



Orica Australia Pty Ltd
16-20 Beauchamp Road
Matraville NSW 2036 Australia

**SOUTHLANDS REMEDIATION AND DEVELOPMENT PROJECT
PART 3A PROJECT APPLICATION (MP 06_0191)**

PREFERRED PROJECT PLAN

UPDATED AND CONSOLIDATED INFORMATION PACKAGE

June, 2011
Rev 7

FINAL

This document is based upon material available at the time of preparation and is current and accurate only to that date. Material prepared by consultant third parties was prepared on instructions by Orica for specific purposes and should not be relied upon by other parties for any purposes.

REVISION HISTORY

REV	STATUS	DATE	PREPARED	CHECKED	AUTHORISED
1	Draft for Prelim. Issue to DoP.	06/05/11	BS/GMR		
2	Review by Orica	9-12/05/11	LA/SC/GMR		
3	Revised Draft	13/05/11	LA/SC/GMR/BS		
4	Revised Draft (2)	16/05/11	LA/SC/GMR/BS		
5	Revised Draft (with DPI comments)	20/05/11	LA/SC/GMR/BS		
6	Final – for submission	23/05/11	GMR/BS		
7	Final – for adoption	06/06/11	GMR/BS		

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EXECUTIVE SUMMARY

This report updates and consolidates changes to the Part 3A Project Application (MP 06_0191) for the Southlands Remediation and Development Project, in order to further inform the Department in assessing the application. Changes and requests for information and clarity have come about since a Preferred Project Plan was submitted in November 2010, and in light of feedback from independent studies commissioned by the Department.

Orica confirms that 3 Stages are still identified in the project and are submitted for consideration by the Department, and that this scope has not changed since the first submission. The Stage 1 earthworks component also extends into part of the Stage 2 area and Stage 3 areas.

Updates to the project submitted for application are:

- revised traffic layouts at the intersections of Botany Road with both Hills and Exell Streets, due to revised traffic arrangements in the vicinity of the site subsequent to the initial submission
- flood modelling to confirm the Stage 1 area of earthworks will be above nominated flood levels with freeboard
- source of fill for the Stage 1 earthworks utilizes material being treated on another Orica site in the vicinity of Southlands, which has received in principle support from the Site Auditor and Office of Environment and Heritage.

The Statement of Commitments from Orica for the project is confirmed in this submission.

Orica has continued to provide updates on this project to the community utilising existing consultation tools.

This document finalises changes for clarity as requested by the Department. Orica as applicant requests the application as submitted be approved under provisions of Part 3A of the NSW EP&A Act (1979).

1. INTRODUCTION

In November, 2010 Orica Australia Pty LTD (Orica) submitted a Preferred Project Plan for the Part 3A Project Application to the NSW Department of Planning (now NSW Planning & Infrastructure), to develop its lands known as Southlands at McPherson Street, Banksmeadow, NSW.

Since that submission, various components and information pertaining to the site and its development have been clarified and determined.

This document provides a consolidated package of information to update the November 2010 Preferred Project Plan submission where required.

2. SCOPE OF PROJECT

The scope of the Preferred Project Plan as originally submitted in November, 2010 (including staging) is maintained for assessment and determination by the Department. That scope is as described in the Drawings described in the Document List at Appendix 1, submitted with the application.

Staging of the project submitted for approval is as per Drawing 004 of that Document List and further embellished for each stage below.

Earthworks in Stage 1 will extend over the Stage 2 area east of Nant Street identified in the drawings, as well as over the Stage 3 area subject to results of groundwater testing and infiltration, in accordance with the requirements of hydraulic studies and the Remediation Action Plan, to ensure the stormwater detention basin required is of adequate size.

It is re-confirmed that no building development is proposed for the Stage 3 area in this Project Application. However, the application does still propose to re-configure and sub-divide the area east of Nant Street to define Stage 2 and Stage 3 areas, including 2 lots in the Stage 3 area in order to add a further easement to facilitate future possible remediation.

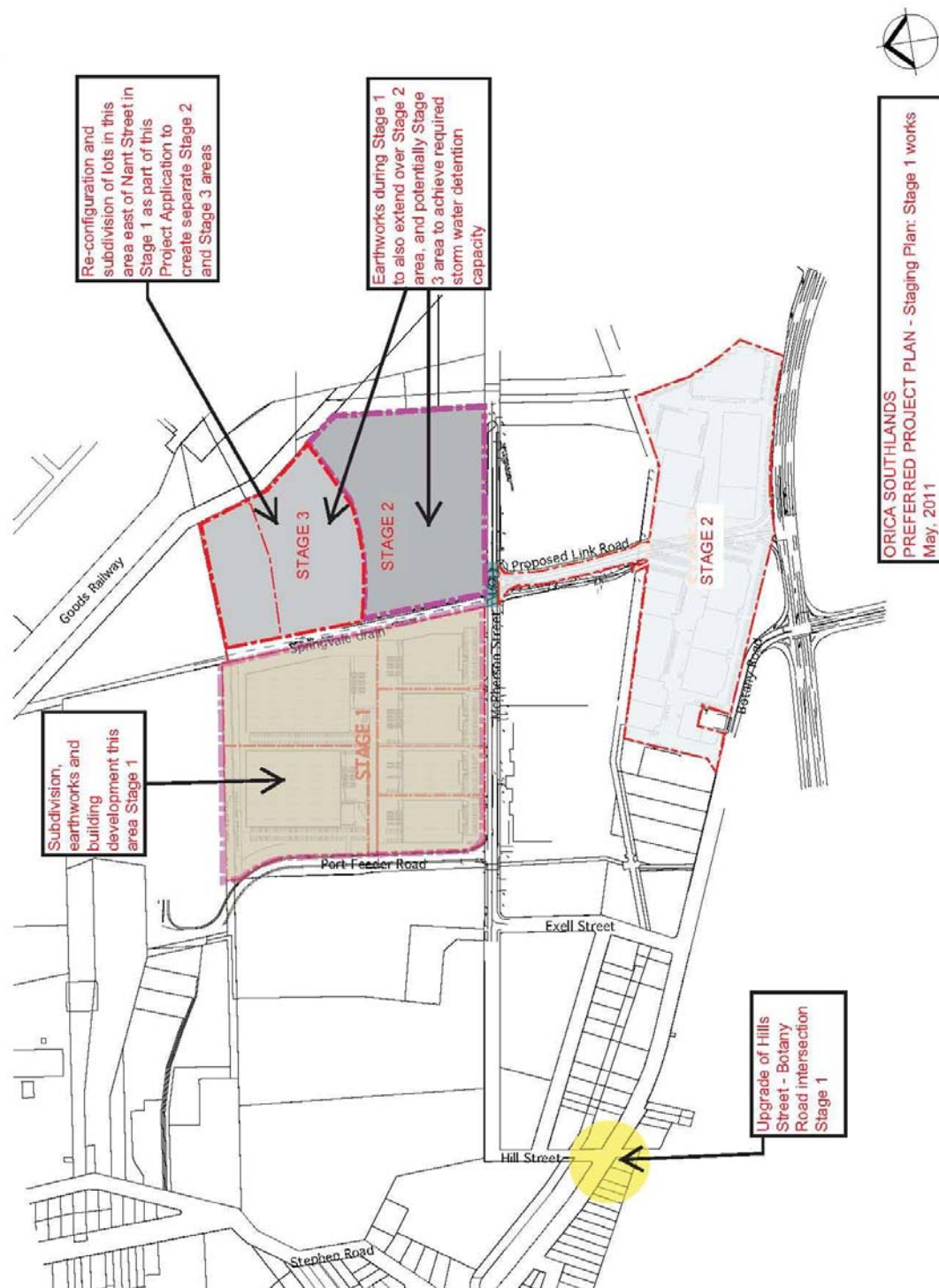


Figure 1: STAGING PLAN – Scope of Stage 1 works

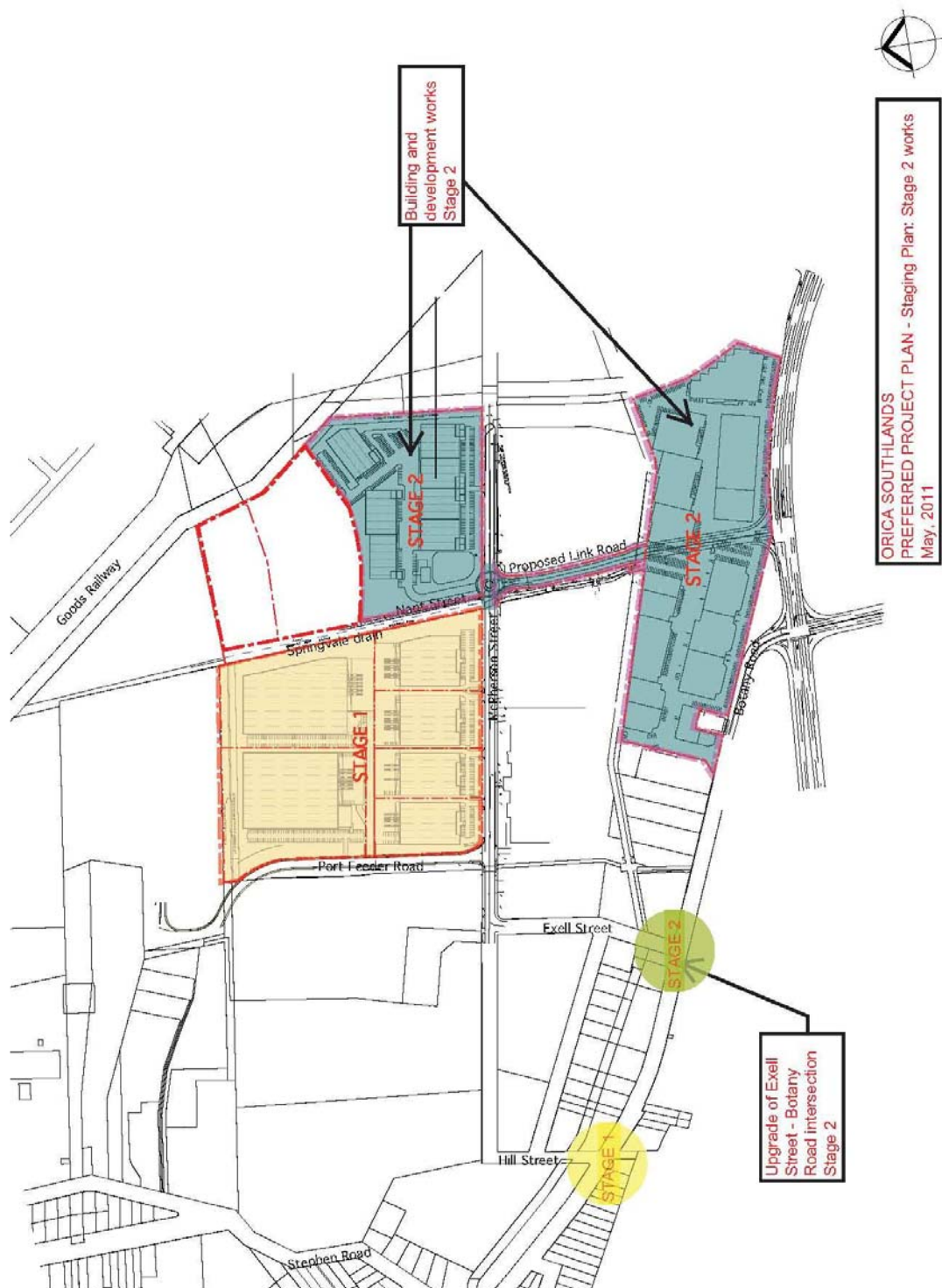


Figure 2: STAGING PLAN – Scope of Stage 2 works

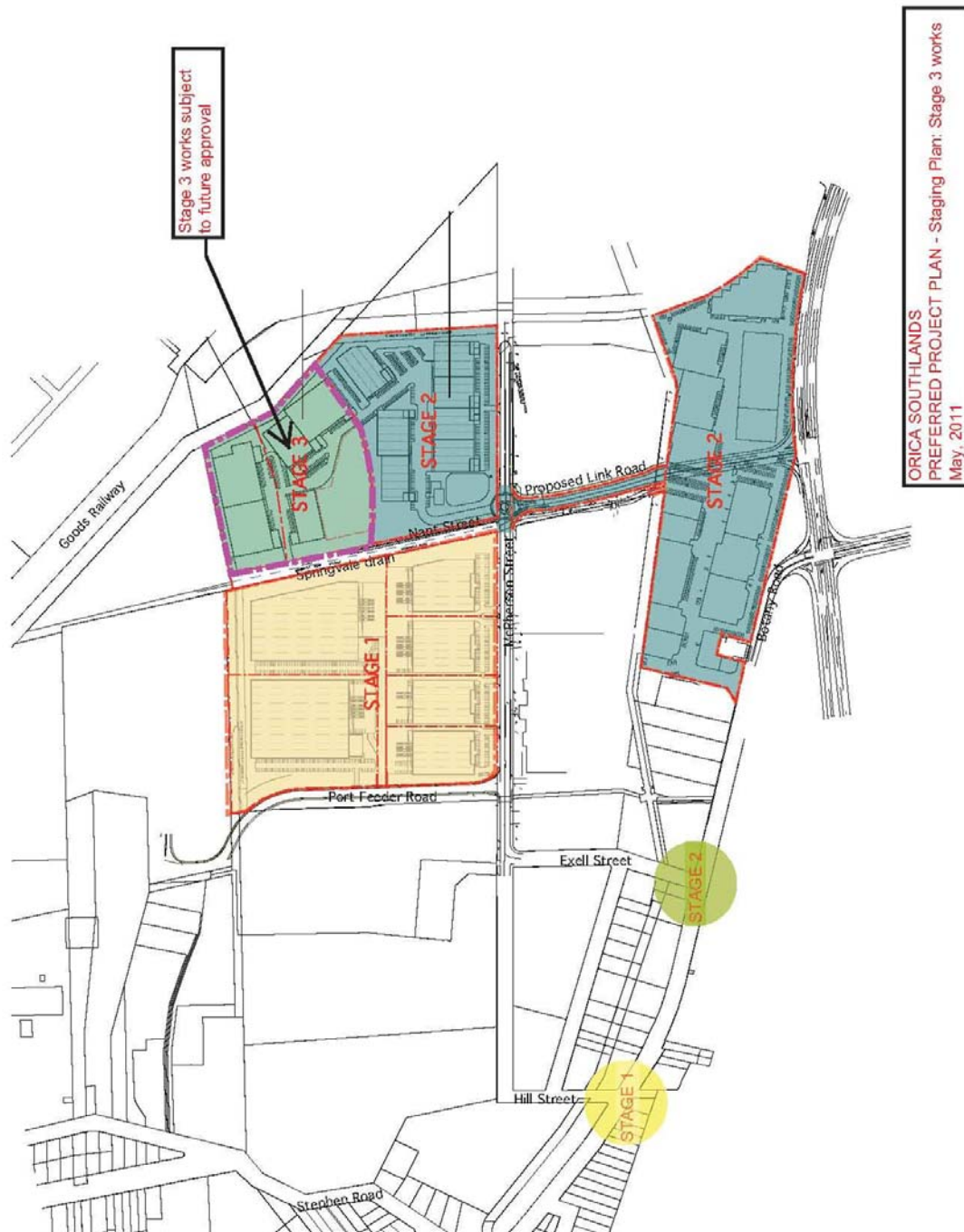


Figure 3: STAGING PLAN – Scope of Stage 3 works

3. SUMMARY OF PROJECT AMENDMENTS & DETAILED RESPONSES

The previous submission of November, 2010 identified issues raised in response to public exhibition of the Project EA, and Orica's response to the issues where necessary.

Independent reviews of the Hydrology and Flooding Report as well as Traffic and Transport Assessment submitted with the Project EA were carried out by consulting firms commissioned by the DoP. Feedback from these independent reviews has been addressed in reports completed in April-May 2011.

A summary of project amendments since the November, 2010 submission is as follows:

3.1 Traffic Arrangements

The Southlands development will require improvements at the intersections of Botany Road with Hills Street, and Botany Road with Exell Street to cater for truck movements that service the Southlands site.

There has been a significant **decrease** in truck movements along Botany Road since the original submission which had **not** been factored into analysis in that submission by Traffix (Traffic and Transport Planners) on the level of service required of the intersections noted. This decrease is the result of:

- Opening of Hale Street access road onto Foreshore Road
- Banning of semi-articulated vehicles from travelling on Botany Road between Mill Pond Road and Hills Street

It is estimated that there are 1,000 less truck movements per day as well as general traffic as a result of these changes. (Traffic Report by Masson Wilson Twiney *Hale Street, Port Botany – Proposed Extension to Foreshore Road* 28 Nov 2007 (for ING) Section 4.1).

Therefore, proposed improvements to the intersections have been modified accordingly, and tied to Staging of the project. The proposed traffic arrangements and improvements for each Stage are:

STAGE 1:

- Upgrade of Hills Street – Botany Road intersection with traffic median and island to allow simultaneous left and right turn movements of trucks from Botany Road into Hills Street. This includes widening of Hill Street at its junction with Botany Road to allow the two lanes to enter from Botany Road, and with appropriate merge length prior to the sharp right turn bend from Hills Street into McPherson Street.
[It is noted that this intersection can be upgraded with minor land impact due to banning of semi-articulated vehicles along Botany Road.]

The existing Exell Street – Botany Road intersection is therefore maintained with no improvement during Stage 1 as all truck movements

are required to turn left from Exell Street onto Botany Road. The small increase in number of truck movements from Southlands site in Stage 1 of the project are such that they can be absorbed in the current capacity of Botany Road

STAGE 2:

- Upgrade Exell Street – Botany Road intersection with revised parking arrangements to allow two lanes to exit into Botany Road. This is proposed to be a signalised intersection, but to be confirmed at time of Stage 2 traffic impact assessment that would include micro-simulation modelling at the request of the RTA and consideration of pedestrian crossings.
- Construction of New Link Road (subject to acquisition land rights) between Botany Road and McPherson Street through the existing Discovery Cove Estate and former MCS site.
- Introduce traffic signals at the intersection of New Link Road and Botany Road.
- Construct a new roundabout at the intersection of New Link Road and McPherson Street.
- Reconfigure parking, access and vehicular circulation within Discovery Cove Estate, subject to agreement by Orica with GMG and MCS.

The proposed changes to previous submissions and intersection improvements are as described in a letter report from **Traffix** (Traffic and Transport Planners) contained at Appendix 2.

It is recommended in that letter report that:

- the amended concept design for Hills Street / Botany Road intersection (included as Attachment 1 to the letter) be adopted as an ‘in principle’ design attached to a suitable condition of consent, with detailed design being undertaken later to the requirements of Botany Council and RTA.
- the amended concept design for Exell Street / Botany Road intersection (included as Attachment 2 to the letter) be adopted as a condition for any subsequent Stage 2 consent, but that no conditions are required for the intersection in a Stage 1 consent.
- no improvements to the Exell Street / Botany Road intersection are required in Stage 1 Project application works

These recommendations are submitted for adoption in the Project Approval.

3.2 Flooding and Hydraulics modelling

In response to review of **Aurecon**’s submission on flood modelling by DoP’s independent review team, an updated response from **Aurecon** is attached to this report at Appendix 3.

Specific points in the response are:

- All Finished Floors Levels (FFL’s) of new buildings built in Stage 1 will be a minimum 500mm above 100 year ARI flood level plus allowance for Climate Change impacts of an additional 500mm.

- Nant Street has limited use for inspection purposes only, and no public access. There is low flood hazard on the land and therefore affectation of flows due to the proposal will be minimal.
- WSUD issues are addressed in the response, noting that there are limited opportunities for water treatment and re-use on site due to contaminated ground water. In particular bio-filtration techniques are not recommended for this project.

3.3 Fill Material

Orica has identified treated & validated material from the Car Park Waste Encapsulation (CPWE) remediation project site as its preferred option for sourcing fill material for raising levels of the Stage 1 area of the Southlands site. This has been discussed with the Office of Environment & Heritage (OEH) and the Site Auditor (Chris Jewell). A submission to OEH describing the proposal has been endorsed by both parties in principle subject to material validation and and/or placement levels.

The submission proposal from Orica and response letters from OEH and Site Auditor are attached at Appendix 4.

Factors in support of re-use of the treated material include:

- Southlands is almost adjacent to the BIP; the two sites are separated only by a railway corridor. Hence this is not a significant geographic departure from the current approval.
- The materials, when treated, will meet approved site criteria and will be protective of groundwater and human health for commercial industrial applications. The appointed contaminated sites' Auditor will need to approve the material for use on Southlands. There is no increased environmental risk associated with the placement of the treated materials on Southlands, nor incorporating them as fill in the proposed Southlands development;
- The placement of the treated validated materials will offset the requirement to fill the Southlands site with VENM for flood mitigation, resulting in lower greenhouse gas emissions associated with transport factors, and avoiding the consumption of VENM. The alternative, disposal at landfill, will result in significantly higher greenhouse emissions due to transport factors, not be compatible with the OEH preferred waste hierarchy, and place an unnecessary strain on VENM supplies and landfill resources.

Transport of the treated material will be by trucks with required coverings and restrictions on loads for transport of soil through urban areas. Due to industrial zoning, and existing 24 hour heavy transport in the area, transport of loads could be carried out without time restrictions on movements, to minimise peak traffic congestion.

In order to implement this option, it is necessary to:

- Incorporate in this Southlands Project Application, an application to allow the use of these treated materials from the CPWE Project for the development (in addition to VENM or ENM).
- modify the CPWE Project Approval to change condition 7 of the CPWE Approval so as to authorise the movement of surplus treated materials soil to the Southlands Site; and then
- modify EPL No 13263 temporarily, so that the description of "Premises" under Condition A2.1 extends to cover the Southlands Site. We understand there is no requirement in the *Protection of the Environment Operations Act 1997 (NSW) (POEO Act)* for the premises subject of an EPL to be contiguous.

Orica raised this proposal at the 10 May 2011 Community Participation and Review Committee (CPRC) meeting. This is discussed at Section 3.4 following.

3.4 Community Consultation

Updates on the Orica projects are provided at quarterly community meetings and discussion is noted in the meeting minutes. The November 2010 Response to Submissions and Preferred Project Plan documents have been uploaded on Orica's website: www.oricabotanytransformation.com

Specifically, Orica raised the proposal to use some of the treated soil from the CPWE as fill at Southlands at the 10 May 2011 Community Participation and Review Committee (CPRC) meeting.

It was explained at the meeting:

- that Orica had approval to reuse the treated material on BIP
- that using the treated material as fill on Southlands would reduce the environmental impacts of transporting fill from an alternate more remote source
- that the independent site auditor would need to validate the soil as appropriate for placement on land zoned for industrial/commercial use.
- that amendments to regulatory approvals would be sought to facilitate this course of action (as described in Section 3.3).

Members of the community group asked where the treated soil would be placed if the Southlands project did not proceed. It was explained that some could be used on BIP, some would need to be stockpiled at BIP, or that the material would need to be sent off site as landfill.

No other feedback regarding the proposal was voiced at the meeting. The draft minutes from this meeting will be issued to the CPRC (including Planning & Infrastructure) in coming weeks. Meeting minutes are endorsed at the next quarterly CPRC meeting and then posted on the Orica website.

3.5 Project Amendments in Response to Submissions

The list of amendments and commitments by Orica as a response to submissions received from public exhibition was included in the submission of November 2010.

A checklist of the items addressed in that submission are:

- VPA Letter of Offer
- Nant Street Corridor – not included in this application
- Green and Golden Bell Frog Pond Design:
- Landscape Management Plan for Stage 3 area
- Urban Design Review by BBCC Panel
- Anti Graffiti Condition
- Standard Noise Criteria
- Truck Movements (restrictions on inward and outward truck movements)
- Conditions raised by DECCW in respect of Remediation issues and Green and Golden Bell Frogs
- Conditions raised by NSW Office of Water
- Review of Flood Impacts – including comments identified in Section 3.2 of this report
- Amendments to the Site Plan (Stage 1) and Subdivision Plan

These commitments above remain unchanged and are included in Appendix 5 of this submission.

The revised commitment with regard to use of Fill material is as per Section 3.3 of this submission.

Appendix 1: Drawing List

forming submission of Project Application – Part 3A 06-0191

Master Planning & Architecture (All Issue [D] 8 November 2010)

SRD DA001 Cover & Location Plan
SRD DA002 Aerial Context Plan
SRD DA003 Context Plan
SRD DA004 Staging Plan
SRD DA005 Masterplan
SRD DA006 Stage 1 Site Plan
SRD DA007 Stage 1 Roof Plan
SRD DA008 Stage 1 Elevations
SRD DA009 Stage 1 Elevations / Sections
SRD DA010 Stage 1 Detail Elevations
SRD DA011 Stage 2 Site Plan
SRD DA012 Stage 2 Roof Plan
SRD DA013 Stage 2 Elevations / Sections
SRD DA014 Stage 2 Road Link Site Plan
SRD DA015 Deleted
SRD DA016 Proposed Subdivision Plan
SRD DA017 Proposed Easements Plan

Survey

12317A DA01 Existing Survey Plan
12317A DA02 Existing Survey Plan

Civil and Stormwater

C-001[03] General Notes and Legend
C-002[05] Erosion & Sediment Control Plan – Stage 1
C-003[04] Erosion & Sediment Control Plan – Stage 2
C-004[02] Civil Works - Erosion & Sediment Control Details
C-010[07] Bulk Earthworks Plan – Stage 1
C-011[01] Bulk Earthworks Plan – Stage 1
C-020[05] Bulk Earthworks Plan – Cross Sections Stage 1
C-021[04] Bulk Earthworks Plan – Cross Sections Stage 2
C-031[04] New Entry Road – Stage 2
C-050[03] Concept Stormwater Layout Plan Stage 1 (Sheet 1 of 2)
C-051[03] Concept Stormwater Layout Plan Stage 1 (Sheet 2 of 2)
C-052[02] Concept Stormwater Layout Plan Stage 2
C-101[04] Services Plan (Sheet 1 of 2)
C-102[04] Services Plan (Sheet 2 of 2)

Appendix 2: Review of Traffic Modelling and Intersection Design

Traffix (Traffic and Transport Planners)



Ref: 06 076

06 June 2011

DBL Property
Level 6
432 Kent Street
Sydney NSW 2000

traffix
traffic & transport planners

suite 3.08
level 3 46a macleay street
potts point nsw 2011
po box 1061
potts point nsw 1335
t: +61 2 8324 8700
f: +61 2 9380 4481
w: www.traffix.com.au
director graham pindar
acn: 065132961
abn: 66065132961

Attention: Brendan Seage, Director

Re: Preferred Project Application - Part 3A Application 06-0191: Proposed Remediation and Redevelopment of Orica Southlands Site, Botany Bay

Dear Brendan,

We refer to the subject application and advise as follows in relation to the two intersections that were previously identified as requiring improvement. These are discussed further below in response to the implications of the more recent opening of the Hale Street access to Foreshore Road, which has resulted in significant traffic volume reductions along Botany Road in the vicinity of Exell Street and Hill Street.

Hill Street/Botany Road Intersection

It has been previously proposed and accepted that this intersection requires improvement to support the Stage 1 Project Application, which is in the nature of channelization to permit simultaneous left and right turn entries into Hill Street. However, the proposed banning of articulated trucks along Botany Road west of Hill Street permits the geometry of this intersection to be further constrained, with left turn entry movements from Botany Road into Hill Street now able to be based on a 12.5m HRV. On this basis, an amended concept layout for this intersection is provided in **Attachment 1**. It is noted that this requires a reduced land-take of the Defence site. It is recommended that this design be adopted as an 'in principle' design attached to a suitable condition of consent, with detailed design being undertaken later to the requirements of Council and the RTA.

Exell Street/Botany Road

The banning of articulated trucks as indicated above similarly reduces the geometric requirements of this intersection in relation to right turn movements out of Exell Street, which at this time is proposed to be signal controlled in support only of the Stage 2 Project Applications. The amended concept design is therefore provided in **Attachment 2** and as above, this concept design can be included in a suitable condition of consent on any subsequent Stage 2 consent. This would need to be conformed later as part of the Stage 2 traffic impact assessment, which involves micro-simulation modelling, at the request of the RTA.



No improvements are considered necessary for the Stage 1 Project Application for the following reasons:

- Since the opening of the Hale Street connection onto Foreshore Road, truck volumes have reduced along Botany Road in the vicinity of Exell Street and these reductions are evidently in the order of 1,000 veh/day; or 100 veh/hr. It is expected that general light traffic volumes have also reduced and therefore, the assumed reduction of 100 veh/hr is considered to be conservatively low (50 veh/hr in each direction along Botany Road);
- During the AM peak period, the subject Stage 1 Project Application is expected to generate only 235 veh/hr as assessed previously in the traffic impact assessment report, with 70 veh/hr exiting Exell Street into Botany Road. This is only slightly more than one vehicle movement per minute and this will have no unacceptable impact on this left turn movement which occurs via a free left turn, with the need to merge downstream with only 340 veh/hr on Botany Road (390 veh/hr existing less 50 veh/hr removed due to the Hale Street connection). The Sidra analysis for the 'existing' and 'existing plus development' scenarios is provided in **Attachment 3** for the AM peak and this demonstrates continued satisfactory performance; and
- During the PM peak period, the subject Stage 1 Project Application is expected to similarly generate 235 veh/hr as assessed previously, with 164 veh/hr exiting Exell Street into Botany Road. This equated to less than 3 vehicles per minute and this traffic will need to merge downstream with 468 veh/hr on Botany Road (518 veh/hr existing less 50 veh/hr removed due to the Hale Street connection). The Sidra analysis for the 'existing' and 'existing plus development' scenarios is provided in **Attachment 4** for the PM peak and this demonstrates continued satisfactory performance

We trust that the above advice is sufficient and request that you contact the undersigned should you have any further queries.

Yours faithfully,

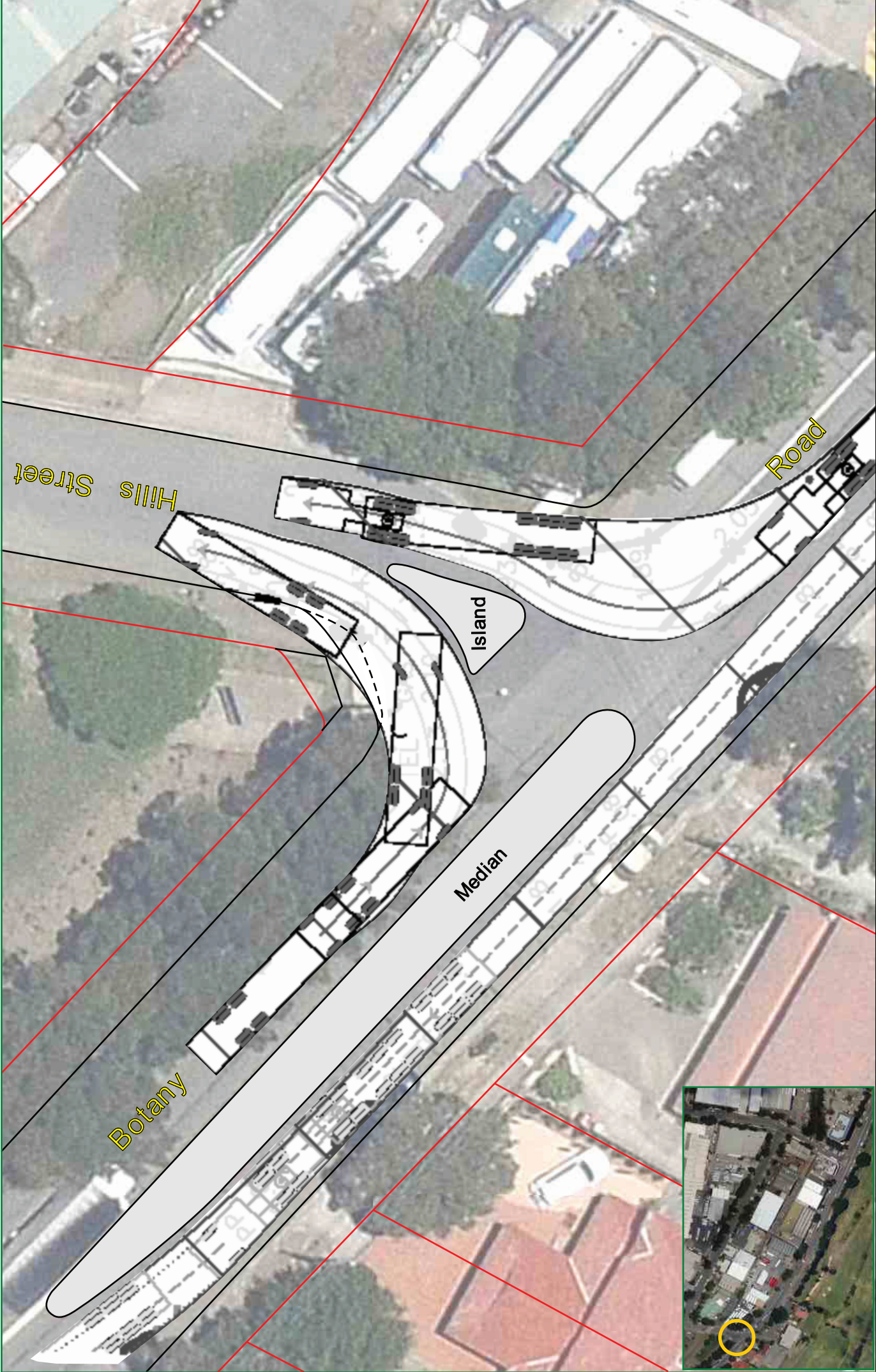
traffix

Graham Pindar
Director

Encl: Attachments 1-4



attachment 1



client: ORICA

airial photograph base: Near Maps December 2010

Botany Road/ Hills Street

Swept Path Analysis

N

0

10m

Address:

EXELL STREET BOTANY

Job No:

TRAFFIX Job No. 06067

Date:

April 2011

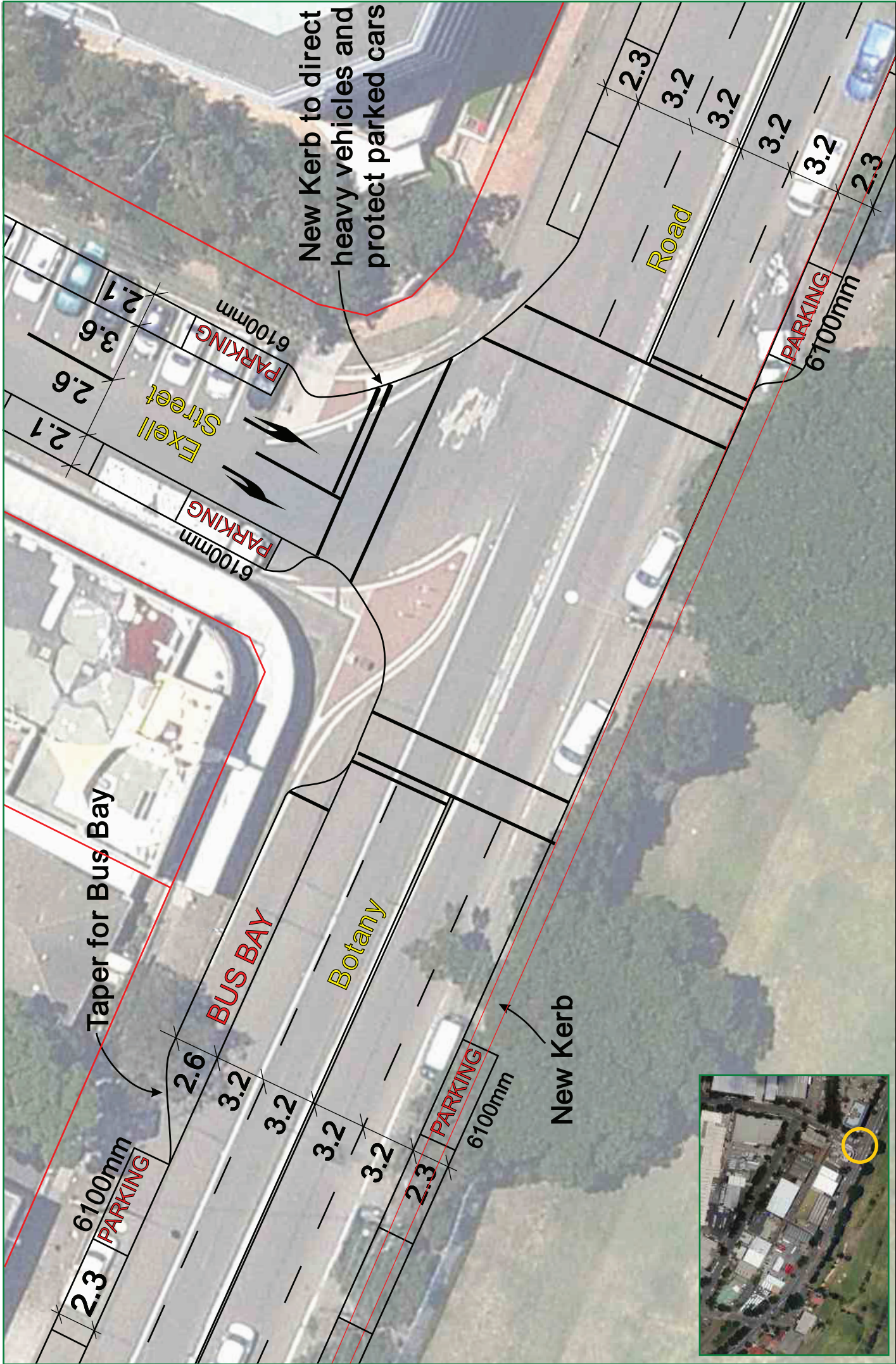
PO Box 1061 potts point
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trafix



attachment 2





attachment 3

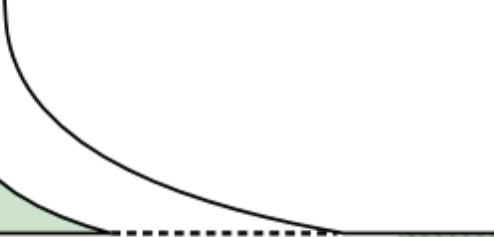


Botany Rd (west)



Botany Rd (east)

Exell St (north)



20



MOVEMENT SUMMARY

Site: Botany Rd / Exell St_AM

Botany Rd / Exell St
Period: AM
Scenario: Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North: Exell St (north)											
7	L	218	25.0	0.263	10.9	LOS A	1.4	12.0	0.54	0.77	46.8
Approach		218	25.0	0.264	10.9	LOS A	1.4	12.0	0.54	0.77	46.8
West: Botany Rd (west)											
11	T	358	25.0	0.213	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		358	25.0	0.213	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
All Vehicles		576	25.0	0.264	4.1	NA	1.4	12.0	0.20	0.29	54.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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Project: T:\Traffic\2006\06076\Modelling\06 076_110414 Exell Botany.sip
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INTERSECTION

MOVEMENT SUMMARY

Site: Botany Rd / Exell St_AM -
FUTURE

Botany Rd / Exell St
Period: AM
Scenario: Existing + Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North: Exell St (north)											
7	L	292	25.0	0.353	11.6	LOS A	2.3	19.6	0.57	0.83	46.1
Approach		292	25.0	0.353	11.6	LOS A	2.3	19.6	0.57	0.83	46.1
West: Botany Rd (west)											
11	T	358	25.0	0.213	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		358	25.0	0.213	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
All Vehicles		649	25.0	0.353	5.2	NA	2.3	19.6	0.26	0.37	52.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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INTERSECTION



attachment 4

MOVEMENT SUMMARY

Site: Botany Rd / Exell St_PM

Botany Rd / Exell St
Period: PM
Scenario: Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North: Exell St (north)											
7	L	312	25.0	0.482	14.8	LOS B	3.5	29.9	0.68	0.99	43.2
Approach		312	25.0	0.482	14.8	LOS B	3.5	29.9	0.68	0.99	43.2
West: Botany Rd (west)											
11	T	493	25.0	0.294	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		493	25.0	0.294	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
All Vehicles		804	25.0	0.482	5.7	NA	3.5	29.9	0.26	0.38	52.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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INTERSECTION

MOVEMENT SUMMARY

Site: Botany Rd / Exell St_PM -
FUTURE

Botany Rd / Exell St
Period: PM
Scenario: Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North: Exell St (north)											
7	L	484	25.0	0.750	19.6	LOS B	8.6	73.5	0.82	1.30	39.5
Approach		484	25.0	0.749	19.6	LOS B	8.6	73.5	0.82	1.30	39.5
West: Botany Rd (west)											
11	T	493	25.0	0.294	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		493	25.0	0.294	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
All Vehicles		977	25.0	0.749	9.7	NA	8.6	73.5	0.40	0.64	47.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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INTERSECTION



Appendix 3: Review of Flood Modelling & Civil Design Information

Aurecon (Engineers)

04 May 2011

Jeff Lord
Director
DBL Property
Level 6
432 Kent St
Sydney NSW 2000

Dear Jeff

Southlands Flood Modelling and civil design additional information

This letter is an update of the Aurecon letter to you dated 12 April 2011 regarding comments from the NSW Department of Planning requiring further information from the flood modelling and civil design for the proposed Southlands development.

Freeboard

All new building Finished Floor Levels (FFLs) for Stage 1 will be constructed a minimum of 500mm freeboard above the 100 year ARI flood level with Climate Change impacts. The pad level is actually designed at 5.4 m AHD with FFL of 5.7 m AHD due to other site constraints, which is well above the minimum FFL to satisfy the flood protection criteria of 4.5 m AHD recommended in the report.

The report has adopted a more stringent criterion than the City of Botany Bay *Guidelines for the Design of Stormwater Drainage Systems within City of Botany Bay* (2002), by using the 100 year ARI flood level with Climate Change Impacts including a 300mm freeboard as it is an industrial development. While the City of Botany Bay does not have separate criteria for industrial developments, it is common practice in many Sydney councils to assign the criteria of a 300mm freeboard above the 100 year ARI for industrial developments within Development Control Plans (as opposed to Residential developments which have 500mm freeboard).

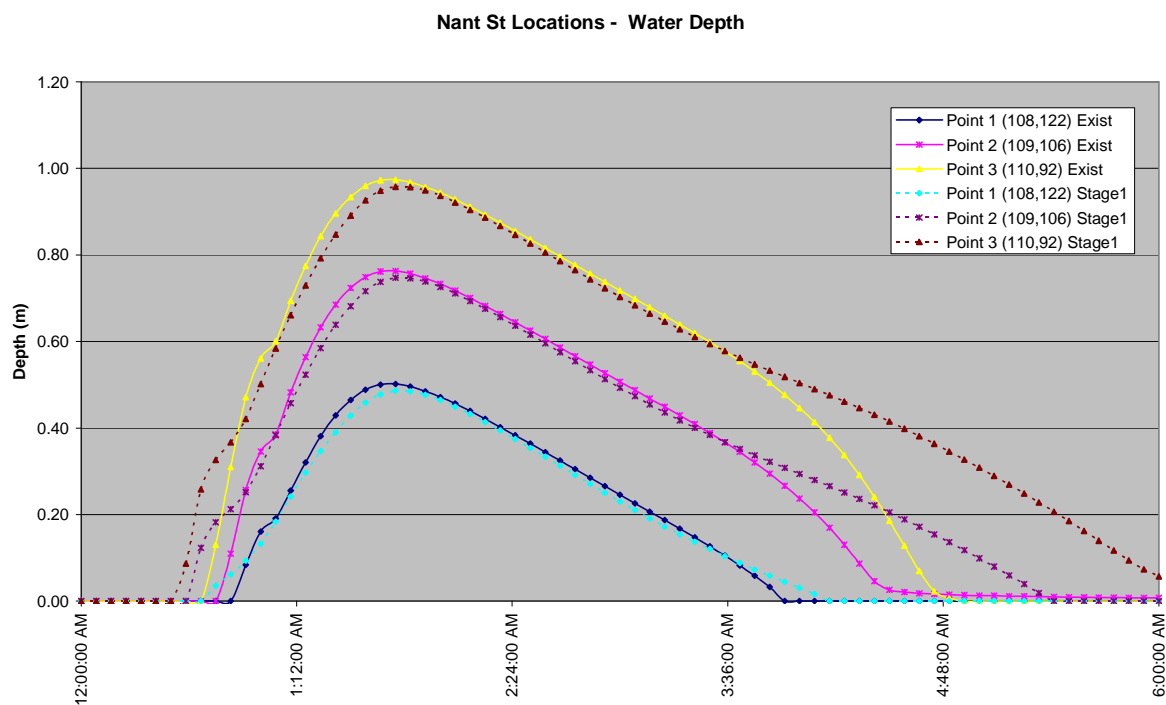
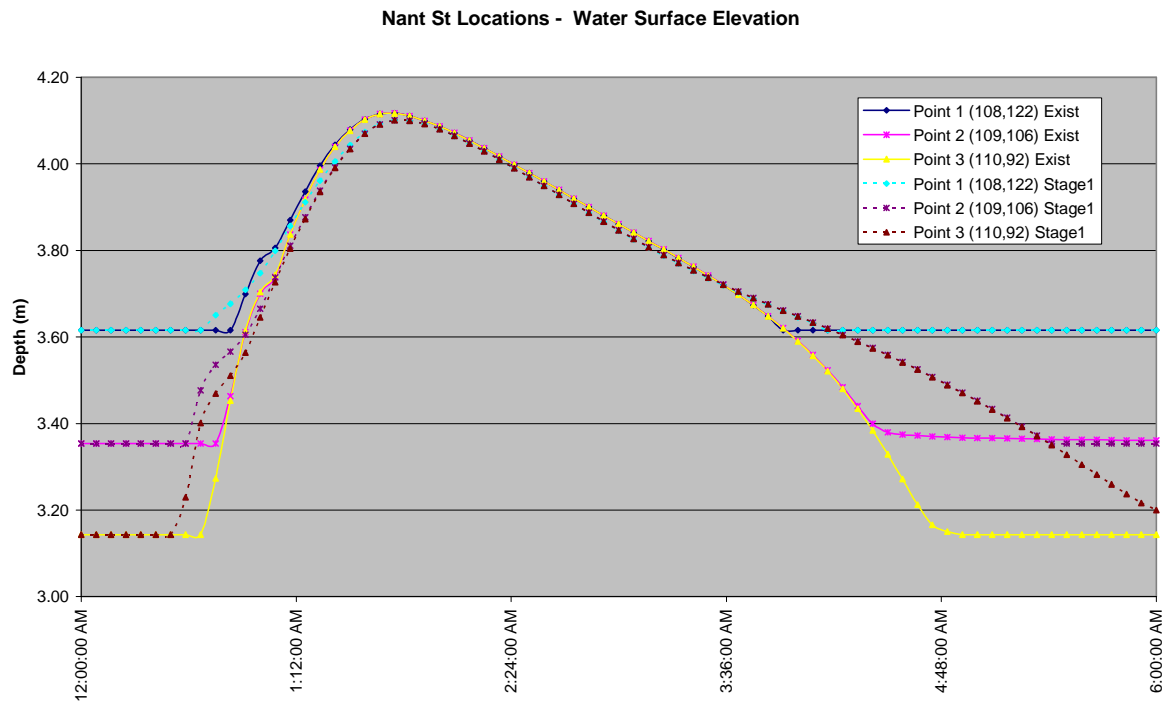
Nant Street Flow Parameters

The attached plots show the flow depths, velocities and flood hazard for flows across Nant Street at 3 locations for the Existing and Stage 1 development scenarios. The locations are at the northern end (Point 1), in the middle (Point 2) and at the southern end (Point 3) of Nant Street along the western edge of the Stage 1 detention basin.

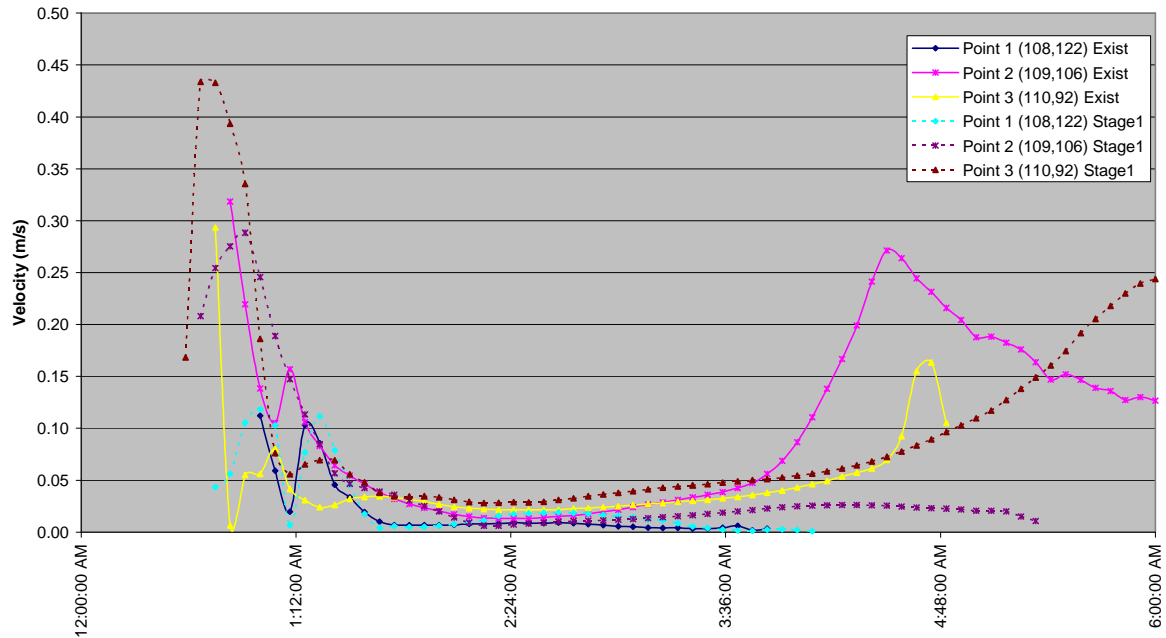
With the increased volume of the Stage 1 detention basin area, a greater flow is expected during the filling stage than currently exists. This is associated with a marginal increase in velocities sustained over the duration of the hydrograph, however, with flow depths remaining similar. Calculation of the Flood Hazard (Velocity x Depth) shows that for both Existing and Stage 1 scenarios, the flood hazard is well below 0.5 at all locations which falls comfortably within the acceptable range. In addition, velocities are generally less than 0.3 m/s and predominantly less than 0.1 m/s for flows over Nant Street during the filling and emptying cycle of the basin. Higher velocities are experienced in Stage 1, but associated with a small flow depth.

Nant Street provides gated vehicle access to the Nant Street tank farm for a single operator every day for half a day, as well as access to the Orica pipe network. There is no heavy vehicle access during normal operations. The tank farm is above 1:100 year level to provide a high point during flooding. Energy Australia also uses Nant Street to inspect and access its easement on occasion. As a result, it

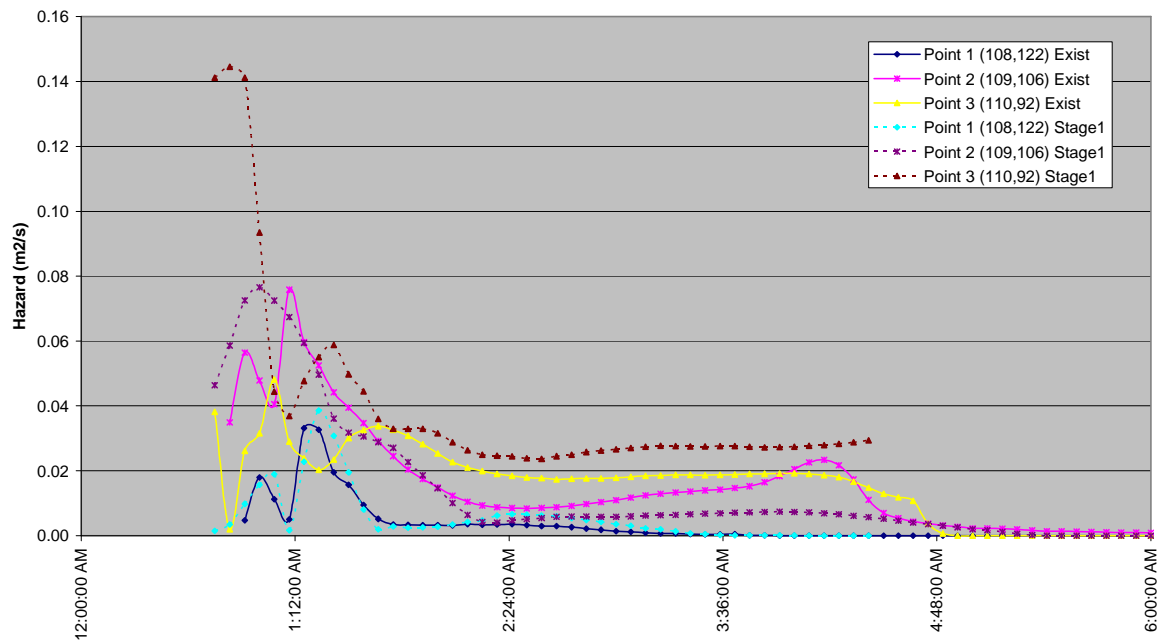
is expected that the affectation of flows over Nant St due to the proposal will be minimal considering the existing flooding and the low flood hazard (depth x velocity).



Nant St Locations - Velocity



Nant St Locations - Flood Hazard



WSUD Treatments

Opportunities for water treatment and re-use for the site are limited by the existence of contaminated ground water. The commercial/industrial zoning will not be able to utilise significant quantities of

treated water and recharge into the subsoil system will result in spreading of the underground contamination. The use of WSUD biofiltration techniques is thus not recommended for this project.

Future detailing of the proposed buildings may utilise the collection and re-use of small quantities of rainwater. However storage tanks must be located above ground to avoid excavations into contaminated subsoils. Similarly, landscaping should be confined to shallow plantings beds and irrigation limited to avoid seepage into the subsoils. The use of self watering tree pits and landscaping, utilising runoff from surface areas, could be considered in the detailed design.

I trust this information will be of assistance in your response to the NSW Department of Planning.

If you have any further queries, please don't hesitate to call me.

Regards,

A handwritten signature in black ink, appearing to read 'D Whyte'.

David Whyte

cc: Brendan Seage



Appendix 4: Correspondence regarding Source of Fill Material for Stage 1 Southlands Project Area:

- Proposal letter from Orica to Office of Environment & Heritage

Responses from:

- Office of Environment & Heritage
- Site Auditor

Botany Operations

Orica Australia Pty Ltd
ABN 99 004 117 828

16-20 Beauchamp Road
Matraville, NSW 2036 Australia
Direct Tel (02) 9352 2017
Fax (02) 9352 2361

13 April 2011

Mr Craig Lamberton
Office of Environment and Heritage
59-61 Goulburn Street
SYDNEY NSW 2000

cc Chris Ritchie (Planning and Infrastructure)
Bob Marr (Office of Environment and Heritage)
Niall Johnston (Office of Environment and Heritage)

Dear Craig,

CARPARK WASTE ENCAPSULATION PROJECT: RE-USE OF TREATED MATERIALS ON SOUTHLANDS

Further to previous discussions, I provide the following information with respect to the reuse of treated materials from the carpark waste encapsulation remediation project (CPWE Project) on the Southlands Site.

1.0 INTRODUCTION

The CPWE Project involves the excavation, treatment, validation and reinstatement of contaminated soils currently in the CPWE (a lined repository created ca 1980). It is anticipated that approximately 30,000 m³ of treated and validated material will be surplus to the reinstatement requirements for the project (AECOM, May 2009).

Under the current CPWE Project approval (CPWE Approval), Orica has permission to store these materials and beneficially re-use them on the Botany Industrial Park (BIP). However, the storage of these materials onsite may not be practically achievable.

The delays in the export of repackaged HCB waste have resulted in a shortage of available Orica-owned land on BIP. Consequently, the treated material might need to be placed in small stockpiles in many locations, including outside BIP, to accommodate the entire volume.

Orica has broadly discussed the possible reuse of the treated materials on Southlands with relevant sections and management within the Office of Environment and Heritage (OEH) (formerly the Department of Environment, Climate Change and Water (DECCW)) and Planning and Infrastructure. In general, the feedback has been that if the proposal is practical, has environmental benefits and can be performed legally, then it is likely to be supported.

The purpose of this document is to establish the merits of placement and beneficial reuse of CPWE-treated materials on the Southlands Site as an alternative to reuse on BIP. This document will provide the following:

1. A review of the suitability of the treated materials for placement on the Southlands Site with respect to its physical properties, chemical composition and environmental appropriateness and benefits;
2. An examination of the planning and licensing approvals required to facilitate reuse at the Southlands Site; and
3. A discussion of the benefits of the proposed placement of CPWE-treated materials on the Southlands Site compared to disposal at a licensed waste facility.

2.0 SUITABILITY OF CPWE-TREATED MATERIALS FOR REUSE ON SOUTHLANDS SITE

The placement of treated materials on BIP was proposed in the CPWE Remediation Action Plan (RAP) (AECOM, 2009), which received approval and is referenced in Environment Protection Licence (EPL) 13263.

Both the land subject of CPWE Approval (CPWE Site) and the Southlands Site are zoned commercial/industrial and are separated only by a railway corridor.

The following provides a summary of the physical and chemical properties of the CPWE-treated material and comments on its suitability for reuse at the Southlands Site.

2.1 Physical Suitability

The excavation reinstatement process described in the CPWE RAP includes tests, such as compaction testing, to ensure the reinstatement method is geotechnically suitable. It is envisaged that the materials would also be suitable for use at the Southlands Site. Nevertheless, an assessment of the geotechnical suitability of the treated validated materials for use on Southlands Site would be completed following treatment.

2.2 Chemical Suitability

The CPWE RAP details Risk Based Site Criteria (RBSC) that were developed according to the proposed end use of the materials, such as buried engineering fill, or fill beneath a slab-on-grade building or fill in open-space sealed (or unsealed) areas. In 2009, URS completed an assessment to determine whether the RBSC derived to be protective of human health also provide adequate protection of groundwater. It was determined that in circumstances where the RBSCs derived to be protective of groundwater are less than the health-based RBSCs, the lower values should be adopted.

If the treated materials were to be reused at the Southlands Site, the requirements for protection of human health and the environment would be no different than reuse on BIP. Comparison with the Southlands Human Health and Environmental Risk Assessment (URS, 2009) indicates that the land use scenario and exposure pathways for the remediation of the CPWE Project area are very similar. Hence the RBSC established in the CPWE RAP are considered appropriate for beneficial reuse of material on Southlands. This would need to be approved by the appointed Site Auditor for the two projects.

2.3 Statutory Approvals

The planning approval pathway for the proposed reuse of CPWE-treated material on the Southlands Site involves:

- making the following changes to the relevant planning approvals:
 - modify the Minister's record of opinion dated 1 August 2006 defining the CPWE Project to include the remediation works relating to the Southlands Site
 - modify condition 7 of the CPWE Approval so as to authorise the movement of surplus treated materials soil to the Southlands Site; and
 - modify any Southlands Project Approval (or the Southlands application to allow the use of CPWE-treated materials on the Southlands Site (in addition to VENM or ENM); and
- making the following variations to the EPL:
 - vary EPL No 13263 so that the description of "Premises" under Condition A2.1 extends to cover the Southlands Site; and
 - when the filling of the Southlands Site with the CPWE-treated materials is complete, vary EPL No 13263 to return to its current form given that there would be no activities on the Southlands Site which would qualify as "scheduled activities" under the POEO Act.
 - Any material transported between the CPWE Site and the Southlands Site would be transported by licensed waste contractors.

Given the new Coalition State Government's plan to scrap Part 3A of the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act), it is currently uncertain how these planning approval changes would be facilitated. Orica assumes that a vehicle for project modification will be available and transitional measures will be in place for existing Part 3A projects.

3.0 DISPOSAL AT A LICENSED WASTE FACILITY

An alternative to the placement of the CPWE-treated validated material on the Southlands Site is the off-site disposal of those materials (after being appropriately assessed and classified in accordance with relevant regulations and guidelines) to a licensed waste facility.

4.0 CONCLUSION

In summary, Orica believes the placement of the CPWE-treated materials onto the Southlands Site is an acceptable proposition as:

- Southlands is adjacent to the BIP, and the two sites are separated only by a railway corridor. Both sites are owned by Orica and have identical zoning.
- The materials, when treated, will meet approved RBSC and will be protective of groundwater and human health for commercial industrial applications. The appointed contaminated sites auditor will need to approve the RBSC for use on the Southlands Site, however, as the land use is the same, this is not expected to be a problem.
- There is no increased environmental risk associated with the placement of the treated materials on Southlands or incorporating them as fill in the proposed Southlands development.
- In fact, there are significant environmental benefits in the placement of the treated validated materials on the Southlands Site. For example, it will offset the requirement to fill the Southlands Site with VENM for flood mitigation, resulting in lower greenhouse gas emissions and avoiding the consumption of VENM. This makes the proposal to place treated material on the Southlands Site sustainable because it will reduce the number of truck movements along roads which would have been required for transporting VENM, ENM and other fill to the Southlands Site. The alternative, disposal at landfill, is not consistent with a precautionary approach because the contaminated materials will be transported off-site, will result in significantly higher greenhouse emissions, will not be compatible with waste hierarchy set out in the Waste Avoidance and Resource Recovery Act 2001 (NSW), and will place an unnecessary strain on VENM supplies and landfill resources.

- There is a regulatory approval pathway to facilitate this proposal.
- The proposal will give the community additional comfort that contamination from the CPWE Project is being addressed in a sustainable manner.

Orica would like to meet with OEH and Planning & Infrastructure as soon as possible to agree to the regulatory approach and discuss how to proceed with this proposal. Please contact myself or Steve Corish to arrange a convenient time.

Yours sincerely



Graeme Richardson
General Manager

Attachment 1 Comparison of Options for CPWE Materials - Post Treatment

Table 1 Comparison of Options for CPWE Materials – Post Treatment

Parameter	Current Approved Approach Storage on BIP	Alternative 1 Placement on Southlands Site	Alternative 2 Disposal to Licensed Landfill
Practicality	<p>The treated validated materials are currently proposed to be stored on BIP (AECOM, May 2009). However, the long term storage of the materials might not be able to be facilitated in one location on BIP. This has been exacerbated by the delays in the export of the repackaged HCB waste. The materials might have to be stored in several discrete locations and large stockpiles could be visible from public roads.</p> <p>Furthermore, the materials could, in the long-term, provide restrictions to beneficial use of parcels of land or they might have to be moved in future.</p>	<p>The treated validated materials can be placed and reused on the Southlands site in an area not designated for development, such as the northern portion of Block 1 if considered appropriate by the geotechnical engineers, in lieu of VENM and in accordance to principles of the RBSC.[</p> <p>All materials will be verified as meeting the nominated site risk based criteria by the Site Auditor.</p>	<p>The treated validated materials can be disposed offsite to a licensed landfill subject to the materials being appropriately assessed and classified.</p>
Regulatory Approvals	<p>This option was proposed as part of the CPWE RAP (AECOM, 2009), which received approval and is referenced in the CPWE Remediation EPL No 13263.</p> <p>No further approvals are required.</p>	<p>In order to implement this option, it would be necessary to:</p> <ul style="list-style-type: none"> • modify the Minister's Record of Opinion dated 1 August 2006 defining the CPWE Project to include the remediation works relating to the Southlands Site; • modify the CPWE Project Approval; • modify the Southlands Project Approval (or the application); • vary EPL No 13263 so that the description of "Premises" under Condition A2.1 extends to cover the Southlands Site; and • once filling of Southlands Site has been completed, vary EPL NO 13263 back to its current form. <p>Given the anticipated changes to Part 3A of the EP&A Act, it is currently uncertain how these planning approval changes would be facilitated, although Orica assumes there will be appropriate transitional provisions in place to address modification of Part 3A approvals.</p>	<p>Disposal of the materials will be subject to the materials being classified in accordance with the NSW DECCW Waste Classification Guidelines (2009).</p>
Geotechnical Suitability	<p>There are no geotechnical requirements for long-term storage onsite. If the materials are reused, they would have to be assessed and determined to be suitable for the proposed use (eg. road base or for under a building slab).</p>	<p>An assessment would be required to ensure the treated validated materials are geotechnically suitable for the proposed redevelopment.</p>	<p>There are no geotechnical requirements for disposal offsite to a licensed landfill.</p>
Environmental	<p>Risk Based Site Criteria (RBSC) have been developed according to the proposed end use of the materials. The RBSC are protective of groundwater and human health.</p>	<p>No variation in environmental risk compared to re-use on BIP. If placed on the Southlands Site the materials would likely be re-used in an engineered cap.</p> <p>This option offsets the requirement for the importation of an additional 30,000 m³ of Virgin Excavated Natural Materials (VENM) for the Southlands development. Currently VENM is not freely available in Sydney in large quantities. It is likely that any imported VENM would require transportation over significant distances.</p> <p>Furthermore, placement on the Southlands Site would result in significantly less greenhouse gas emissions. An estimated 220,000 km of road travel by trucks would be conserved.</p>	<p>This is the least environmentally appropriate option. The transport of the materials a significant distance across Sydney to an appropriate landfill site will result in the emission of significantly higher greenhouse emissions. Upwards of 250,000 km of truck road travel would be required.</p> <p>It also (avoidably) exhausts some of Sydney's limited landfill resources.</p>
Waste Hierarchy - Avoidance and Resource Recovery Act (2001):	<p>This option fits with the waste hierarchy however only in that the materials are not being disposed of to landfill. Consequently, the landfill will have greater capacity to receive higher priority waste materials. Avoidance or resource recovery does not occur with this option.</p>	<p>This option is the most desirable outcome in regards to the waste hierarchy. The benefits of this option are similar to the proposed storage on BIP.</p> <p>Avoids transportation of VENM to the Southlands Site, and is therefore, more sustainable because it would reduce the number of truck movements along the roads which would have been required for transporting VENM, ENM and/or other fill to the Southlands Site..</p>	<p>This option is the poorest fit with the waste hierarchy. Disposal is the least desirable option for the treated validated materials.</p>
<ul style="list-style-type: none"> • Avoidance • Resource Recovery • Disposal 			



Office of
Environment
& Heritage



Our reference: DOC11/18695
Contacts: Craig Lamberton, (02) 9995 5593
Niall Johnston, (02) 9995 5651

Mr Graeme Richardson
General Manager - Botany Operations
Orica Australia Pty Ltd
16-20 Beauchamp Road
Matraville NSW 2036

Dear Mr Richardson

Re: Carpark Waste Encapsulation Project: Reuse of Treated Materials on Southlands

Thank you for your letter of 13 April 2011 in relation to Orica's proposal to reuse treated material from the Carpark Waste Encapsulation (CPWE) remediation project by placement at Southlands.

To enable the reuse of the treated material at Southlands you have identified that Environmental Protection Licence (EPL) No. 13263, which relates to the CPWE remediation project, will need to be varied to include Southlands in the premises details.

The Office of Environment and Heritage (OEH) generally accepts the environmental benefits outlined in your proposal and given that until recently Southlands and the CPWE area were part of the same licensed premises, OEH has no objections in principle to amend EPL No. 13263 as proposed. However, such acceptance is contingent on the following:

- Orica obtaining all necessary approvals (including any required amendments to existing approvals) from the relevant planning consent authority; and
- Orica obtaining written advice from the accredited site auditor engaged for the two projects providing comment on the suitability of the use of the treated material at Southlands in the context of the proposed site use.

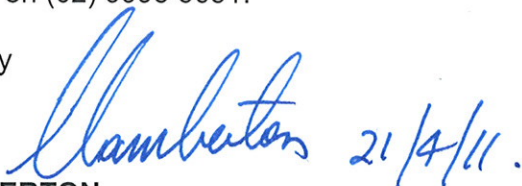
As you would be aware, there is mixed community sentiment regarding the proposed redevelopment of Southlands. Consequently, OEH considers that it will be important for Orica to discuss the proposed reuse of the treated material with the relevant community group/s at an appropriate stage of the project.

We suggest that Orica discusses planning approval matters with the Department of Planning and Infrastructure. We would be available to attend a meeting if further clarification of our position on this matter is required.

The Department of Environment, Climate Change and Water is now known as the Office of Environment and Heritage, Department of Premier and Cabinet

If you have any questions regarding the matters discussed in this letter please call me on (02) 9995 5593 or Niall Johnston on (02) 9995 5651.

Yours sincerely

A handwritten signature in blue ink, which appears to read 'C. Lamberton', followed by the date '21/4/11'.

CRAIG LAMBERTON
Director Specialised Regulation
Environment Protection and Regulation
Office of Environment and Heritage
Department of Premier and Cabinet

Cc Chris Ritchie, Department of Planning and Infrastructure



C.M. Jewell & Associates Pty Ltd

A.C.N. 056 283 295 A.B.N. 54 056 283 295

Water and Environmental Management

1/13 Kalinda Road, Bullaburra, NSW 2784, Australia

P.O. Box 10, Wentworth Falls, NSW 2782

Phone: (02) 4759 3251 Fax: (02) 4759 3257

Email: postie@cm-jewell.com.au

Ref: J1393.8L

17 May 2011

Orica Australia Pty Ltd
16-20 Beauchamp Road
MATRAVILLE NSW 2036

Attention: Mr Graeme Richardson

Dear Graeme

Car Park Waste Encapsulation Project: Re-use of Treated Materials on Southlands

As requested, I have reviewed Orica's letter to the Office of Environment and Heritage (OEH) dated 13 April 2011, and reply from OEH dated 3 May 2011.

I am the accredited site auditor engaged for both the Car Park Waste Encapsulation (CPWE) and Southlands projects.

Subject to review of the validation data for the treated material from the CPWE (as those data become available in the course of the treatment process) and subject to consideration of the placement level of the treated materials in relation to the water table and the final ground surface level, I consider that, in principle, the treated material from the CPWE project should be suitable for re-use on Southlands.

Confirmation of material suitability will be provided when both the treatment validation data and placement locations are available.

This communication has been provided as interim advice only. Where applicable, the information provided is consistent with NSW EPA (OEH) guidelines and policies. The advice does not constitute a site audit report or site audit statement and does not pre-empt the conclusions which will be drawn at the end of the audit process. A site audit report and site audit statement will be issued when the audit process has been completed.

For and on behalf of
C. M. JEWELL & ASSOCIATES PTY LTD

CHRIS JEWELL

Site Auditor accredited under the
Contaminated Land Management Act 1997

Principal: Chris Jewell BSc MSc Cgeol MIWEM

Appendix 5: Statement of Commitments

(as per submission November, 2010)

3. SUMMARY OF PROJECT AMENDMENTS IN RESPONSE TO SUBMISSIONS

Based on the submissions raised the following amendments and commitments have been made by Orica, as a response to the submissions:

- **VPA Letter of Offer** – Orica has provided a letter of offer setting out the terms of a proposed VPA between Orica, the Minister and Botany Bay City Council;
- **Nant Street Corridor** - Orica note that Botany Bay City Council has now confirmed that it does not at this stage wish to sell Nant Street. Therefore the Nant Street public road corridor does not form part of this Application;
- **Green and Golden Bell Frog Pond Design:** It is proposed that artificial, above ground ponds be installed. This style of pond has been used successfully at Sydney Olympic Park and at Davistown (on the Central Coast). An above ground pool has logistical advantages of not needing to disturb ground soil and being higher than normal flood levels during heavy rain events. They also have an ecological advantage in that an elevated pond can exclude many terrestrial competitors, such as Striped Marsh frogs (*Limnodynastes peronii*). A logistical disadvantage of these ponds is that they cannot usually be filled by natural run-off, and will have to be filled from either town water, or from roof captured water. Roof captured water is preferred as this can better simulate natural flooding events in the local area.

Assuming above ground ponds are used as now proposed, more than two ponds should be established. The ponds would be set up so that the overflow from the first pond feeds the second pond at each location at the Southlands site: in this way a variety of water depths are achieved at the site.

As the Southlands site is proposed to be developed for a warehouse, with secure fencing there is little fear of vandalism to these ponds.

- **Landscape Management Plan for Stage 3 area** - Orica commits to preparing a landscape management plan for the Stage 3 area and will include in that a staged approach to the screening of the under-utilised portions of the site.
- **Urban Design Review by BBCC Panel** - Orica has no objection to Botany Bay Council's Urban Design Review Panel independently reviewing the architectural merits of the buildings at each stage, prior to the issuance of a Construction Certificate for new staged building works, in terms of elevational treatments.
- **Anti Graffiti Condition** - Orica raises no objections to a standard condition of consent from Botany Bay City Council in respect of anti-graffiti coating. Council is to provide the Department of Planning with an anti-graffiti coating condition to be included in any consent granted. The condition would generally be as follows:
 - (a) *A detailed Schedule of Finishes and Colours must be submitted to Council for approval prior to issuing the construction certificate in respect of the new buildings to be erected on the site.*
 - (b) *The Schedule of Finishes shall consist of samples of materials cross referenced with manufacturers details and product code. The Schedule shall*

include detailed facade treatment, anti graffiti coatings and green screens where required to prevent the application of graffiti to the buildings.

(c) The detailed Colour Scheme is to be shown in the form of detailed coloured building elevations, cross-referenced with a colour sample chart showing manufacturers details and product code.

- **Standard Noise Criteria** - Orica raised no objection to the following standard Condition in respect of Noise Criteria being a condition of consent of any consent issued.

Standard Noise Criteria Adopted by Council

(a) The operation of all plant and equipment shall not give rise to an equivalent continuous (L Aeq) sound pressure level at any point on any residential property greater than 5dB(A) above the existing background L A90 level (in the absence of the noise under consideration).

(b) The operation of all plant equipment when assessed on any residential property shall not give rise to a sound pressure level that exceeds L Aeq 50dB(A) day time and L Aeq 40dB(A) night time.

(c) The operation of all plant and equipment when assessed on any neighbouring commercial/industrial premises shall not give rise to a sound pressure level that exceeds L Aeq 65dB(A) day time/night time. For assessment purposes, the above L Aeq sound levels shall be assessed over a period of 10 -15 minutes and adjusted in accordance with EPA guidelines for tonality, frequency weighting, impulsive characteristics, fluctuations and temporal content where necessary.

- **Truck Movements** - Orica raised no objection to a Condition relating to Stage 1 in respect of truck movement routes, noted by Botany Bay City Council as follows:

The Truck movements shall be restricted:

- (i) Inward movements: Foreshore, Exell Street, Botany Road and McPherson*
- (ii) Outward movements: McPherson Street, Exell Street, Botany Road, Foreshore Drive*

- **Conditions raised by the DECCW in respect of Remediation issues and Green and Golden Bell Frogs** – Generally agreed to proposed conditions but with some proposed amendments. (see comments on Submission 16. DECCW, Environment Protection and Regulation dated 7/10/09 and Submission 17. DECCW, Environment Protection and Regulation dated 13/10/09)
- **Conditions raised by NSW Office of Water** – Generally agreed to proposed conditions but with some proposed amendments. (see comments on Submission 19. NSW Office of Water dated 4/11/09)
- **Review of Flood Impacts** – At the request of the DoP and some submissions from neighbours, further more detailed flood analysis has been undertaken updating previous flood modelling with new 2D flood modelling. This work has been undertaken in consultation with independent flood consultants engaged by the DoP. As a result of this work, the following modifications have been made to the Site Plan for the Stage 1 area:
 - The rear vacant area behind the northern warehouse areas which includes two easements has been increased in width by 6 metres (ie. increased rear building setback of 6 metres) to allow additional flood flow area between

Floodvale and Springvale drains. To offset this area the northern warehouse areas have been marginally increased to the west by up to 10 metres;

- Setback of the northern warehouse buildings/carparks has been set to a minimum of 18 metres from Coal Pier Road;
 - The removal of the Nant Street access road and Springvale Drain crossing in favour of access to the rear warehouse areas by use of the adjoining Coal Pier Road;
 - Introduction of a weir within Springvale Drain upstream of McPherson Street to facilitate the hydraulic function of the design to utilise the Stage 1 detention area to mitigate the flood impacts of the project.
- **Amendments to the Site Plan (Stage 1) and Subdivision Plan**
To facilitate the above-mentioned variations required by the flood modelling and to provide a greater range of warehouse types in Stage 1, the proposed site layout and resulting subdivision plan has been altered to now show development on six (6) parcels of land in Stage 1.
 - The six parcels of land either front MacPherson Street or have access to Coal Pier Road. The proposed subdivision pattern now reflects this layout.
 - The resulting warehouse, ancillary office space, parking and loading areas has been redesigned to allow the delivery of each warehouse on the individual lots. The resulting plan is depicted in the Preferred Project Plan and maintains the general layout as previously proposed with only a minor reduction in GFA (500 m²) from the previously submitted proposal;
 - Car parking has been maintained at the previous rates identified in the Project Application and is now dedicated to each individual parcel of land to suit the GFA proposed for that warehouse; and
 - Nant Street access for Stage 1 has been removed as a result of the flood study recommendations and access to the rear warehouse Lots 1 and 2 is now from Coal Pier Road;

The Stage 3 area is still not proposed for any new development by way of this Project Application. However the subdivision layout has been amended to divide this Lot into two areas to allow flexibility in dealing with potential uses in the future. Any development on the Stage 3 area would be the subject of a separate Project Application.

- **Selection of Fill Material**

This commitment (Selection of Fill Material) revised: refer to Section 3.3 of Preferred Project Plan (Rev 7) June 2011

Significant filling works are proposed as part of Stage 1 and 2 to realise the required design flood levels. The Environmental Assessment accompanying the Application proposed that this material be Virgin Excavated Natural Material (VENM). The validation of the material was to be the matter of review by the Environmental Auditor.

It is proposed to amend the requirement for the sole use of VENM in favour of any material that has been validated by the Environmental Auditor as being suitable for placement on the Southlands site.

Appendix 6: List of Acronyms

ABS	Australian Bureau of Statistics
ACM	Asbestos Containing Materials
AHC	Australian Heritage Council
AHD	Australian Height Datum - a standard reference point for the elevation of a location.
AHIMS	DECC Aboriginal Heritage Information Management System
ANZECC	Australian and New Zealand Environment Conservation Council
APM	Australian Paper Manufacturers
Aquifer	An underground geological formation that contains water and is capable of yielding water to a well or spring; a water bearing formation.
Aquitard	A low permeability unit that can store groundwater and also transmit it slowly from one aquifer to another.
Asbestos Waste	Under the current (DECC NSW, 2008) Waste Guidelines (refer definition for Waste Guidelines) Asbestos Waste is any waste that contains asbestos. Asbestos Waste is a type of Special Waste.
Attenuation	The removal or reduction of contaminants in groundwater with time and with distance travelled.
BCA	Building Code of Australia
BGC	Botany Groundwater Cleanup Project
Bioremediation	Removal of in situ organic contamination by utilising naturally occurring or specifically engineered or introduced bacteria.
BIP	Botany Industrial Park
BLEP	Botany Local Environmental Plan 1995
Block 1	The portion of the parcel of land known as Southlands located to the east of Springvale Drain.
Block 2	The portion of the parcel of land known as Southlands located to the west of Springvale Drain.
Botany Groundwater Cleanup (BGC) Project	The project to hydraulically contain and treat CHC contaminated groundwater in a Groundwater Treatment Plant (GTP) on BIP, and its associated infrastructure requirements, including groundwater extraction, effluent disposal and treated water distribution.
Botany Sands	The stratigraphical name given to unconsolidated sediments comprised predominantly of sand which underlie BIP and adjoining areas.
BTEX	BTEX is an acronym for benzene, toluene, ethylbenzene, and xylene
CoBB	Council of the City of Botany Bay
CEMP	Construction Environmental Management Plan
Central EDC Plume	Plume inferred to originate from the EDC storage tanks
CFM	Trichloromethane (Chloroform)
Chain-of-Custody	Procedure to ensure that samples are traceable from the sample collection through to laboratory analysis and reporting.
CHC	Chlorinated Hydrocarbon
Chemical Reduction	Degradation of chemicals in an oxygen deficient environment.
CLM Act	Contaminated Land Management Act 1997
CPWE	Car Park Waste Encapsulation
CTC	Tetrachloromethane (Carbon Tetrachloride)
dBA	decibels above reference noise level
DCP	Development Control Plan
DECC	NSW Department of Environment and Climate Change (formerly known as

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Department of Environment and Conservation (DEC)	the Department of Environment and Conservation (DEC)) and incorporating the NSW Environment Protection Authority.
DEWHA	now NSW Department of Environment and Climate Change (DECC)
DEUS	Commonwealth Department of the Environment, Water, Heritage and the Arts
DEWR	NSW Department of Energy, Utilities and Sustainability. Divisions of this department were combined with divisions of DNR to form the DWE in April 2007.
Discovery Cove	Commonwealth Department of Employment and Workplace Relations (now known as Department of Education, Employment and Workplace Relations (DEEWR))
Dissolved Phase	Discovery Cove Industrial Estate. This refers to the parts of Discovery Cove required for works within the Estate related to the Project for the New Link Road and access arrangements, associated internal re-configuration works, demolition / building services works to accommodate the New Link Road and new car parking arrangements.
DNAPL	See Aqueous Phase
DNAPL Source Zones	Dense Non-Aqueous Phase Liquid - an organic chemical or mixture of organic chemicals that does not readily mix with water and is heavier than water.
DNR	Zones where residual or free phase DNAPL is present
DoP	NSW Department of Natural Resources. Divisions of the DNR were combined with divisions of DEUS to form the DWE in April 2007.
Drawdown	NSW Department of Planning
DTD	A lowering of the water table of an unconfined aquifer or the potentiometric surface of a confined aquifer caused by pumping from wells.
DWE	Direct Thermal Desorption
EAR	NSW Department of Water and Energy
EC	Environmental Assessment Requirements
ECRTN	Environmental Consultant
EDC	Environmental Criteria for Road Traffic Noise
EHC	1,2-Dichloroethane (Ethylene Dichloride), an intermediate compound in the production of vinyl chloride.
EMP	Environmentally Hazardous Chemicals
ENCM	Environmental Management Plan
ENM	NSW Environmental Noise Control Manual
	Excavated Natural Material is naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:
	<ul style="list-style-type: none"> - been excavated from the ground; - contains at least 98% (by weight) natural material; and - does not meet the definition of VENM.
	ENM does not include material that has been processed or contains acid sulphate soils or potential acid sulphate soils.
EPA	Environment Protection Authority (incorporated into the Department of Environment and Climate Change (DECC))
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EP&A Regulation, EP&A Regs	Environmental Planning and Assessment Regulation 2000
EPBC	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
ESA	Environmental Site Assessment
ESD	Ecologically Sustainable Development

Exclusion Zones	<p>Areas of the Site which either require additional protective measures or may require the adoption of additional occupational health and safety requirements and work practices. The zones primarily correspond to:</p> <p>Areas where there is a potential for exposure to dusts or noxious vapours; and</p> <p>Other areas of the Site which are affected by emissions from the works being undertaken by the Remediation Contractor.</p>
Extraction Pump	Pump associated with extraction well system.
Extraction Well	A well installed to enable in-situ groundwater remediation by the extraction of groundwater. Extraction wells assist in the control of a migrating plume.
Flow Lines	Direction of groundwater flow.
Flow Path	The direction in which groundwater is moving.
Former MCS site	Former MCS land being Part Lot 2, DP 740747, to the south of the Southlands Site, proposed to be used for a portion of the New Link Road. Formerly owned by MCS and used for container storage. Currently owned by Trust Company of Australia Limited as custodian of the TGA1 Property Trust (a Goodman managed Trust).
Free Phase DNAPL	DNAPL saturation exceeding the capillary pressure of the soil.
FSR	Floor Space Ratio
GCP	Groundwater Clean up Plan – Plan prepared in response to Notice of Clean Up Action (NCUA).
General Solid Waste (non-putrescible)	Material classified as General Solid Waste (non-putrescible) in accordance with the DECC NSW (2008) Waste Guidelines.
General Solid Waste (putrescible)	Material classified as General Solid Waste (putrescible) in accordance with the DECC NSW (2008) Waste Guidelines.
Geology	The study of the earth as a whole, its origin, structure, composition and history, and the nature of the processes which have given rise to its present state.
Goodman	Goodman International Limited
Gradient	The rate of inclination of a slope. The degree of deviation from the horizontal.
Groundwater	Water beneath ground surface.
Groundwater Extraction Exclusion Area (formerly Groundwater Protection Zone 1)	Area of groundwater as defined by NSW Department of Water and Energy (DWE) (formerly DIPNR), during August 2003, for which there is an exclusion on the extraction of groundwater except for remediation purposes.
GTP	Groundwater Treatment Plant - A chemical treatment plant required to be constructed for the ex situ treatment of groundwater from hydraulic containment as required by the Notice of Clean Up Action (NCUA).
Hazardous Waste	Material classified as Hazardous Waste in accordance with the DECC NSW (2008) Waste Guidelines.
HCB	Hexachlorobenzene
HCBD	Hexachlorobuta-1,3-diene
HCE	Hexachloroethane
Heavy Ends	Waste stream from solvent manufacturing, which includes HCB, HCBD and HCE.
Heggies	Heggies Australia Pty Ltd
Heritage Act	Heritage Act 1977
HHRA	Human Health Risk Assessment
HIPAP No. 4	Hazardous Industry Planning Advisory Paper No 4. Risk Criteria for Land Use Planning.
Hydraulic Conductivity	A coefficient of proportionality describing the rate at which water can move through a permeable medium.
Hydraulic Containment	Measures taken to lower the potentiometric surface and/or water table and

	effect hydraulic capture of the contaminant plume (as defined in the NCUA).
Hydraulic Gradient	The change in total head in an aquifer with the change in distance in a given direction.
Hydrocarbon	Organic chemicals such as benzene or tetrachloroethene that contain atoms of carbon and hydrogen.
Hydrogeology	The study of the interrelationships of geological materials and processes with water, especially groundwater.
Hydrology	The study of the occurrence, distribution and chemistry of all waters of the earth.
Inorganic	A chemical substance that does not contain carbon.
INP	NSW Industrial Noise Policy
LA10	The noise level which is exceeded for 10% of the sample period.
L _{Aeq}	The equivalent continuous sound level (L _{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment.
LEP	Botany Bay Local Environmental Plan
LGA	Local Government Area
Lithology	The geological (physical) character of a rock or soil.
LPG	Liquid Petroleum Gas
MCS	Maritime Container Services Pty Limited
Microgram (µg)	One thousandth part of a milligram (mg) one millionth part of a gram (g); one billionth part of a kilogram (kg).
Migration	The movement of materials (e.g. water, gas or contaminants in soil) from one location to another.
ML	Megalitres
Monitoring Well	A well installed to routinely observe groundwater levels or to systematically collect water samples and analyse these for chemical pollution.
MPB	Material Public Benefits
NAPL	Non-Aqueous Phase Liquid - An organic chemical or mixture of organic chemicals that does not readily mix with water.
NCUA	Notice of Clean Up Action – Notice issued by the NSW Environment Protection Authority under Section 91 of the Protection of the Environment Operations Act 1997. The notice (No. 1030236) was issued on 26 September 2003 to Orica.
NEPC	National Environment Protection Council
New Link Road Site	The site proposed for the New Link Road, being Part Lot 1 873989 (former MCS land) and Part Lot 2, DP 740747 and part crossing of SWSOOS – Part Lot 1, DP 663644.
NH&MRC	National Health and Medical Research Council
NP&W Act	National Parks and Wildlife Act 1974
NPWS as part of DECC	NSW Heritage Office and National Park and Wildlife Service
NT	National Trust
OEMP	Operation Environmental Management Plan
Organic Compound	A carbon containing compound.
Orica	Orica Australia Pty Ltd
PCA	Primary Containment Area – Block 2 Southlands
PCE	Tetrachloroethene (Perchloroethene)
PFM	Planning Focus Meeting
PHA	Preliminary Hazard Analysis
Piezometer	A well with a short slotted screen for measuring a potentiometric surface or elevation of the water table.

Plume	A mass of contaminated water extending outward from the source of the contamination.
Plume Axis	Inferred centre line of a dissolved phase groundwater contamination.
POEO Act	Protection of the Environment Operations Act 1997
Porosity	The ratio of the volume of void spaces in a rock or sediment to the total volume of the rock or sediment.
Potentiometric Surface	An imaginary surface representing the total head of groundwater and defined by the level to which water will rise in a well.
Precision	The degree to which a measurement is reproducible.
Primary Containment Area	The primary containment area is defined in the NCUA as Block 2 of Southlands.
Proponent	Orica Australia Pty Limited and its successors or assigns
Pure Phase Solubility	Aqueous solubility of a single organic compound.
RAP	Remediation Action Plan
Recharge	Replenishment of an aquifer by a natural process such as addition of water at the ground surface, or by an artificial system such as addition through a well.
REF	Review of Environmental Factors
Restricted Solid Waste	Restricted Solid Waste Material classified as Restricted Solid Waste in accordance with the DECC NSW (2008) Waste Guidelines.
RTA	Roads and Traffic Authority
RVP	Remediation Validation Plan
Saturated Zone	An underground geologic formation in which the pore spaces or interstitial spaces in the formation are filled with water under pressure equal to or greater than atmospheric pressure.
SCA	Secondary Containment Area - The area defined in the NCUA as "the location where the EPA approved contaminant works upgradient of Botany Bay and Penrhyn Estuary, for the interception and containment of contaminant plumes that have migrated or may migrate beyond the primary containment area, are carried out".
Screen	Perforation in a well casing and usually located near the bottom of the well or at selected depths to tap perched aquifers.
Section A Site Audit Statement	Refer to <i>Site Audit Statement</i>
Section B Site Audit Statement	Refer to <i>Site Audit Statement</i>
Semi-volatile Compound	An organic compound which has a low potential to form a vapour at room temperature.
SEPP 33	State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
SEPP 55	State Environmental Planning Policy No. 55 – Remediation of Land
SEPP 64	State Environmental Planning Policy No. 64 – Advertising and Signage
SEPP 66	The Draft State Environmental Planning Policy No. 66 – Integration of Land Use and Transport
SEPP Major Projects	State Environmental Planning Policy (SEPP) 2005 (Major Projects)
Site	The component of the Project relating to the Southlands property comprising Lot 1 in Deposited Plan (DP) 254392, Lot 1 in DP 1078077, Lot 1 in DP 85542, Lot 11 in DP 109505, Springvale that passes through Southlands, unformed Public Road – Nant Street. Referred to as the Southlands Site or the Site. Other components of the Project include the New Link Road Site and Discovery Cove and former MCS land.
Site Audit	Site auditors review the work of contaminated site consultants. The CLM Act calls these reviews 'site audits' and defines a site audit as an independent review:

(a) that relates to investigation or remediation carried out (whether under the CLM Act or otherwise) in respect of the actual or possible contamination of land, and
(b) that is conducted for the purpose of determining any one or more of the following matters:

- (i) the nature and extent of any contamination of the land
- (ii) the nature and extent of the investigation or remediation
- (iii) whether the land is suitable for any specified use or range of uses
- (iv) what investigation or remediation remains necessary before land is suitable for any specified use or range of uses
- (v) the suitability and appropriateness of a plan of remediation, a long-term management plan, a voluntary investigation proposal or a remediation proposal.

The main products of a site audit are a 'site audit statement' and a 'site audit report'.

Site Auditor	An independent third party technical reviewer (for land contamination issues) who is accredited by the DECC, NSW under the Contaminated Land Management Act 1997.
Site Audit Statement	<p>A site audit statement is the written opinion by an accredited site auditor, on a DECC-approved form, of the essential findings of a site audit. There are two types of Site Audit Statement (Section A or Section B) that can be prepared.</p> <p>A Section A Site Audit Statement is used where site investigation and/or remediation has been completed and a conclusion can be drawn regarding the suitability of the land use(s).</p> <p>A Section B Site Audit Statement is used when the audit is completed to determine the nature and extent of contamination and/or the appropriateness of an investigation or remediation action or management plan and/or whether the site can be made suitable for a specified land use or uses subject to the successful implementation of a remedial action or management plan.</p>
Solvay	Solvay Interlox Pty Ltd
Southlands	A parcel of land bisected by Springvale Drain and lies to the west of the BIP. Orica purchased the land from Australian Paper Manufacturers (APM) in 1980. Refer to Site.
Southlands Remediation and Development Project	The Project to which this Environmental Assessment relates comprising remediation of the Southlands Site and development of an industrial / warehousing facility in stages and associated works, and New Link Road (and associated works) part of Stage 2 as described in this Environmental Assessment.
Special Waste	Special Waste is Material that is classified under the current (DECC NSW, 2008) Waste Guidelines (refer definition for Waste Guidelines) with unique regulatory requirements. Special Wastes are: clinical and related waste; asbestos waste; and waste tyres.
SSHSEP	Site Specific Health, Safety and Environment Plan
Stratigraphy	The study of rock and soil strata, especially their distribution, deposition and age.
SWC	Sydney Water Corporation
SWSOOS	South Western Sydney Ocean Outfall Sewer
TCE	Trichloroethene
TOC	Total Organic Carbon
Topography	The relief and contour of the land surface.
Transmissivity	The transmission rate of water (based on a unit width of an aquifer) relative to a hydraulic gradient.
Trip Blank	Type of field blank used to check if samples have been cross-contaminated with volatile contaminants during handling and transit between the field and laboratory. A trip spike typically comprises a sample of deionised water supplied by the laboratory in a laboratory sample bottle.

TSC	NSW Threatened Species Conservation Act 1995
Unconfined Aquifer	An aquifer whose upper level can extend to ground surface.
Unsaturated Zone	The area between ground surface and the underground water table. Interstitial spaces in this zone contain moisture (water) and air.
VC	Vinyl Chloride (Chloroethene)
VENM	Virgin Excavated Natural Material. This includes natural material (such as clay, gravel, sand, soil and rock) that is not mixed with any other type of waste and that has been excavated from areas of land that are not contaminated as a result of industrial, commercial, mining or agricultural activities and that do not contain sulphidic ores or soils.
VFAs	Volatile Fatty Acids
VOC	Volatile Organic Compounds
Volatile Compound	Chemical with sufficiently low vapour pressure to become a gas at room temperature.
Waste Guidelines	DECC, NSW (2008) Waste Classification Guidelines: Part 1 Classifying Waste. During April 2008 the DEC NSW Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes (2004) were replaced by these guidelines.