

8.1 Overview

8.1.1 Background

Orica has engaged the Botany community, local interest groups, local industries, government and non-government organisations on issues regarding the Orica groundwater contamination since 1996. More recently, the engagement program has become more comprehensive, designed to inform all stakeholders of actions and activities being undertaken, to capture emerging issues, and to provide the opportunity for effective comment and participation throughout the process. The consultation program uses a number of communication channels to present information and to obtain feedback and comment from interested stakeholders.

The consultation process is organised and managed by a dedicated Orica Community Relations Team, based at the Orica premises on the BIP.

Community Liaison Committee

One of the foundations of the consultation process regarding the groundwater contamination issue has been the Community Liaison Committee (CLC), which was formed at the start of the Stage 3 Groundwater Survey with the objective of acting as a conduit through which the Randwick and Botany communities are kept informed about the findings, proposed activities and progress of the Survey and subsequent works.

The CLC has conducted regular meetings on a quarterly basis since its inception, and has been involved in a range of initiatives to inform and involve stakeholders in the groundwater contamination issue. One example of such an initiative includes the issue of regular newsletters to Orica's industrial and residential neighbours. This commenced in July 1999.

The typical format of the quarterly meetings involves updates from both Orica and the regulatory authorities (such as the DEC and DIPNR) to keep members informed on progress with the various activities and findings, and to allow for questions and discussion of issues of interest and concern. The information is then passed on from the CLC members to other interested parties and stakeholders within the community.

Membership of the CLC is broad, thus ensuring that it is representative of the wider community. The current membership of the CLC is presented in **Table 8.1**.

Table 8.1 Community Liaison Committee membership

Group	Representatives
Community Interest Groups	Australian National Sportfishing Association Banksmeadow Public School Botany Environment Watch Botany Bay and Catchment Alliance Botany & Eastern Region Environmental Protection Agency (BEREPA) NSW Recreational Fishing Association Save Botany Beach
Local Industry Representatives	Solvay Interox Ampcor Packaging Botany Industrial Park Pacific National
Conservation/Environment Groups	Greenpeace National Toxics Network
Government and Regulatory Groups	City of Botany Bay Council Randwick Council Office of NSW Member of Parliament, Kristina Keneally NSW Department of Environment and Conservation (DEC), including NSW EPA and National Parks and Wildlife Service (NPWS) South Eastern Sydney Public Health Unit Department of Infrastructure, Planning and Natural Resources (DIPNR), including Department of Land and Water Conservation (DLWC) NSW Fisheries NSW Roads and Traffic Authority Sydney Ports Corporation NSW Waterways Authority
Independent Chair	Associate Professor Ronnie Harding

Other Communication Channels

As well as the information presented to the members of the CLC, the consultation process utilises a range of other communication channels for disseminating information and for seeking community feedback.

These include:

- the Orica Botany Groundwater website (<http://www.oricabotanygroundwater.com/>), which presents extensive information, including background information, fact sheets, newsletters and many of the technical reports related to the BGC Project;
- quarterly newsletters reporting information from the CLC meetings, distributed throughout the suburbs neighbouring the BIP;

- quarterly project briefing papers for CLC members. These briefing papers summarise the quarterly technical progress reports prepared for DEC;
- a regular column in the *Southern Courier*, prepared by the Botany Site Environment Manager, presenting information on progress with the project;
- regular advertisements through the local newspaper inviting community members to attend relevant workshops and information sessions;
- project updates via letterbox drops to 5000 local residents;
- more targeted letterbox drops to the 550 residents down-gradient of the BIP; and
- provision of a contact phone number, email address and postal address through which comments and questions can be raised for consideration by Orica and response through the Community Relations Team.

8.1.2 Consultation Framework

As part of the ongoing process of consultation, Draft Community Consultation Guiding Principles were tabled by Orica at the CLC meeting on 16 December 2003 for review by CLC members. The aim of these principles was to provide a guidance document for the involved stakeholders, which sets out a standard by which the communication and consultation process could be judged.

The aims of these principles were:

- to promote an informed understanding of the environmental and remediation issues;
- to enhance the development, adoption and implementation of practicable and effective long-term remediation and management of the contaminated groundwater;
- to place the contaminated groundwater and its management in a broader context; and
- to achieve practicable, socially acceptable and environmentally responsible outcomes.

The draft principles were reviewed, amended and agreed by the CLC members.

These principles form the framework for ongoing consultation, for both the BGC Project and any other activities undertaken by Orica to comply with the NCUA.

8.2 BGC Project Community Consultation Program

Consultation about the BGC Project has been incorporated into Orica's established consultation process, based on the same frameworks, principles and communication channels. Consultation has been carried out through a number of formats, including the CLC meetings, the website, the newspaper column, fact sheets and newsletters.

In addition, a series of workshops have been undertaken, which are designed to provide specific information about the BGC Project, updates on the works being undertaken as part of the EIS, and an opportunity for discussion between the project team and stakeholders about issues and concerns.

The objectives of the consultation program, and details of its various elements, are presented in the following sections.

8.2.1 Objectives

The overall objective of the community consultation process for this EIS was to ensure clear, transparent, two-way communication by listening, recording and responding to issues as they arose.

Specific objectives were to:

- disseminate information about the BGC Project and this EIS process to key stakeholders and the surrounding community;
- increase community awareness and understanding of the BGC Project and this EIS process and study findings;
- ensure that stakeholders and members of the community were provided with adequate opportunities through the consultation process to communicate feedback and voice concerns;
- accurately report community and stakeholder issues and views;
- build community confidence in this EIS and approval process;
- facilitate information exchange between the study team and the community, to enable joint understanding of issues raised;
- conform to relevant NSW legislation; and
- work in close cooperation with the relevant community stakeholders.

8.2.2 Community Liaison Committee

As noted, CLC meetings are held quarterly, to update members about ongoing developments and progress of activities. The CLC has been informed about the various activities and developments throughout the progress of the BGC Project including, for example, the issue of the NCUA, Orica's response through the preparation of the GCP, and the proposed short-term and long-term activities for containment and treatment of the groundwater.

As well as regular updates of progress, the CLC meetings have included presentations from regulators and Orica about specific topics and activities related to the GCP and the BGC Project. Such presentations allow for dissemination and detailed discussion about specific issues related to the BGC Project and have included:

- DEC presenting the regulatory framework within which the BGC Project was being carried out, with updates about the NCUA, the approvals process for works under the GCP and the BGC Project, and the future of the VRA;
- Orica presenting updates on the progress of the GCP and the BGC Project and activities to implement the NCUA, with topics including monitoring, GCP progress reports and VRA progress reports;
- Orica presenting updates on the residential bore monitoring program, undertaken bi-annually;
- Orica presenting updates on Orica's communication activities for the BGC Project with specific reference to the workshops for this EIS;
- DIPNR (including the DLWC) updating the CLC on the progress of the Botany Groundwater Strategy (Northern Zone) currently being prepared by DIPNR;
- Orica presenting the technology assessment process, and the basis for the preferred technologies (as detailed in this EIS); and
- URS presenting updates on the process and progress of the EIS for the BGC Project.

8.2.3 Community Briefing Papers

Community briefing papers are prepared for the quarterly CLC meetings in order to provide committee members with information on issues associated with the GCP and the BGC Project. The briefing papers are designed to provide a non-technical description and analysis of relevant issues for the BGC Project.

Briefing papers for the CLC meetings (numbers 19 to 22, between 16 December 2003 and 26 August 2004) presented details and progress of the BGC Project and the other works being undertaken. These papers addressed a range of issues, including the concept design for the GTP and the progress of the design and EIS.

The community briefing papers are available to the general public via the Orica Botany Groundwater website.

8.2.4 EIS Workshops

For specific consultation about the GTP, the treatment technology selection, the process and progress of the EIS, and the findings from the specialist studies, Orica organised a series of workshops, which were independently chaired by the CLC Chair. Through this forum, the GTP and EIS project teams were able to inform community stakeholders about the EIS preparation process, present preliminary findings, identify key issues of concern, and enable review and comment on the BGC Project.

Four (plus one repeat) EIS workshops have been conducted during the period of preparation, with the final workshop undertaken at the end of October, at which the key findings of the EIS were presented for discussion before formal submission for assessment.

Invitations to the workshops were extended to all interested stakeholders, including members of the CLC, members of the local communities, representatives of community groups, local industries and non-governmental organisations. The workshops were advertised through a number of channels, including the Orica Botany Groundwater website, the regular 'Orica Botany Groundwater Cleanup' column in the *Southern Courier*, dedicated advertising in the *Southern Courier*, Community Newsletters sent to 5000 households and direct email contact. In total, around 150 people attended the four workshops.

The workshops were held at the Orica Administration Building and chaired by an independent chair. The timing and scope of the workshops were designed to meet the needs of attendees to ensure that issues of interest/concern were addressed.

A summary of the agenda for each workshop is presented below. Comments and issues that were raised during the discussions at the workshops are incorporated within **Table 8.3**, which provides a summary of the key issues raised during the consultation process, through all channels of communication.

Workshop 1: 16 June 2004

A workshop was held during the morning. The main items on the agenda included:

- overview of the overall GCP, the various activities being undertaken, and how the GTP and its operations fit within the overall BGC Project;
- overview of the BGC Project, and details of the proposed treatment technologies/processes for the GTP; and
- overview of the EIS and the various specialist studies being undertaken.

Workshop 2: 20 July 2004

A single workshop was held throughout the day, with a range of presentations covering the different aspects of the BGC Project, allowing stakeholders to attend those presentations of specific interest. The main items on the agenda included:

- updated overview of the overall BGC Project, the various activities being undertaken, and how the GTP and its operations fit in;
- updated overview of the GTP, and details of the proposed treatment technologies/processes;
- updated overview of the EIS and the various specialist studies being undertaken;
- details of the groundwater modelling work and its findings;
- summary of groundwater contamination and anticipated changes following implementation of the hydraulic containment and treatment;
- groundwater treatment technology assessment, including alternatives considered, preferred options and process selection;
- preliminary assessment of air quality, emissions and standards, and proposed works to be undertaken;

- treated water reuse and discharge, and waste management;
- Health Risk Assessment methodology and approach, and proposed works to be undertaken;
- Preliminary Hazard Analysis overall approach, guidelines and key issues to be assessed; and
- other environmental issues, such as site contamination, noise, traffic, flora and fauna, and heritage.

Workshop 3: 15 September 2004

A workshop was held in the morning, to provide an update on the progress of specific aspects of the BGC Project. The main items on the agenda included:

- updated overview of the BGC Project, the various activities being undertaken, and how the GTP and its operations fit;
- findings of the independent assessment of technology alternatives;
- updated preferred technology selection process for the GTP, as previously presented to the CLC;
- updated findings of the groundwater modelling work, incorporating the additional containment lines and increased groundwater extraction; and
- summary of the changes to NSW Government planning legislation and the basis for the approvals process for the different components of the BGC Project.

Workshop 4: 29–30 October 2004

Two further workshops were carried out, on Friday 29 and Saturday 30 October, at which key findings of the EIS were presented. As there were a number of first time attendees at these workshops, the agenda accommodated a last minute change to provide the audience with a broad overview of the BGC Project and the GTP treatment proposal. The other main items on the agenda included:

- overview of the results of the air quality assessment;
- findings of the preliminary hazard analysis;
- overview of the results of the human health risk assessment; and
- forum for members of the public to raise any further issues relevant to the EIS.

8.2.5 Post-Submission Activities

As detailed in **Section 8.4**, ongoing consultation activities will be maintained by Orica throughout the EIS exhibition and determination period, and for the operating life of the BGC Project.

8.2.6 Community Publications

Newsletters

Orica has produced regular Groundwater Project newsletters (between two and four a year) since 1999, for distribution in the community, in conjunction with the CLC. These newsletters provide a major source of information for the local community about the activities and proposed works associated with the GCP and the BGC Project.

The newsletter is distributed throughout the suburbs neighbouring the BIP, including Banksmeadow, Botany, Pagewood, Hillsdale and Matraville.

Following feedback from the CLC and local residents, the format of the July 2004 (Issue 15) edition was updated to cover the full range of tasks and activities being undertaken as part of the BGC Project.

Issue 15 presented a range of information about the BGC Project and the EIS process, including highlights from the CLC meeting on 2 June 2004 and results of the first EIS Workshop, held on 16 June 2004.

Issue 16 of the newsletter presented further information about the BGC Project, in particular about aspects such as the GTP technology assessment and selection process and the amendments to NSW Government planning legislation.

Copies of newsletter Issues 15 and 16 are presented in **Appendix M**.

Fact Sheets

A series of fact sheets has been produced for the GCP and the BGC Project, designed to provide the community with simple, non-technical, easily understood information on various elements of the GCP and the BGC Project, such as the nature of the contaminants, hydraulic containment and the GTP.

These fact sheets are available from various sources, including the Orica Botany Groundwater website, and directly from the Orica Community Relations Team.

The full list of available fact sheets is presented in **Table 8.2**.

Table 8.2 Orica information fact sheets

Reference	Topics
Fact Sheet 1	Trials at Lidcombe Waste Treatment Plant
Fact Sheet 2	Steam Stripping Unit Recommissioning
Fact Sheet 3	Bioremediation
Fact Sheet 4	Chlorinated Hydrocarbons
Fact Sheet 5	Ethylene Dichloride (EDC)
Fact Sheet 6	Hydraulic Containment
Fact Sheet 7	Reactive Iron Barrier

Fact Sheet 8	Tanker Loading Facility
Fact Sheet 9	Transfer Pipeline
Fact Sheet 10	Groundwater Treatment Plant
Fact Sheet 11	GTP EIS process
Fact Sheet 12	Thermal Oxidation
Fact Sheet 13	Dioxins in the environment
Fact Sheet 14	Stockholm Convention

Copies of the fact sheets listed in **Table 8.2** are included in **Appendix M**.

Technical Documents

A range of technical documents produced by Orica, including the GCP, progress reports, monitoring reports and surveys, have been made available for review and can be downloaded from the Orica Botany Groundwater website.

Hard copies of many of these technical documents are also available through the local Botany libraries at Eastgardens and Mascot.

8.2.7 Media

In February 2004, Orica established a regular column in the *Southern Courier* to keep the local community informed about the GCP. Information regarding the BGC Project, the GTP and its operations and the EIS process has been published in the column since early June. At the end of October 2004, 22 columns had been published. Copies of the *Southern Courier* columns published in 2004 are included in **Appendix M**.

The column includes contact details (address, telephone, email) through which readers can obtain further information.

8.2.8 Website

The Orica Botany Groundwater website (www.oricabotanygroundwater.com) was set up in early March 2004, as an effective means of making relevant information easily available to the community—particularly technical reports, progress updates and the regular reports that Orica is required to submit to the EPA under the NCUA.

The website provides extensive information about the GCP, including a brief history of what is now known as the BIP, photos of the BIP, a chronological history of the groundwater issue, community briefing papers, the workshop agendas and records, newsletters, copies of the *Southern Courier* columns, and an extensive range of technical information and reports.

It also provides an additional channel through which comments, concerns and questions can be directed to the Community Relations Team and, by extension, to the BGC Project and EIS project teams.

As of early October, 1692 computers had accessed the website, with each computer accessing the website five times on average.

This EIS will be made available on the website.

8.2.9 Other Communication Channels

All comments and issues of concern received through these additional communication channels have been incorporated in **Table 8.3**, which presents the key issues of the concern to the community.

Telephone Information Line

A free call telephone information line, 1800 025 138, was set up following the establishment of the BIP in 1998/99, as the Orica Botany community relations number. It now serves both the GCP and the BGC Project, providing information to callers and receiving comments and issues for communication to the BGC Project and EIS project teams.

There have been around five calls to date regarding the BGC Project. These have related to residential bore sampling and attendance at the EIS workshops.

Postal Address

A designated 'Community Matters' postal address was also established for the GCP, to allow members of the public to make written comments to Orica. This postal address will remain available for contact and comment throughout the EIS process and throughout the life of the BGC Project.

Email Address

Two email addresses were made available to receive comments and questions from the stakeholders for the BGC Project, allowing a rapid response for visitors to the Orica Botany Groundwater website. These email addresses:

- info@oricabotanygroundwater.com; and
- Bruce.Gotting@orica.com

will remain available for contact and comment throughout the EIS process and throughout the life of the BGC Project.

8.2.10 Additional Consultation

As well as the specific workshops held for all interested stakeholders, URS conducted a number of meetings/teleconferences with specific organisations, independently of Orica, to understand the particular issues and concerns that they and their associated members may have about the BGC Project, and to ensure that these issues were addressed in the EIS.

These meetings included the following organisations:

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- National Toxics Network (NTN);
 - Greenpeace; and
 - Council of the City of Botany Bay (CCBB).

Key issues raised by the NTN and Greenpeace related to the choice of technology for the GTP and air emissions. Key issues raised by the CCBB related to cleaning up the groundwater contamination as soon as possible, and specific matters pertaining to BGC Project works on Council land.

8.2.11 Assessment of Awareness

In September 2004, Orica commissioned an independent telephone poll to assess the awareness of local residents about the groundwater issue and the proposed cleanup plans, including the BGC Project.

The poll, based on a survey of 200 neighbouring residents of the BIP, found a high level of awareness of the groundwater contamination issue, but a lower than desirable level of awareness about Orica's cleanup plans. Some of the key findings include:

- 1 in 4 immediate local residents were unaware of the contamination of groundwater, and around 3 in 8 had only a low level of awareness;
- awareness is strongest in the two postcodes closest to the BIP (2019 and 2036). Almost two-thirds of people within the 2109 postcode are aware of the contamination issue;
- in total, 96% of those aware of the contamination described themselves as concerned about the contamination, with concern strongest amongst the neighbouring postcodes of 2019 and 2036;
- 74% of the people who had heard about the contamination were aware that Orica was trying to clean up the problem, and one-third of those described themselves as well aware;
- of those who were aware of the issue and the fact that a cleanup plan was in place, more than half were not aware of how cleanup was going to be achieved. Of the total population, only 13% were well aware of the method to be employed as part of the GCP and a further 12% said they were vaguely aware;
- in total, 72% of respondents indicated they were in favour of the treatment solution.
- that 6% trusted Orica very much, 43% of people had general trust in Orica and less than one-third did not trust Orica.

8.3 Issues Raised by the Community

The issues raised by the respondents through the EIS workshops are presented in **Table 8.3**. These questions were answered in the workshops and are included here after being reviewed by the EIS and BGC Project design team. The key issues raised in these questions have been addressed in the preparation of the EIS.

Table 8.3 Issues of concern

Issue of Concern		Response	Source
Project overview and context of EIS			
1.	Contingency plans if the groundwater contamination is not sufficiently reduced after the 30 year operational life of the plant.	On the basis of detailed groundwater modelling undertaken for the BGC Project (refer to Chapter 12) Orica estimates that 30 years of treatment will clean up the contamination. The Groundwater Cleanup Plan also includes the removal of DNAPL source areas to the maximum extent practicable. This will prevent ongoing contamination of the groundwater and therefore speed up its decontamination. Alternative treatments, such as bioremediation, will continue to be investigated as a contingency. Orica is committed to cleaning up the contamination caused by its past operations.	Workshop 1
2.	Why didn't the treatment trials work at Waste Service NSW's Liquid Treatment Plant at Lidcombe?	Although the trials to extract groundwater and transfer it to the Liquid Treatment Plant were completed successfully, it was concluded that this was not a viable ongoing treatment option, because there were problems with HCl emissions from the Lidcombe Treatment Plant's odour control system during treatment of the groundwater.	Workshop 2
3.	Hasn't the plume reached the Bay already?	Contamination associated with the Southern Plumes has reached Penrhyn Estuary. These levels do not pose a risk to human health. Lower concentrations of CHCs from the Central Plume have been detected in monitoring locations along Foreshore Road, but no CHCs have been detected at Botany Bay along the foreshore.	Workshop 3
4.	Has Orica addressed the contamination on the Botany Golf Course?	Botany Golf Course is located between the primary and secondary containment lines. The primary containment line will ensure that there is no further migration of the contaminant plumes beyond that line. The existing groundwater contamination beyond the primary containment line will be gradually removed by the secondary containment line. This includes the groundwater contamination beneath the golf course, which does not present an unacceptable risk to human health to users of the golf course.	Workshop 3

Issue of Concern	Response	Source
5. What would happen if you did nothing?	As described in Chapter 4 , highly contaminated groundwater will enter Botany Bay if nothing is done. This would result in significant negative ecological and human health impacts, and could significantly reduce the ecological, recreational and commercial value of Penrhyn Estuary and Botany Bay.	Workshop 4
6. What's the contingency plan if the project is delayed due to slow approval or refusal?	A Steam Stripping Unit has been recommissioned and is currently treating contaminated groundwater. Groundwater is being extracted from the areas where the contaminant concentrations are greatest and closest to the receiving environment (i.e. with the greatest potential to have an adverse ecological and human health impact). This unit will continue to be operated until the GTP is operational. Alternative treatments, such as bioremediation, are continuing to be investigated.	Workshop 4
7. Are more pollutants being added to the groundwater from current activities?	No.	Workshop 4
Technology alternatives		
8. What alternatives to thermal oxidation have been considered?	Alternatives considered include thermal pyrolysis (e.g., plasma arc), gas phase reduction (Ecologic), and Base Catalysed Decomposition. These are discussed in detail in Chapter 4 .	Workshop 2
9. Is there a contingency plan if the emission limits of the GTP are exceeded?	The GTP is to be designed to meet strict emission specifications. Suppliers of the equipment will be committed to meeting those limits, and monitoring will be conducted to ensure that the limits are not exceeded. In the unlikely event of any exceedance being detected, the plant would be shut down and works undertaken to resolve the malfunction.	Workshop 3

Issue of Concern	Response	Source
<p>10. What are the air emission standards for each technology?</p>	<p>Direct quench technology – destruction efficiency typically 99.99%, but reported up to 99.9999%. Dioxins typically < 0.1ng/m³</p> <p>Recuperative technology - destruction efficiency typically > 99.99%. Dioxins typically < 0.1 ng/m³</p> <p>Flameless technology - destruction efficiency typically 99.99%, but reported up to 99.9999%. Dioxins typically < 0.1ng/m³</p> <p>Regenerative technology – destruction efficiency up to 99.5%. Dioxins not routinely reported, but low levels can be achieved with ‘add on’ technology.</p>	<p>Workshop 3</p>
<p>11. Toxicity levels relate to humans. Are other, especially local, species more vulnerable?</p>	<p>There is very little known about toxicity levels for species other than humans and a number of other well studied species, such as white rats.</p>	<p>Workshop 3</p>
<p>12. Is it primarily the oxidation process that creates dioxins? What about thermal oxidation vs pyrolysis? Does pyrolysis produce dioxins?</p>	<p>Dioxin production is normally associated with oxidation processes. With pyrolysis, except during abnormal conditions, dioxins are not usually detected.</p>	<p>Workshop 3</p>
<p>13. Is continuous emissions monitoring used in the USA?</p>	<p>Orica is not aware of any instrumentation that would allow continuous monitoring of dioxins. There is, however, continuous <u>sampling</u>. Continuous dioxin sampling involves collecting a sample over an extended period (typically a month) and reporting the average value for that period. Problems with continuous sampling include the collection of only a subset of dioxins and extrapolation from these to a total measurement. Orica is not aware of the use of continuous sampling in the USA. It is not widely accepted or in common use.</p> <p>Orica proposes to continuously monitor other process parameters such as HCl, CO, temperature, flow, total VOCs, EDC, VC, moisture content and oxygen to ensure that the thermal oxidiser is operating within specification, achieving the required levels of destruction and, by inference, meeting specified emission limits (e.g. dioxins). This would be regularly validated with manual sampling and analysis.</p>	<p>Workshop 3</p>

Issue of Concern	Response	Source
<p>14. Has such a large volume of groundwater with the same contaminants been treated before?</p>	<p>Larger capacity plants have been used in Burbank, California, and in Scottsdale, Arizona, using air stripping of similar chemicals. While these plants didn't use thermal oxidation (because of the different contaminants and the lower concentrations), thermal oxidisers of this capacity are installed around the world. The proposed unit is a standard model from the supplier.</p>	<p>Workshop 3 Workshop 4</p>
<p>15. How can the plant be ready in time? Is nine months an unrealistic time frame?</p>	<p>Constructing and commissioning the GTP will be a significant engineering task. Whilst this is a lengthy process, Orica has committed extensive resources and is confident that, if given the go ahead from Government, the plant can be operational within the timeframe.</p>	<p>Workshop 3</p>
<p>16. Could we strip the toxins and destroy them later?</p>	<p>The use of air stripping requires the destruction of the contaminants in the off-gas stream, using thermal oxidation.</p> <p>Steam stripping, allows the storage of the waste recovered EDC liquid. However, a very large storage capacity would be required, depending when eventual destruction began. The transport and storage of the volatile, toxic, flammable, hazardous material would require careful management to ensure public safety.</p> <p>The Basel Convention requires destruction rather than storage where practical.</p> <p>Best practice is not to store the material, especially when internationally accepted destruction technologies exist.</p>	<p>Workshop 3</p>
<p>17. Could Orica use plasma technology?</p>	<p>Orica has investigated plasma technology. It would be a suitable for the destruction of the waste recovered EDC liquid. Each unit has only a limited capacity, requiring a number of units to be installed to provide the required capacity.</p> <p>While commercially available, the units require ongoing operator attention, with the maximum continuous running reported to be less than two weeks.</p>	<p>Workshop 3</p>

Issue of Concern	Response	Source
18. Is there much difference in the price between plasma arc and thermal oxidation?	Orica's preferred technology of air stripping with thermal oxidation is not the cheapest option considered. Over the life of the plant the total cost of plasma arc and thermal oxidation (without the air stripping or steam stripping units) would be similar.	Workshop 3
19. Why hasn't Orica talked to Ecologic?	The Ecologic process uses hydrogen at high temperature and pressure to destroy the contaminants in a reducing environment. This process is not favoured because it demonstrates limited inherent safety. While operated with some success in Western Australia, the supplier Ecologic in Canada has gone into receivership and is unable to supply the technology. There are currently no operating units.	Workshop 3
20. What is the timeframe for storage of EDC from the SSU at the Terminals facility?	Orica will begin treating the stored waste recovered EDC liquid within the first year of operation of the GTP. It is expected that the destruction will be complete in a few years.	Workshop 4
21. Will you use an alternative technology if you find another proven method in the next 30 years?	Orica will continue to investigate alternative technologies (e.g. <i>in situ</i> bioremediation) and will apply them where appropriate.	Workshop 4
Thermal oxidation		
22. Does thermal oxidation comply with the Stockholm Convention on persistent organic pollutants (POPs)?	All combustion processes can potentially produce dioxins. The Stockholm Convention requires the use of Best Available Technology (BAT) to minimise the production of dioxins. Well designed and operated thermal oxidisers are proven to minimise dioxin production and are accepted as BAT by the European Commission.	Workshop 1
23. Where else has this technology been used?	Thermal oxidation is used in thousands of applications around the world, including paint ovens and resin manufacturers. A very similar example is the Petro Processors Superfund site in Baton Rouge, Louisiana; see http://clu-in.org/download/remed/incpdf/petro.pdf	Workshop 1
24. What form is the EDC waste in?	The EDC waste is a liquid, similar to kerosene or petrol, but more dense than water. Due to the mixture of chemicals in the liquid, the liquid is quite volatile (i.e. it forms a vapour readily).	Workshop 3

Issue of Concern		Response		Source
25.	Could other chemicals (not EDC) combine to form a more noxious gas in the stripper?	It is not expected that any reactions will take place in the ambient temperatures in the stripper. The high destruction efficiency in the thermal oxidiser will cope with a wide range of compounds.		Workshop 3
26.	Explain the destruction efficiency of TO.	Destruction efficiency is the percentage of the contaminants in the feed which are destroyed (converted into simpler compounds for safe disposal).		Workshop 3
27.	Is Orica using this technology because (a) you have run out of time and (b) it's cheap?	a) The selection was not based solely on the timeframe that could be achieved. The selected technology demonstrates best practice. b) The preferred option is not the cheapest option.		Workshop 4
Hydrogeology				
28.	Will the treatment enable an eventual lifting of DIPNR's Groundwater Extraction Exclusion Zone?	This decision will need to be made by DIPNR. Orica is committed to cleaning up the groundwater to remove contaminants caused by its past activities.		Workshop 1
29.	Is there any risk of subsidence due to the pumping? What is the recharge?	No. As detailed in Chapter 12 and Appendix D , the likely subsidence is predicted to be less than 1 mm at Foreshore Road, associated with the pumping. No structures, including residential properties will be affected by subsidence due to the extraction of the groundwater.		Workshop 1
30.	What will the impact of the groundwater pumping be on existing groundwater flows?	The groundwater will flow faster in the immediate vicinity of the pumps towards the extraction wells. Immediately down-gradient to the wells the groundwater flow will stop, or in some areas, reverse back towards the extraction wells. There will be some overall changes to the direction of flow, to ensure plumes are captured.		Workshop 1
31.	What is the rationale for the groundwater model? What is the level of understanding of sensitivity within the model?	The current model is based on a whole-of-basin model that has been used for 15 years on all of the major infrastructure projects in the Botany Basin. A very good understanding of sensitivity and dynamic behaviour has been built up over time.		Workshop 2

Issue of Concern	Response	Source
32. Why was a steady state groundwater model chosen?	To assess continuous long-term pumping rates; optimisation software is limited to a small number of time periods; steady state optimisation is the obvious first step. Although water levels will change with the climate, hydraulic gradients will not alter appreciably. The optimisation is based on control of hydraulic gradients.	Workshop 2
33. What is the thickness of the aquifer? Does it vary?	Generally 20 to 30 m near the BIP. Can reach more than 40 m in places within subterranean channels. The geological formation does not change in thickness over time.	Workshop 2
34. Will salt water be pumped back from the Bay?	A key constraint used in the model was to ensure that no saltwater is drawn back into the pumps on Foreshore Road. The sub-surface interface between the salt water and the groundwater as it emerges into the estuary and the bay is expected to move a short distance landwards.	Workshop 2
35. Could the aquifer dry up?	There is no chance of the aquifer drying up as a result of the proposed extraction. The 15 ML/day proposed to be extracted is a small proportion of the groundwater flowing through the aquifer. Discharge to Botany Bay will be reduced by 15%, but there will be no perceptible impacts of this in the bay. One other consequence of the drawdown will be a reduction of the level of water flowing in Springvale and Floodvale Drains, which currently capture some of the shallow groundwater. Under dry weather conditions there might be no flow (which would eliminate this fast-track route for contaminants to Penrhyn Estuary).	Workshop 3

Issue of Concern	Response	Source
36. Will sediment be contaminated after the groundwater is extracted?	As groundwater flows past soil and sediment particles contaminants are transferred to and from the sediments in processes known as sorption and desorption. It will take time for contaminants in the soil and sediments to be slowly dissolved. Modelling is being undertaken to determine how quickly this might occur.	Workshop 3
37. How much is known about the Botany aquifer?	This aquifer, known as the Botany Sands Aquifer, is probably the most studied aquifer in Australia. Dr Noel Merrick, of the National Centre for Groundwater Management at UTS, has been studying it for well over 20 years.	Workshop 3
38. In the case of heavy rainfall, would pumping need to increase?	No. Hydraulic containment requires the hydraulic gradient (i.e. the 'fall' of flowing groundwater in the aquifer) to be stopped or reversed. Rainfall has a barely perceptible influence on the gradient.	Workshop 3
39. Does it matter that the model is based on the plume location at June 2004 and the plant won't be operating for another year?	The model itself does not take into account the contaminants in the groundwater—only the flow of the groundwater itself and the hydraulic properties of the aquifer. Optimisation of the extraction well locations, however, requires some knowledge of the plumes' location. The most important factor is the width of the plumes, which is not going to change significantly over a year or two. GTP start-up is based on predictions of plume locations in late 2005.	Workshop 3
40. Can the rate of pumping be varied?	Yes. Each well will be installed with pumps which are capable of being operated at variable speeds.	Workshop 3
41. Will the proposed Port Botany expansion exacerbate the groundwater flow?	There will be little impact from the Port Botany expansion on the hydraulic containment proposed in this EIS. Nevertheless, Dr Merrick did the groundwater modelling for both projects and has taken into account any relevant factors.	Workshop 4
42. Are you confident the groundwater is only moving in the one direction (i.e. towards the Bay) and not anywhere else?	Yes. The groundwater modelling and monitoring clearly define the groundwater movement and the direction it is flowing.	Workshop 4

Issue of Concern		Response	Source
Plant operation			
43. Will there be significant dust emissions during construction of the plant?	No. The location of the GTP site is within the BIP (away from the boundaries), which means that there would be little potential for emissions to give rise to nuisance impacts off-site. Dust mitigation measures would be implemented to ensure this.	Workshop 1	
44. What operational safeguards will be in place to minimise the risk of groundwater pumping or treatment plant failure?	The plant will be designed to achieve at least 95% availability through the selection of equipment and selection of spare equipment. The plant will be computer controlled, with early warning and extensive diagnostics of problems. An independent safety system will provide an additional level of protection. An Environmental Management Plan will be in place to ensure ongoing operational safety and environmental performance.	Workshop 1	
45. Will there be an environmental monitoring program during the construction of the GTP Project and afterwards, during operation?	Yes.	Workshop 1	
46. Have you considered scenarios for the GTP's failure?	Yes. These scenarios have been specifically addressed in air quality and human health impact assessments (Chapters 22 and 24 respectively) and the PHA (Chapter 23).	Workshop 2	
47. How long will it take to get the plant up and running?	Given a reasonable approval period, it is expected that the plant will be operational by October 2005.	Workshop 3	
48. How will the EPA police compliance?	An amendment to Orica's existing Environmental Protection licence is required for operation of the GTP. The EPA monitor compliance with licences such as this through regular reporting requirements.	Workshop 2	
49. How long will the plant operate?	It is estimated that the GTP will be in operation for 30 years.	Workshop 4	
Air emissions			
50. What will the cumulative effects of the development be on local air quality?	A comprehensive air dispersion modelling study, which included regional background levels and existing sources in the BIP has shown that the air emissions from the GTP will have a minor impact on local air quality, with contaminants below any levels of concern.	Workshop 2	

Issue of Concern	Response	Source
51. What is the scope of the air quality assessment? What are the sources of data?	The scope of the air quality assessment was set in the Director-General's Requirements for the EIS. It also followed the <i>Assessment of Air Pollutants in NSW</i> (EPA, 2001). Key sources of data included Orica (stack test results and emission data for the BIP, maximum proposed emission limits for the plant, exhaust gas flows and temps etc for the GTP), the NSW EPA (background air quality data for key pollutants, assessment criteria) and the Bureau of Meteorology (observational data for Sydney Airport).	Workshop 2
52. Does Randwick air quality data dilute the assessment?	The Randwick monitoring station is the nearest monitoring site available. The levels measured will be representative of typical background levels in Sydney. The modelling also included existing sources at the BIP to ensure local concentrations were not underestimated. The modelling results show an extremely minor increase in pollutant levels attributable to the GTP and levels are well below the assessment criteria.	Workshop 2
53. Have you used data from the air monitoring station operated by Botany Council and available on the ANSTO website?	A review of this data showed that the pollutants monitored at the Botany Council Building by ANSTO are not relevant for use in this assessment. They are measuring aerosol levels and not the pollutants we need to assess such as NO _x , SO ₂ and VOCs.	Workshop 2
54. The Abnormal Operating Conditions are predicted to occur once in 50,000 years – does this include human error?	The plant is to be computer controlled and there would be an extensive continuous monitoring system to ensure that operating parameters are within set levels to ensure efficient operation of the plant. Under normal operating conditions, the plant would not require manual control; hence, there is a negligible risk of human error.	Workshop 4

Issue of Concern	Response	Source
55. Why did you limit the maximum background levels to the Botany Industrial Park? How different would it be if you added sources from other plants around the site?	We used all the data available to us. It is not possible to get the detailed information required for modelling from other companies. The contribution of the GTP to maximum off-site concentrations is very low and this conclusion would not change if other sources in the Botany area were included.	Workshop 4
56. Do the regulatory agencies have modelling data that can be publicly accessed?	A modelling study of the Greater Metropolitan Area was undertaken some years ago; however, there are some major limitations in the study and it is now out of date. The EPA is currently preparing a detailed emissions database for Sydney, Wollongong and Newcastle which will be used in air-shed modelling studies and policy development. It is not known what information will be made publicly available from this work.	Workshop 4
57. Does the assessment factor in possible future policy changes that could make the regulations stricter?	Air quality issues associated with the criteria pollutants (i.e. NO _x , SO ₂ , CO, etc.) are well understood and the assessment is based on national guidelines, which are not expected to change in the near future. The VOCs have been assessed using a health risk study and therefore does not rely on guidelines. The EPA will also consider the proposal in light of any expected new guidance they are in the process of formulating.	Workshop 4
58. Can't you use more recent data than 2001?	A review of the 2001 and 2002 background data showed that background levels were slightly higher in 2001, so this data was used. The background data also has to be for the same year as the meteorological (weather) data.	Workshop 4
59. How do you alert the community if something happens?	Orica has emergency response procedures in place in the event of process upsets. In the event of a serious plant failure, Orica would immediately contact the police, whose emergency response procedures (which have been developed in consultation with Orica) would be implemented.	Workshop 4

Issue of Concern	Response	Source
60. Will Orica design the GTP to ensure that there are no smells at local residences?	The air impact assessment shows that under normal operating conditions there would be no offensive odours at nearby residential areas. Only in the very rare event of a failure of the Thermal Oxidiser (1 in 50,000 years risk) would odours be expected to be detectable.	Workshop 4
61. Will the emissions from the stack interact with other emissions in the atmosphere?	The cumulative impacts of the emissions from the GTP and other emissions from the BIP have been assessed in the modelling. The conversion of NO emissions to NO ₂ due to reaction in the atmosphere has also been considered.	Workshop 4
Air emissions monitoring		
62. Who is monitoring compliance with the air quality regulations? How often are reports done?	The licence will set out the monitoring requirements for the GTP as well as reporting requirements. These conditions will require Orica to provide the results of the monitoring to the EPA on a regular basis. Orica also wishes to set up a community liaison group, which could be a way of providing the results of the monitoring to the community.	Workshop 4
63. Will there be ongoing monitoring at the sensitive receptors, including schools?	The proposed approach is to monitor pollutant levels in the stack rather than in the environment. This will provide the best level of control for emissions from GTP and will be used to demonstrate compliance with emission limits and the modelling inputs. For a neighbourhood monitor in an urban area like Botany, it would not be possible to determine what the main source of the measured levels is. With monitoring, it is also possible to miss the location of peak concentrations, which can be identified using modelling techniques.	Workshop 4

Issue of Concern	Response	Source
64. Will the government undertake an epidemiological study of residents?	That is an issue for the Government to determine. As part of this EIS a human health risk assessment was undertaken to assess potential impacts associated with the GTP. The risk assessment methodology followed national guidelines and was developed in consultation with DEC and NSW Health. The assessment does not provide an evaluation or review of community health status or issues. Health of individuals in the community is dependent on many factors. These include age, family history (genetic make-up) and lifestyle choices such as sports, diet and consumption of drugs (notably tobacco products and alcohol). The health risk assessment showed that the risk of health impacts from the GTP are so low that they would not be measurable (i.e. negligible).	Workshop 4
65. Will monitoring be continuous?	A number of operating parameters and pollutant emission levels would be measured continuously as detailed in the Air Impact Assessment. This monitoring would provide continuous data on the operating status of the plant, and any failures in the thermal oxidiser or scrubbing systems would trigger an automatic shutdown of the plant.	Workshop 4
66. Can Orica do more extensive and/or permanent monitoring in the Botany area?	The modelling study shows that such monitoring is not warranted by the expected emissions from the GTP. However, Orica acknowledges the community's concerns and proposes to set up an independent performance monitoring process for the GTP, which could include a community-based technical review panel. Off-site monitoring could be discussed in that forum.	Workshop 4
67. How will the air quality monitoring data be made available to the public?	Orica is committing to the establishment of an independent oversight committee to monitor performance. This committee will be one way of providing the results of the stack monitoring to the community.	Workshop 4

Issue of Concern		Response		Source
68. Will the monitoring be independent?	The licence would require that for the continuous monitors that evidence of calibration and maintenance records be provided. The three-monthly monitoring of stack emissions would also provide assurance that the in-line monitors are working properly. This stack monitoring would need to be undertaken by a NATA accredited stack-testing consultant, independent of Orca.		Workshop 4	
Water quality				
69. Will the treated water quality be monitored?	Yes. Reuse water would be monitored for pH and conductivity. The marine discharge would have online analysis of pH, turbidity, oxygen demand and chlorinated hydrocarbons. Regular analysis for a wider of species would also be undertaken. Online analyses would be routinely validated with manual sampling and analysis.		Workshop 1	
70. What options have been considered for the use of treated water? Will it be possible to reuse all of it?	Currently there are agreements in place to supply industrial users on the BIP. Orca will investigate the option of reuse by other users.		Workshop 2	
71. Where will the stormwater go?	Stormwater would go to a first-flush pit to collect the first flows of rainwater for subsequent analysis, treatment as required and disposal. The following rainwater (which would be clean) would enter the site stormwater system for disposal in Springvale Drain.		Workshop 2	
72. What is the pH of the salty water to be discharged?	The pH of the salty water discharge to Brotherson Dock would be in the range 6.5 – 9, to be compatible with Botany Bay.		Workshop 2	
73. Has detention and filtration in a wetland been considered as an option for the treated water?	The treated water will be a quality valuable resource, and so would be reused for preference. This is especially important given the limited fresh water availability in the Sydney region. Wetlands can be used as part of water treatment system; however, they have not been pursued for this project due to the size required and the probability that the volatile contaminants would be released to the atmosphere.		Workshop 2	

Issue of Concern		Response		Source
Health issues				
74. What are the health risks to workers at the BIP and to the local community from the GTP? What are the cumulative impacts of the other surrounding industrial sites and the BIP?	The human health risk assessment (HHRA) has provided an evaluation of risks to workers on and off the BIP, as well as residents and recreational users in areas surrounding the site. These are risks associated with the GTP. In addition, the health risk assessment has also considered the cumulative risk from other issues associated with the Orica site, including the consideration of background exposures which include intakes from food, water and industrial air.		Workshop 1 Workshop 4	
75. Have studies been done into the possible bioaccumulation of the chemicals in the food chain?	Yes. Potential exposure to chemicals which are considered persistent and bioaccumulative in the environment (dioxins, mercury and hexachlorobutadiene) has been included in the human health risk assessment for the GTP.		Workshop 1	
76. How will the geographic boundaries for community protection be determined?	There are no geographic boundaries defined in the health risk assessment. Calculations have been presented based on maximum exposures. Risks to human health in areas further away from the site would be lower than presented for the maximum risk level. Risks to human health in a number of discrete receptors (locations of schools and residential areas in the computer model) presented in the Air Quality Impact Assessment have also been presented (lower than the maximum).		Workshop 2	
77. Who are the stakeholders who prepared the guidelines for the HHRA?	The HHRA has been prepared in consultation with the DEC and NSW Health. This has included review of the methodology and inputs and models used in the evaluation of exposure and toxicity.		Workshop 2	

Issue of Concern	Response	Source
78. Have the impacts of the SSU and GTP on nearby residents and schools been taken into account?	The SSU and GTP would not operate simultaneously. The HHRA has provided an assessment of potential exposures at schools surrounding the site arising from the operation of the GTP. The evaluation presented has been based on residential-type exposures which assumes that children (or teachers) who attend a local school may live close to the school.	Workshop 3
79. Are dioxins genotoxic carcinogens?	A genotoxic carcinogen is a cancer-causing substance where the mode of action causes damage or alteration to the gene. The assessment of dioxins with respect to carcinogenicity is the subject of ongoing debate. Review of dioxins by the Australian Federal Government Department of Environment and Heritage in 2004 provided a sound evaluation of dioxins. In summary, dioxins have been identified as carcinogenic in animal studies; however, they are not considered to be genotoxic and as such a threshold level is considered relevant for the assessment of dioxin exposure. The NHMRC (2002) has endorsed a tolerable monthly intake level which is considered to provide "an adequate margin of safety for any possible increased risk of cancer".	Workshop 4
80. Where does the data used for the Human Health Risk Assessment come from?	The HHRA has used data to identify issues, define exposure and toxicity. The identification of issues associated with the GTP has been derived from process information and studies on air quality and the preliminary hazard assessment. Data used to define exposure and toxicity has been derived from accepted source documents as outlined by enHealth (a Federal Government publication providing guidance on human health risk assessments) and agreed with DEC and NSW Health.	Workshop 4

Issue of Concern	Response	Source
81. Will dust from the construction and operation on the GTP have an impact on health?	Dust generated from the construction of the GTP would not have an impact on the health of workers or surrounding areas. Chemical concentrations in the soils on the site (GTP) are less than endorsed health-based investigation levels. Impacts associated with nuisance dust would be controlled by a construction environmental management plan.	Workshop 4
82. Have you done regular sampling on emissions from soil?	Soil concentrations at the GTP site have been sampled and referenced in the HHRA. Sampling of other soils on the BIP has been undertaken on a number of occasions.	Workshop 4
83. Have people who have been exposed to the groundwater (from watering gardens etc) over the last number of years been impacted?	The risks to residents who may extract and use groundwater in the backyard for irrigation of fruit and vegetables, in a wading pool, sprinklers, etc, have been assessed in a separate HHRA, which is referenced in the HHRA for the GTP. Risks, evaluated using consistent methodology, were calculated to be low and essentially negligible. The assessment of these areas will be compiled in the revised HHRA (not forming part of this EIS) currently being undertaken for all areas surrounding the BIP. The HHRA included in this EIS did assess the health impacts of residents' use of the groundwater, but only with respect to emissions from the GTP.	Workshop 4
84. Can Orica make a contribution to the community by planting trees around the area?	Orica is keen to work with the local community to identify opportunities for providing a positive contribution to local environmental initiatives.	Workshop 4
85. Has Orica done a Human Health Risk Assessment on Penrhyn Estuary?	Penrhyn Estuary was assessed in 1996 as part of the Stage 2 HHRA. In addition, regular reviews using data routinely collected from the estuary have been undertaken with respect to the potential for increased exposure to chemicals from the Orica facility. The revised HHRA currently being undertaken for all areas surrounding the site, including Penrhyn Estuary, will incorporate these revisions and any further data. The revised HHRA is being undertaken in consultation with the DEC and NSW Health.	Workshop 4

Issue of Concern	Response	Source
<p>86. Why hasn't the Human Health Risk Assessment included talking to residents?</p>	<p>The HRA has been undertaken to address the potential risks associated with the GTP. The approach taken is an approved methodology (enHealth, DEC and NSW Health) for the assessment of any proposed facility.</p> <p>The health of individuals is dependent on many factors (eg. age, genes, lifestyle, smoker, non-smoker, etc), of which environmental exposures are typically only a small part.</p> <p>While it is acknowledged that residents share concerns about health issues, the sources of these health issues are much broader than the scope of the HHRA for the BGC Project. The HHRA is a tool to assist in the evaluation of issues associated with the GTP.</p>	<p>Workshop 4</p>
<p>87. Have you used similar studies from other treatment plants in the world as an input into this study?</p>	<p>The HHRA presented is specific to the GTP. However, the technology proposed is used in other countries. Facilities in other countries treat different chemicals and surrounding land uses are quite different, hence direct comparison is not possible. The evaluation of toxicity for the chemicals evaluated from the GTP has used best available information, which incorporates reviews of studies undertaken on animals as well as occupation exposure studies associated with these chemicals from a variety of industries around the world.</p>	<p>Workshop 4</p>
<p>88. Why can't you monitor the health of the local people?</p>	<p>The aim of the HHRA is to evaluate risks associated with the GTP. The calculated risks are very low and cannot be measured in any health study, as they are well below background cancer rates. The health of the surrounding community is not evaluated in this assessment as it is dependent on many variables such as age, genes and lifestyle. Environmental exposures (of which the GTP will contribute a negligible increment) include all sources in the area, including industry, motor vehicles, trucks, household chemicals and products (e.g. cosmetics). Assessment of community health will not provide a sound basis for the evaluation of exposures and risks associated with the proposed (no exposures yet) GTP.</p>	<p>Workshop 4</p>

Issue of Concern	Response	Source
89. Are the Acceptable Daily Intakes Australian or USA standards?	The assessment of chemicals using acceptable daily intakes (where relevant) has used data from sources listed by enHealth. In general, these are primarily sourced from Australian bodies such as NHMRC and ANZECC, and European agencies such as WHO. Data from the US is used where no other data is available and is considered appropriately conservative in the assessment of risk.	Workshop 4
Hazard risks		
90. How safe will it be to store the EDC at Port Botany? Will it be guaranteed not to leak into Bay? What if a plane hits it?	The Port Botany facility proposed for storage of recovered waste EDC liquid is owned and operated by Terminals Pty Ltd, which is independent of Orica. The risk of storage and handling of hazardous materials at this facility would have been identified and assessed as part of this facility's approval process.	Workshop 2
91. Has the risk of terrorist attacks on the GTP been considered?	The PHA considered the potential for sabotage and terrorism incidents on the GTP. The GTP is located on the BIP, which has extensive security measures appropriate for a site that stores and handles a variety of toxic and flammable materials at the various plants operating on the BIP. The risk to the GTP from these incidents was therefore assessed in the PHA as very low.	Workshop 2
92. Will this assessment be subject to the new guidelines that were released yesterday regarding safety and terrorism?	Not sure which guidelines are referred to. We cannot find any guidelines released on 19 July. However, there were various improvements to maritime security announced on 20 July. These would not be applicable to the BGC Project or the PHA.	Workshop 2
93. Will risk management controls be incorporated as they are identified in the study or during operation if an incident occurs? Are there quantitative guidelines?	If the BGC Project is approved, during the subsequent design process a number of additional detailed hazard studies would be carried out to identify and incorporate any additional risk controls which would further improve operational safety. A Final Hazard Analysis (FHA) may be required as one of the conditions of approval. This is an update of the PHA taking into account the final design information and suggested changes from the hazard studies. The results of the FHA must meet the same risk criteria as the PHA.	Workshop 2

Issue of Concern	Response	Source
94. How long has the PHA process been in place?	The requirement for a PHA as part of the approval process for potentially hazardous or offensive developments was developed by DIPNR in 1992. Work on the PHA for this project began formally in May 2004.	Workshop 2
95. What would happen if the GTP blew up? Would the contaminated groundwater disperse into the air?	There are two GTP explosion events identified in the PHA. Each of these has been demonstrated to be extremely unlikely. The PHA shows that the calculated risks to nearby residential areas from explosions are well below the maximum acceptable risk criteria set by DIPNR. The containment around each of the various GTP storage vessels is designed to hold the entire contents of the vessel, so even in the extremely unlikely event of an explosion, any leaks from damaged storage vessels would be contained within the plant. There is no event identified in the PHA which could lead to vapourisation of significant quantities of groundwater.	Workshop 4
96. Describe what is meant by "irritation"?	Toxic irritation is defined by DIPNR (HIPAP4) as: "Irritation to eyes or throat, coughing or other acute physiological responses in sensitive members of the community"	Workshop 4
97. Has the PHA addressed the storage of the EDC at Terminals? How is the EDC transported and does it pass through residential areas?	The PHA has addressed the transport of EDC from Terminals Pty Ltd at Port Botany to the GTP. It does not include any aspects of the storage and handling of recovered waste EDC liquid at the Terminals Pty Ltd facility, as this facility is owned by a third party and covered by its own planning approvals and licence, which include storage and handling of waste chlorinated hydrocarbons such as the recovered waste EDC liquid.	Workshop 4
98. If the GTP is not approved, will there be a PHA on the use of the steam stripping unit?	A PHA was conducted for the SSU before it was recommissioned, and was submitted to DIPNR.	Workshop 4

Issue of Concern	Response	Source
99. What impact would an explosion at the GTP have on the HCB stored on the BIP?	The PHA was required to consider the possibility of 'knock-on' effects from the GTP on other BIP operations, and did not identify any concerns. There are two GTP explosion events identified in the PHA. Each of these has been demonstrated to be extremely unlikely. In addition, the quantities of flammable materials stored and used at the GTP are relatively small, and as a result the effects of an explosion at the GTP on the nearest HCB storage (which is over 200 hundred metres away) would be negligible.	Workshop 4
Communications		
100. Orica should keep in mind the lessons learned from the HCB approvals process.	This project is quite different from the HCB project, in that it is to be assessed under Part 5 of the EP&A Act. The HCB project was considered under Part 4 of the EP&A Act. Members of Orica's team worked closely on the HCB EIS and have brought an understanding of that project to the BGC Project.	Workshop 1
101. How transparent is the EIS process and how available will information be for the general public?	The EIS process is governed by NSW planning legislation. Orica has attempted to provide full and comprehensive information to the public during the development of the BGC Project and will continue to provide information and seek input from the community as outlined in this chapter.	Workshop 2
102. Are the workshop participants actually representative of the wider community?	Orica advertised the workshops widely to ensure that the wider community was aware of them. The participants represent those who have expressed an interest in seeking further knowledge and to raise issues to be addressed in the EIS.	Workshop 2

Issue of Concern		Response		Source	
Ecological impacts					
103. Have the impacts on the development on the local fauna, in particular the green and golden bell frog, been considered?	The green and golden bell frog has not been seen on Orica land for many years. Nevertheless, the conditions in Southlands are consistent with its preferred environment. The project will create certain infrastructure across Southlands, but not eliminate or significantly change that environment. The GTP would be built on land developed for the chemical industry from 1940. There is no green and golden bell frog habitat in that location.		Workshop 2		
104. Have you considered the presence of lead and petroleum contamination at Foreshore Road where the wells are to be installed?	During construction of these wells, environmental management procedures were implemented to ensure that any contaminated material was identified and handles correctly. These wells have now been installed. No contaminated material was found during their installation.		Workshop 2		
105. Will biota assessments and faunal assemblage assessments be undertaken?	As outlined in Chapter 20 , an assessment of the BGC Project's impacts on flora and fauna has been undertaken.		Workshop 2		
106. What gets transported offsite and where does it go?	During construction of the GTP, no soil would be removed from site. During operation, spent activated carbon would be transported to an approved landfill as a non-hazardous waste if it cannot be regenerated. In addition, a dewatered solid waste comprising the iron removed from the groundwater as well as solids from the organic acid and ammonia removal unit. Depending on the technology selected, an amount of zeolite may either be disposed of or sent back to the supplier for manufacture into an alternative product.		Workshop 2		
Pollution					
107. Has the generation of waste and its disposal been considered?	Yes. Chapter 15 provides an assessment of all wastes that may be generated during the construction and operation of the BGC Project.		Workshop 1		
108. Has the noise from the groundwater pumping been considered?	Yes. As outlined in Chapter 17 , operation of the pumps in the wells would not be audible at any residences.		Workshop 2		

Issue of Concern	Response	Source
109. Will there be the need for power generators?	All power for the GTP would come from existing EnergyAustralia supplies. Battery backed power would be supplied for the plant control and shutdown system.	Workshop 2
Planning approvals		
110. Was Council involved in the changes to SEPP 55?	Yes. DIPNR liaised with Council on this matter.	Workshop 3
111. Who is the determining authority under the amended SEPP 55?	As outlined in Chapter 6 , a number of approvals are required for the Activity. Each authority that an approval is required from is a determining authority. The determining authorities for the Activity are EPA, DIPNR, Sydney Ports, NSW Maritime Authority, NSW Fisheries, WorkCover Authority and Sydney Water. The EPA is the nominated Determining Authority.	Workshop 3
112. Have there been any changes to Part 3A permits?	A Part 3A permit was obtained from DIPNR for works adjacent to Springvale Drain. There has been no requirement to change this permit.	Workshop 3
113. Will residential zonings change due to the changes to the SEPP?	No.	Workshop 3
114. Are permits required for Foreshore Road works?	Yes. As outlined in Chapter 6 , approval from the RTA was obtained for the works in Foreshore Road.	Workshop 3
115. How do the works on Foreshore Road fit with the Port Botany expansion?	Orica has discussed the Foreshore Road works with Sydney Ports Corporation to ensure that there are no conflicting matters. Final well locations took into account the proposed works by Sydney Ports.	Workshop 3

8.4 Ongoing Consultation and Community Involvement

Under the Community Relations Plan developed for the BGC Project (attached in **Appendix M**), consultation and communication with the local communities would be maintained throughout the life of the BGC Project, beyond the development and submission of the EIS and the exhibition period.

Orica's approach to community relations is based on the best practices for community and stakeholder engagement, developed by the International Association for Public Participation (IAP2) and the guidelines of the NSW Government (www.iplan.nsw.gov.au).

The Community Relations Plan provides an overview of the community relations activities for the BGC Project as it develops through the stages of EIS exhibition, detailed project design, construction and operation of the project throughout its life.

Community Relations Objectives

There are four key objectives set out in the Community Relations Plan:

- Demonstrate Orica's commitment to stopping high concentrations of contaminated groundwater from reaching Botany Bay.
- Foster community awareness of the BGC Project, including the GTP and its operations, and the impacts of its various phases (design, construction and operation).
- Engage the local community and other stakeholders by providing ongoing opportunities to raise concerns, comments and questions about the GTP and its operations, and by addressing them appropriately.
- Provide a process to measure the quality and effectiveness of the community engagement, and modify the process as required.

Stakeholders

The independently chaired Community Liaison Committee (CLC) has been the representative group for the stakeholders since 1996.

In addition to the CLC, Orica has sought to identify a comprehensive range of stakeholders for the BGC Project. Orica will address the specific needs of stakeholders as they evolve over the various phases of the BGC Project. This stakeholder list will be continually updated to reflect changing requirements.

Table 8.4 lists the current stakeholders.

Table 8.4 Community Relations Plan stakeholders

Government/Regulators	Local Community	Media
Department of Environment and Conservation	City of Botany Bay Council elected officials	Mainstream and local print outlets
Department of Infrastructure, Planning and Natural Resources	City of Botany Bay Council staff	Mainstream radio and TV
Other key government agencies	Botany Bay Golf Club	Environmental trade print outlets
State Government elected officials	Environmental advocacy non-government organisations	
Whole-of-Government regulatory group	Federal Member for Kingsford Smith	
	Industrial neighbours	
	Local interest groups	
	Local residents ⁽ⁱ⁾	
	Other potentially interested groups	
	State Member for Heffron	

(i) Residents of Eastlakes, Rosebery, Botany, Maroubra, Pagewood, Chifley, Eastgardens, Hillsdale, La Perouse, Little Bay, Malabar, Matraville, Phillip Bay and Port Botany.

Community Relations Activities

The Community Relations Plan provides an overview of the community relations activities for the BGC Project, as it moves through the different phases of EIS exhibition, detailed design, construction and operation.

In line with its objectives, the activities of the Plan are twofold:

- informing people about the BGC Project; and
- providing people with ways to express their views about the BGC Project.

The Plan is designed to be flexible so that specific stakeholder concerns about the BGC Project, and the GTP and its operations, can be addressed in a timely and proactive way.

The Plan will be managed and implemented by the Orica Community Relations team. The CLC will also continue to provide ongoing input into Orica’s work, to ensure that community expectations and concerns continue to be addressed.

In consultation with stakeholders, Orica intends to achieve the following three new community initiatives, to demonstrate its commitment to the cleanup and transparency of the BGC Project and associated operations:

- establish an Independent Oversight or Community Audit Committee;
- introduce a Good Neighbour Agreement; and
- contribute to greening the local area, in order to improve the overall amenity.

Table 8.5 provides a summary of the proposed community relations activities that would be carried out as part of the implementation of the BGC Project and throughout its life.

The effectiveness of the various communication methods would be measured through regular telephone polling of residents in Eastlakes, Rosebery, Botany, Maroubra, Pagewood, Chifley, Eastgardens, Hillsdale, La Perouse, Little Bay, Malabar, Matraville, Phillip Bay and Port Botany, as well as through feedback from CLC members.

Table 8.5 Community relations activities

BGC Project Phase	Summary of Community Relations Activities
EIS exhibition	Community brochure providing a user friendly general overview of the EIS and important issues, distributed to the broader community (25,000 residents in the local area) with a letter from Orica's Managing Director & Chief Executive Officer Information displays at the Orica Administration Building and other accessible locations throughout the local area With permission, static displays at key locations (local libraries, preschools, local schools, DIPNR, Council of the City of Botany Bay) Eight face-to-face information/feedback sessions at key locations (to be advertised) with stakeholders – to include sessions with authors of the key EIS chapters Advertisements and regular columns in the <i>Southern Courier</i> Website Fact sheets Community hotline Ongoing meetings of the CLC Written personal communications as required.
Detailed design	Ongoing communications via the <i>Southern Courier</i> , website, newsletter, fact sheets, community hotline Ongoing meetings of the CLC Face-to-face briefing sessions with stakeholders Written personal communications as required.
Construction	Ongoing communications via the <i>Southern Courier</i> , website, newsletter, fact sheets, community hotline Ongoing meetings of the CLC Face-to-face briefing sessions with stakeholders Written personal communications as required Open days/tours.
Operation	Ongoing communications via the <i>Southern Courier</i> , website, newsletter, fact sheets, community hotline

BGC Project Phase	Summary of Community Relations Activities
	<p>Ongoing meetings of the CLC</p> <p>Face-to-face briefing sessions for stakeholders</p> <p>Written personal communications as required</p> <p>Open days/tours</p> <p>In consultation with stakeholders:</p> <ul style="list-style-type: none"> • establish an independent oversight committee to monitor Orica’s performance throughout the life of the BGC Project; • introduce a Good Neighbour Agreement; • contribute to the greening of the local area (e.g. through a tree planting program) to improve overall amenity.