Strategy Review which includes Orica's suggested approach towards DNAPL source area depletion. A date

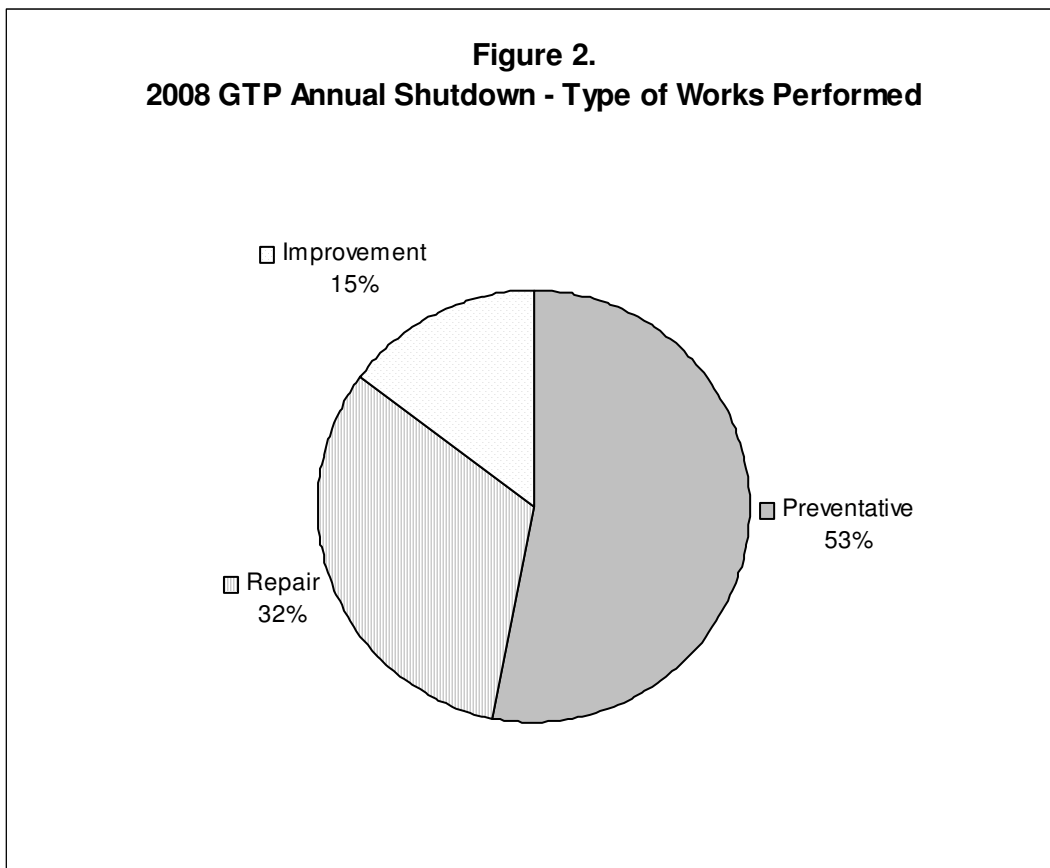
for a community workshop to further discuss these matters needs to be determined at the December CLC meeting. The full Conceptual Site Model report is in the process of being uploaded to the website.

## 5. GTP SHUTDOWN

The GTP annual shutdown commenced on 14 November 2008 and the plant was restarted in the first weekend in December. Over 450 jobs were executed without any environmental incidents. In response to CLC requests for further information following last years shutdown, details regarding the 2008 shutdown have been included in this paper.

The jobs undertaken have been divided into improvement, repair and preventative categories, with the percentage in each group noted below and shown in Figure 2.

- Repair: 32 % of tasks - This is where equipment that is showing signs of poor performance needs maintenance. Sometimes this can only be done when the plant is offline. An example of type of work is the thermal oxidiser refractory repair. Limited inspection while the thermal oxidiser was operating indicated that some of the refractory (internal brickwork) was likely to be in need of repair. Detailed inspection and repair works could only be done while the plant was shutdown.
- Preventative: 53 % of tasks – This is work that is done to ensure that equipment does not stop working due to normal wear and tear of components. For example, Caustic Pump Valve & Diaphragm inspection and oil change. The internal components of this important pump may work correctly for a few years. To ensure that the pump doesn't breakdown while the plant is operating, it is opened and checked to see if it is showing wear and needs replacement.
- Improvement: 15 % of tasks - As understanding of better ways to operate the plant develops with time and experience, equipment needs to be changed to take advantage of this new knowledge. Sometimes these changes can only occur when the plant is offline. For example, the following task *“Replace valves on inlet to pre-filter”* was undertaken as upgrading these valves to a higher specification simply allows the process operators to manually operate these valves with greater ease.



The main focus of this years' shutdown was the thermal oxidiser and quench tower (where approximately 43% of the total tasks were conducted). No significant works were conducted on the stripped water treatment plant, the blowers or the air strippers.

A range of contractors were involved in the GTP shutdown providing services such as:

- electrical
- refractory rebuilding
- cranes
- scaffolding
- mechanical fitters
- pump supply
- grease & oil lubrication
- specialist engineering

The breakdown of tasks for 2008 (shown above) is similar to that for the 2007 shutdown, where 55% of tasks were preventative, 31% were repairs and 14% were improvement tasks.

Three first aid injuries occurred during the shutdown and Orica has identified improvement opportunities (including a requirement for all contractors to be on time in order to participate in the daily safety talks and a refresher training for supervisors and operational staff on unsafe act prevention) that will be implemented next year.

## **6. FORMER CHLORALKALI PLANT MERCURY INVESTIGATIONS**

As previously reported, mercury was detected in groundwater and soil at the site of the now demolished former ChlorAlkali Plant at the BIP. Orica has been conducting soil investigations on the BIP site, and groundwater investigations both on and off the site. These investigations have detected mercury in groundwater at off-site monitoring wells. All off-site wells included in these investigations are situated on industrial properties and Orica has confirmed with property occupiers that groundwater is not used at these sites.

Reports on groundwater and soil investigations, including test pitting, the hydrogeochemical conceptual model (for the fate and transport of mercury in the soil and groundwater) and the Human Health and Environmental Risk Assessment (HHERA) have been submitted to DECC.

### **6.1. HHERA**

The following information was included in the September briefing paper, but time ran out at the meeting to discuss this topic. The information on the HHERA has been repeated here for completeness and is on the agenda for the upcoming December meeting.

The HHERA assesses the potential risks associated with mercury in soil and groundwater to human health and the environment both on and off site (BIP), in areas in and around and hydraulically downgradient of the former ChlorAlkali Plant. The HHERA also derives Risk-Based Criteria for mercury in soil to assist Orica in determining the extent of remediation that might be required to address the identified risks. The HHERA report has been submitted to the DECC for review.

The report concludes that risk to human health for workers on site who undertake intrusive activities or work within the former ChlorAlkali Plant following development consistent with the industrial nature of the BIP, is considered unacceptable if no remediation measures are taken. Risks to human health off site are considered acceptable. With respect to the environmental risks, mercury-impacted groundwater has not discharged to any receiving environment; however the presence of mercury in soils and groundwater beneath the former ChlorAlkali Plant area provides an ongoing source to groundwater that requires consideration with respect to future environmental risks. When the DECC has completed its review of the report, Orica plans to meet with the DECC to discuss the assessment and risk management options.

### **6.2. Soil Washing Trials**

As previously reported, in August 2008, Orica commenced soil washing trials in order to assess whether this technology could be used to remediate the mercury-contaminated soil within BIP. Results of the trials are encouraging and a technical assessment is being prepared. The report will be submitted to DECC and the City of Botany Bay Council (CoBB), and made available to the community.

### **6.3. Remediation Action Plan**

Given the findings of the HHERA, Orica will proceed with remediation of the former ChlorAlkali Plant area at the BIP to render the site suitable for future industrial/commercial use. A Remediation Action Plan for full-scale soil cleanup will be prepared.

### **6.4. Updating Stakeholders and the Community**

A letter report on groundwater sampling and the HHERA was issued to owners/occupiers of properties where off-site groundwater sampling was undertaken at the end of October this year. A new dedicated webpage is being developed for this project, as part of the [www.oricabotanytransformation.com](http://www.oricabotanytransformation.com) website. Information and reports will be uploaded when this webpage is complete.

## **7. INDEPENDENT MONITORING COMMITTEE (IMC)**

Each of the IMC members has been advised of the CLC decision not to hold another IMC and a combined IMC/CC meeting this year.

Prof Acworth will be invited to attend the Remediation Strategy Review Workshop in the New Year once it has been scheduled.

Following on from IMC Task 21, where Dr John McCracken reviewed results from monitoring conducted by Orica's in connection with its Environment Protection Licence, Trade Waste Service Agreement and Ammonia Pollution Reduction Program, DECC has asked Orica to conduct a scan of GTP feed and product water for semi-volatile compounds. Sampling and analysis are almost complete and Orica will report results in early 2009.

## **8. COMMUNITY COMMUNICATION UPDATE**

### **8.1. Community Workshops & Informal CLC meeting**

In response to CLC feedback on Orica's communication regarding the treatment of DEAC contaminated waste at the GTP, a short informal meeting of CLC members was held on 11 November. Key outcomes were:

- Orica to provide a detailed presentation on the DEAC contaminated waste, including monitoring results, and to respond to questions about the storage of legacy waste.
- Protocols for notification & communication with the CLC on matters of CLC interest between meetings to be discussed at the December CLC meeting.

The minutes for the combined Orica/Sydney Ports/CoBB workshop prepared by CoBB were distributed to the CLC.

Orica is aware that the community is keen for another workshop on Southlands to be held. Orica is waiting for the HHRA for that project to be finalised, and for the independent auditor to complete his review of the Remediation Action Plan so that all relevant information will be available for the community workshop.

As noted above, in consultation with the CLC, Orica will arrange a workshop in early 2009 to discuss the Remediation Strategy Review.

Orica still plans to hold another workshop on water recycling once the various recycling initiatives have been further developed.

### **8.2. Newspaper Columns**

Three newspaper columns were published in the *Southern Courier* since the last quarterly Progress Report. These columns incorporate information on a range of Orica projects. Reporting on the BGC Project was as follows:

- *Column 82: 30 September 2008:* Surface water quality at Penrhyn Estuary, combined Sydney Ports and Orica workshop, September 2008 CLC meeting and a reminder of the November residential bore monitoring event.
- *Column 83: 28 October 2008:* Groundwater treatment and containment and the mercury investigations at the former ChlorAlkali Plant.

- *Column 84: 25 November 2008:* Scheduled annual maintenance shutdown of the GTP and the treatment of DEAC contaminated waste at the GTP.

With consideration of feedback received, Orica has reviewed the frequency and value of its columns in the Rockdale, Bexley and Sutherland areas and will trial printing columns in the *St George and Sutherland Shire Leader* every four-six months. Copies of columns are available on the website and are mailed out as requested.

### **8.3. Website**

The following material has been posted on the website during the reporting period:

- Groundwater Cleanup Plan Progress Report No.19;
- Recent newspaper columns;
- The September CLC newsletter;
- GTP Ecological Monitoring Program, No.3 (URS 2007a)
- The Briefing Paper, and all presentations to the CLC September 2008 meeting;
- A diagram from the Site Conceptual Model (URS 2007b) and
- 2003 USEPA Report on DNAPL Remediation (–USEPA 2003) (also available at <http://www.epa.gov/ada/download/reports/600R03143/600R03143.pdf>).

### **8.4. 1800 Number**

Orica continues to operate the free-call number – 1800 025 138. The majority of calls during this reporting period related to Orica’s November residential bore monitoring and some were received regarding the BIP site bus tour held on 30 September 2008. Other calls related to the BGC Project included a request for sponsorship, information about the groundwater contamination, the GTP, the rainwater tank rebate program and the treatment of DEAC contaminated waste at the GTP. Enquiries placed through the 1800 line are generally responded to within 24 hours.

### **8.5. Email Feedback**

Several e-mails were received in this reporting period from browsers of the Botany Transformation Projects website. Apart from marketing emails, matters raised related to the BIP site bus tour, sponsorship requests and requests for information about the GTP, the Southlands remediation and development project and groundwater treatment.

There were no emails received via the CLC feedback facility in this reporting period.

Orica has received feedback from CLC members (mostly via email) during the reporting period as follows:

- Bookings for the September BIP site bus tour and interest in a GTP plant tour;
- CLC membership changes (Charles Koch from Solvay Interlox has retired and will be replaced on the CLC by Rick Bevan & Pat Williams has advised that he will not be able to attend CLC meetings, but wishes to continue to receive correspondence);
- Concerns regarding the changed date for the combined Sydney Ports/Orica/CLC meeting;
- A request for more information about DNAPL, and the presentation made at the September CLC meeting;
- Interest in Orica’s remediation projects from community members who read Orica’s newspaper columns;
- A number of e-mails were received from CLC members regarding treatment of DEAC contaminated waste at the GTP.

### **8.6. BIP Site Tours**

An Orica bus tour of BIP was held on 30 September 2008 and attended by 13 participants from DECC. The tour included the presentation of information about the BGC Project and Orica’s other Botany Transformation Projects.

### **8.7. Outreach Projects**

Information on the community air monitoring program is provided in Section 3.2. A brief update on residential bore monitoring matters occurring in this reporting period is provided below

below. During this reporting period Orica has received a handful of calls from residents finalising rainwater tank rebate applications.

**Residential Bore Monitoring** – Reporting on the May 2008 testing round appeared in the July newspaper columns and the September 2008 CLC newsletter. The next round of residential bore testing took place in early November 2008.

#### **8.8. CLC Meeting Dates for 2009**

CLC meetings are scheduled to occur between 1.30 and 4.30 pm at the Botany Town Hall on the following Tuesdays in 2009:

- 17 March
- 16 June
- 15 September
- 15 December

These meeting dates are to be discussed and confirmed at the December 2008 CLC meeting.