



Douglas Partners
Geotechnics | Environment | Groundwater

Phase 1 Contamination Assessment

IMAX Theatre, 31 Wheat Road
Darling Harbour

Prepared for
Grocon Group

Project 73201.01
February 2012

Integrated Practical Solutions





Douglas Partners

Geotechnics | Environment | Groundwater

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

Signature	Date
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Table of Contents

	Page
1. Introduction	1
2. Scope of Works	1
3. Site Identification and Location	2
4. Geology, Topography and Hydrogeology	2
4.1 Groundwater Bore Search	2
4.2 Acid Sulphate Soils	3
5. Review of Previous Investigations	3
5.1 Discovery Village	3
5.2 Theatre Development	4
6. Site History	4
6.1 Aerial Photograph Record	4
6.2 Historical Title Deed Search	5
6.3 NSW WorkCover Dangerous Goods	7
6.4 Council Section 149 (2) and (5) Certificates	7
6.5 Regulatory Notices Search	8
6.6 Council Records Search	8
7. Site Observations	9
8. Areas of Environmental Concern	9
9. Conclusion and Recommendations	10
10. Limitations	10
 Appendix A: Drawing and Notes About this Report	
Appendix B: Groundwater Bore Search	
Appendix C: Aerial Photographs	
Appendix D: Historic Title Deeds	
Appendix E: WorkCover Dangerous Goods Search	
Appendix F: Section 149 (2) & (5) Certificates	
Appendix G: Site Photographs	

Phase 1 Contamination Assessment

IMAX Theatre, 31 Wheat Road, Darling Harbour

1. Introduction

This report presents the findings of a Phase 1 contamination assessment, undertaken for IMAX Theatre, 31 Wheat Road, Darling Harbour, New South Wales (hereon referred to as 'the site'). The assessment was commissioned by Mr Justin Clark of Grocon Group (Grocon) on 16 November 2012, and was undertaken in accordance with Douglas Partners' proposal dated 12 November 2012.

It is understood that the site is being considered for redevelopment for mixed commercial purposes, and the contamination assessment has been prepared to support the development application for the proposed redevelopment.

The objectives of the assessment were to assess the potential for contamination of the site based on past and present site use, assess the site's suitability for a mixed commercial use and to comment on the need for further investigation and / or management, if required.

2. Scope of Works

The scope of the Phase 1 contamination assessment comprised the following:

- A site walkover, in order to identify site features, site activities, and any potential contamination issues visually apparent;
- Identification of the property – street address and property description, name and address of the owner;
- Search of the current and historical titles and deposited plans to identify previous owners and potentially contaminating activities;
- Review of historical aerial photographs;
- Search of the Contaminated Lands Register for notices issued under the *Contaminated Lands Management Act 1997*;
- Conduct a search of the NSW office of Water's groundwater bore database for bores located in the vicinity of the site;
- Search the WorkCover database for records of any dangerous goods licences;
- Obtain and review Section 149 (2 and 5) planning certificates for the site;
- Request relevant Council records pertaining to the site; and
- Review general mapping information, including geological, acid sulphate potential, salinity and hydrogeological information.

This Phase 1 contamination assessment report has been prepared in general accordance with the published Environment Protection Authority NSW (EPA) endorsed guidelines.

3. Site Identification and Location

The site is bound by the Western Distributor to the north and south, and is currently occupied by the IMAX Theatre. The Darling Harbour wharf structure is located beneath the northern portion of the site. Stormwater culverts cross the central and western portions of the site in a north-south direction.

The site comprises Deposited Plan 862501 and Lots 401, 402, 403, 404 and 405 and is zoned Darling Harbour Plan No.1– under City of Sydney regional environmental plan under Schedule 6, Part 7, clause 23 of the *Environmental Planning and Assessment Act, 1979*, as amended.

The site is depicted in Drawing 1, Appendix A.

4. Geology, Topography and Hydrogeology

Reference to the Sydney 1:100,000 series geological sheet indicates that the site is located on an area of reclaimed land, which overlies Hawkesbury Sandstone bedrock. Hawkesbury Sandstone typically comprises medium to coarse grained quartz sandstone with minor shale and laminite lenses. Previous investigations on the site confirm the presence of filling overlying Hawkesbury Sandstone.

Reference to the Sydney 1:100,000 Soils Landscape Sheet indicates that the site is located within Disturbed Terrain, which is terrain heavily impacted by human activity including removal or burial of soil.

The existing site ground level is at approximately RL 2.5 m relative to the Australian Height Datum (AHD).

Cockle Bay lies approximately 25 m to the north of the site. The anticipated groundwater flow direction from the site is north towards Cockle Bay. However, given the proximity, it is likely that the groundwater beneath the site is tidal.

4.1 Groundwater Bore Search

The locations and details of groundwater bores at or near the site were searched on the database held on the Department of Water and Energy's website (previously held by the Department of Natural Resources) on 16 November 2012. Twelve (12) groundwater bores were located within a 1 km radius of the site and work summaries were available for the each bore. Details are provided in Appendix B.

Standing water levels (SWL) were provided for seven of the twelve wells. GW106911 is approximately 400 m south east of the site and was noted to be 10.50 m below ground level (bgl). GW100467 is approximately 500 m east of the site within sands and was noted to be 2.35 m bgl. GW107418 is

approximately 250 m east of the site and within sands and was noted to be 3.50 m bgl. Drillers logs supplied indicated that the lithology across the area generally comprised fill overlaying sand and sandstone bedrock.

4.2 Acid Sulphate Soils

The NSW Acid Sulphate Soil Risk map identifies the site as being within Disturbed Terrain (Soil Code X2). The legend for this classification states that soil investigation is required to assess acid sulphate soil potential.

5. Review of Previous Investigations

5.1 Discovery Village

In 1986 and 1987 DP undertook two geotechnical investigations in the area for the Discovery Village project in Darling Harbour. The results were included in the reports titled:

- *Report on Geotechnical Investigation, Discovery Village, Darling Harbour*, DP Report 9710, dated July 1986;
- *Report on Geotechnical Investigation, Discovery Village, Darling Harbour*, DP Report 9710-2, dated March 1987.

These investigations, in the area of the current proposed works, included two cored boreholes (DV12 and DV13), three augered boreholes (DV119, DC18 and DC21) and three Cone Penetration Tests which were continued from the base of shallow augered boreholes (DC16, DC17 and DC19).

The principal strata sequentially encountered (beneath pavement materials) comprised:

- Filling – Gravelly sand, clayey silty sand and crushed sandstone filling to depths of 1.9 to 4.0 m bgl;
- Alluvium – Very loose to loose silty clayey sand, and some soft dark grey organic marine clay (encountered in DV13, DV119, DC16 and DC17 only), to depths of 4.2 m to 6.7 m bgl;
- Residual – Dense, clayey sand to depths of 4.4 m to 6.9 m bgl; and
- Sandstone – Weak to medium strong and slightly fractured, to a maximum tested depth of 9.4 m bgl.

Groundwater was encountered at about 2.4 m depth (RL -0.2 m to -0.1 m) during drilling in boreholes DV12 and DV13.

No testing for contaminants was undertaken, however there were no visual indicators or odours noted to suggest significant contamination issues.

5.2 Theatre Development

In 1992 DP undertook a geotechnical investigation at the site for the IMAX Theatre. The results of the investigation were reported in:

- *Report on Geotechnical Investigation, Theatre Development, Darling Harbour*, DP Project 19013, dated November 1992.

The field investigation comprised five cored boreholes (Bores 1 to 5), two of which were abandoned due to encountering obstructions (Bores 2 and 4).

The principal strata sequentially encountered (beneath pavement materials) comprised:

- Filling – Gravelly sand, clayey silty sand and crushed sandstone filling to depths of 4.0 m to 4.6 m bgl;
- Alluvium – Soft to firm, dark grey organic marine clay, encountered to depths of 5.3 m to 6.5 m bgl;
- Residual – Dense, clayey sand in Bore 1 only; overlying
- Sandstone – Medium to high strength, slightly weathered to fresh and slightly fractured to unbroken to a maximum tested depth of 9.55 m bgl.

Groundwater was encountered at 2.15 m to 2.40 m depth (RL 0.15 m to 0.41 m) during the drilling.

No testing for contaminants was undertaken, however there were no visual indicators or odours noted to suggest significant contamination issues.

6. Site History

A review of historical information in relation to the site was based on historical aerial photographs, historical title deeds, a WorkCover Dangerous Goods database search, a search for regulatory notices (issued under the *Contaminated Lands Management Act 1997* [CLM Act] and *Protection of the Environment Operations Act 1997* [POEO Act]), and a review of Council's Section 149 (2) and (5) planning certificates and other Council records that were made available. The reviewed information is summarised in the following sub-sections.

6.1 Aerial Photograph Record

Historical aerial photographs from the years 1930, 1943 1951, 1961, 1968, 1972, 1986, 1999, 2004 and 2012 were obtained from the NSW Department of Lands Office, the NSW Government Land and Property SIX Viewer website and the Nearmap website. These photographs were studied in order to identify the likely past features and changes to the site (and to a degree surrounding lands), particularly those of a potentially contaminating nature. The findings are summarised below and copies of the aerial photographs are provided in Appendix C.

1930	The site is located at the south-eastern edge of the Cockle Bay finger wharves. The photograph is poor quality and specific site features cannot be clearly identified. The region surrounding the site, however, appears to be occupied by rail lines and associated buildings. At the time the site was owned by the Minister for Public Works, suggesting possibly a public domain.
1943	The image is clearer and it appears that the site area sits at the south-eastern end of one of the finger wharves as well as some access roads and other buildings. The area to the south and west of the site is heavily utilised as a rail network.
1951	A clearer image shows the site occupied by the southern tip of the finger wharf, vehicular and pedestrian traffic areas and part of a number of small buildings to the south. The surrounding land uses have not changed significantly since 1943.
1961	There is no significant change to the site and surrounding layout since 1951.
1968	There is no significant change to the site and surrounding layout since 1961.
1972	There is no significant change to the site and surrounding layout since 1968.
1986	The site has changed since 1972. The site area (and surrounds) appears to be used for the storage of materials and equipment associated with the redevelopment works along the Cockle Bay foreshore. An access road (likely for construction purposes) passes through the site. The site is situated between several Western Distributor overpasses, partially under construction. The extensive rail use noted in previous photographs in areas surrounding the site is no longer visible.
1999	The site is occupied by the IMAX building, which remains present today (2012). The Darling Harbour complex and foreshore, seen under construction in the 1986 photograph, has been completed and is in use. There is also a new building to the south of the site.
2009	The site and surrounds have not noticeably changed since 1999. The area to the south of the site is the process of being redeveloped, and is currently a construction site.
Present	The site and surrounds remain relatively unchanged since 2009. A new building has been constructed to the south of the site.

6.2 Historical Title Deed Search

A historical title deeds search was conducted for the site. The searches were undertaken by Mark Groll of Service First Registration Pty Ltd. The table below summarises the reported title deed information. A full copy is also provided in Appendix D.

Re: - 31 Wheat Road, Darling Harbour

Description: - Lot 401 D.P. 862501

As regards the part highlighted yellow on the attached copy of D.P. 862501

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Possible Site Use</u>
13.07.1904 (1904 to 1934)	Minister for Public Works	Commercial
17.07.1934 (1934 to 1985)	Sydney Harbour Trust Commissioners Now Maritime Services Board of New South Wales	Commercial

As regards remainder of the subject land

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Possible Site Use</u>
18.04.1910 (1910 to 1985)	Sydney Harbour Trust Commissioners Now Maritime Services Board of New South Wales	Commercial

Search continued as regards the whole of the subject land

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Possible Site Use</u>
28.06.1985 (1985 to date)	# Darling Harbour Authority Now # Sydney Harbour Foreshore Authority	Commercial / Retail

Denotes current registered proprietor

Easements: -

- 11.09.1996. Easement for Stormwater Drainage Purposes 11.3 wide and variable (D.P. 862501)

Leases continued: -

- 01.11.1933 to James Patrick and company Limited, term of 3 years to months, Berth 36A and 36B Darling Harbour – See D.P. 185348
- 12.09.1939 to James Patrick and company Limited, term 11.05.1938 expiring 31.12.1941, Berths 36A and 36B Darling Harbour – See D.P. 182383

Leases and sub leases have not been investigated from 13.09.1996 to-date.

Note:

During the course of our investigation of the early titles it was found that the land formed part of the actual Darling Harbour, being a jetty on piles, and reclaimed land as well.

The Harbour Title Volume 2050 Folio 103 Volume 5018 Folio 1 is extremely complex. However it would seem that this title may be identical to the title of the reclaimed land shown highlighted yellow of the attached copy of D.P. 862501.

6.3 NSW WorkCover Dangerous Goods

A search of the NSW WorkCover Dangerous Goods Database indicated that there were no dangerous goods stores or depots registered for the site.

WorkCover search documentation is provided in Appendix E.

6.4 Council Section 149 (2) and (5) Certificates

The section 149 (2) and (5) planning certificates for the site were obtained from City of Sydney Council and are dated 28 November 2012 (provided in Appendix F). The section 149 certificates show that Lots 401, 402, 403, 404 and 405 in Deposited Plan 862501 under City of Sydney Council, are zoned Darling Harbour Development Pan No.1. The site is located in the County of Cumberland, Parish of St Andrew. The land was noted to be subject to flood related development controls.

The following findings were made:

- The land does not comprise critical habitat;
- The land is not listed on the State Heritage Register;
- The land is not within a wilderness area;
- The land is not an item of environmental heritage;
- The land has not been reserved for a public purpose in an environmental planning instrument;
- The land has not subject to biobanking;
- The land is not excluded land identified by an environmental planning instrument;
- The land is identified as being land in a foreshore area;
- The land is not affected by any road widening or road realignment;
- The land is not affected by a policy that restricts development of the land because of the likelihood of land bushfire;
- No orders have been issued for the site under the Contaminated Land Management Act 1997.

Copies of the Section 149 planning certificates are included in Appendix F.

6.5 Regulatory Notices Search

The EPA publishes records of contaminated sites under section 58 of the CLM Act 1997 on a public database accessed via the internet. The notices relate to investigation and/or remediation of site contamination considered to pose a significant risk of harm under the definition in the CLM Act. More specifically, the notices cover the following:

- Actions taken by the EPA under Sections 15, 17, 19, 21, 23, 26 or 28 of the CLM Act;
- Actions taken by the EPA under Sections 35 and 36 of the Environmentally Hazardous Chemicals Act, 1985;
- Site audit statements provided to the EPA under Section 52 of the CLM Act on sites subject to an enforced declaration order.

A search of the public database was conducted on 19 November 2012 and revealed that the subject site was not listed.

It should be noted that the EPA record of notices for contaminated land does not provide a record of all contaminated land in New South Wales. At the time of preparing this report a total of 16 sites were registered within the LGA of Sydney City Council in the database.

The EPA also issues environmental protection licences to the owners or operators of various industrial premises under the POEO Act. Licence conditions relate to pollution prevention and monitoring, and cleaner production through recycling and reuse and the implementation of best practice.

The EPA has made available a public register of notices under Section 308 of the POEO Act. The register contains:

- Environmental protection licences;
- Applications for new licences and to transfer or carry existing licences;
- Environmental protection and noise control licences;
- Convictions in prosecutions under the POEO Act;
- The result of civil proceedings;
- Exemptions from provisions of the POEO Act or Regulations;
- Approvals granted under Clause 9 of the POEO (Control of Burning) Regulation;
- Approvals granted under Clause 7a of the POEO (Clean Air) Regulation.

A search of the register was conducted on 28 November, 2012 indicated that no licences were registered for the site.

6.6 Council Records Search

An application was made to City of Sydney Council to conduct a Council records search of the property to ascertain whether any potentially contaminating activities had occurred across the site. A

search by, and email provided by, Council on the 23 November 2012 indicated that no documents were found relating to environmental matters.

7. Site Observations

A site inspection was conducted by an environmental scientist from DP on 23 November 2012. Photographs were taken during the inspection and are included in Appendix G.

The site inspection indicated that the site was an operating movie theatre. The inspection indicated that the building had several operating business including café and restaurant along with the IMAX Theatre utilising the majority of the site. The building was in very good condition, with no visible signs of contamination.

There was a power generator behind the building that appeared to be quite new with no visible staining on the generator or around the base. There was a garbage disposal compaction unit that appeared to be well maintained, with the surrounding area not showing any visible staining or contamination.

8. Areas of Environmental Concern

The site appears to have mainly been used for commercial and light industrial purposes over time, including part of a finger wharf and partly for rail ancillary services. The site has also been filled as part of the Darling Harbour reclamation works. On this basis, the areas of environmental concern (AEC) identified for the site are as follows:

Table 1 – Areas of Environmental Concern

Location/Activity	Description	Potential Impacts	Potential Contaminants
Filling containing anthropogenic materials	Potential placement of imported materials from contaminated sources (i.e. general site filling) including ash, asbestos, metal wastes etc.	Soils, groundwater	Heavy metals, OCP, TPH, PAH, BTEX, PCB, Phenols, asbestos (general screen of unknown source materials)
Asbestos Materials	Potential surface soil contamination caused during the removal of old buildings. Potential contamination of imported fill by wastes including lagging and sheeting fragments (fibro).	Soils	Asbestos

Location/Activity	Description	Potential Impacts	Potential Contaminants
Rail yard / other light industrial activities	Potential infiltration of paint residue, solvents and stored chemicals.	Soil and Groundwater	Heavy metals, TPH, BTEX, PAH, VOC

Notes:

OCP	Organochlorine pesticides
PAH	Polycyclic aromatic hydrocarbons
TPH	Total petroleum hydrocarbons
BTEX	Benzene, toluene, ethyl benzene, total xylene
VOC	Volatile organic compounds
Heavy metals	Arsenic, cadmium, chromium, copper, lead, nickel, mercury, zinc

Previous investigations at the site by DP, albeit for geotechnical investigation purposes, did not uncover obvious signs of soil contamination, such as asbestos. As such, the potential soil impacts from the identified AEC are not considered likely to be significant.

Any groundwater impacts at the site are likely to be regional rather than site specific, based on the extensive former rail use beyond the site boundaries, and the tidal nature of the groundwater.

9. Conclusion and Recommendations

Based on the information obtained and the inspection of the site, it is considered that the site can be made suitable for the proposed redevelopment, from a contamination perspective, subject to appropriate management principals should contaminants be present. The potential for contamination at the site is considered to be related to imported filling and past light industrial uses.

In order to quantify the nature, extent and risk posed by contaminants at the site (if present) it is recommended that a soil and groundwater investigation (Phase 2 contamination assessment) be undertaken prior to construction commencing. Given the current access constraints it is recommended that the intrusive investigation be carried out following demolition and removal of all structures.

10. Limitations

Douglas Partners (DP) has prepared this report for this project at IMAX Theatre, 31 Wheat Road, Darling Harbour in accordance with DP's proposal dated 12 November 2012 and acceptance received from Mr Justin Clark dated 16 November 2012. The work was carried out under DP's conditions of Engagement. This report is provided for the exclusive use of Grocon Group for the specific project and purpose as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. DP has necessarily relied upon information provided by the client and/or their agents.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions

across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Douglas Partners Pty Ltd

Appendix A

Drawing and Notes About this Report



CLIENT: Grocon Group

OFFICE: Sydney

DRAWN BY: RJL

SCALE: NTS

DATE: Dec-12

TITLE: Site Drawing

IMAX Theatre, 31 Wheat Road, Darling Harbour

PROJECT No: 73201.01

DRAWING No: 1

REVISION: A

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

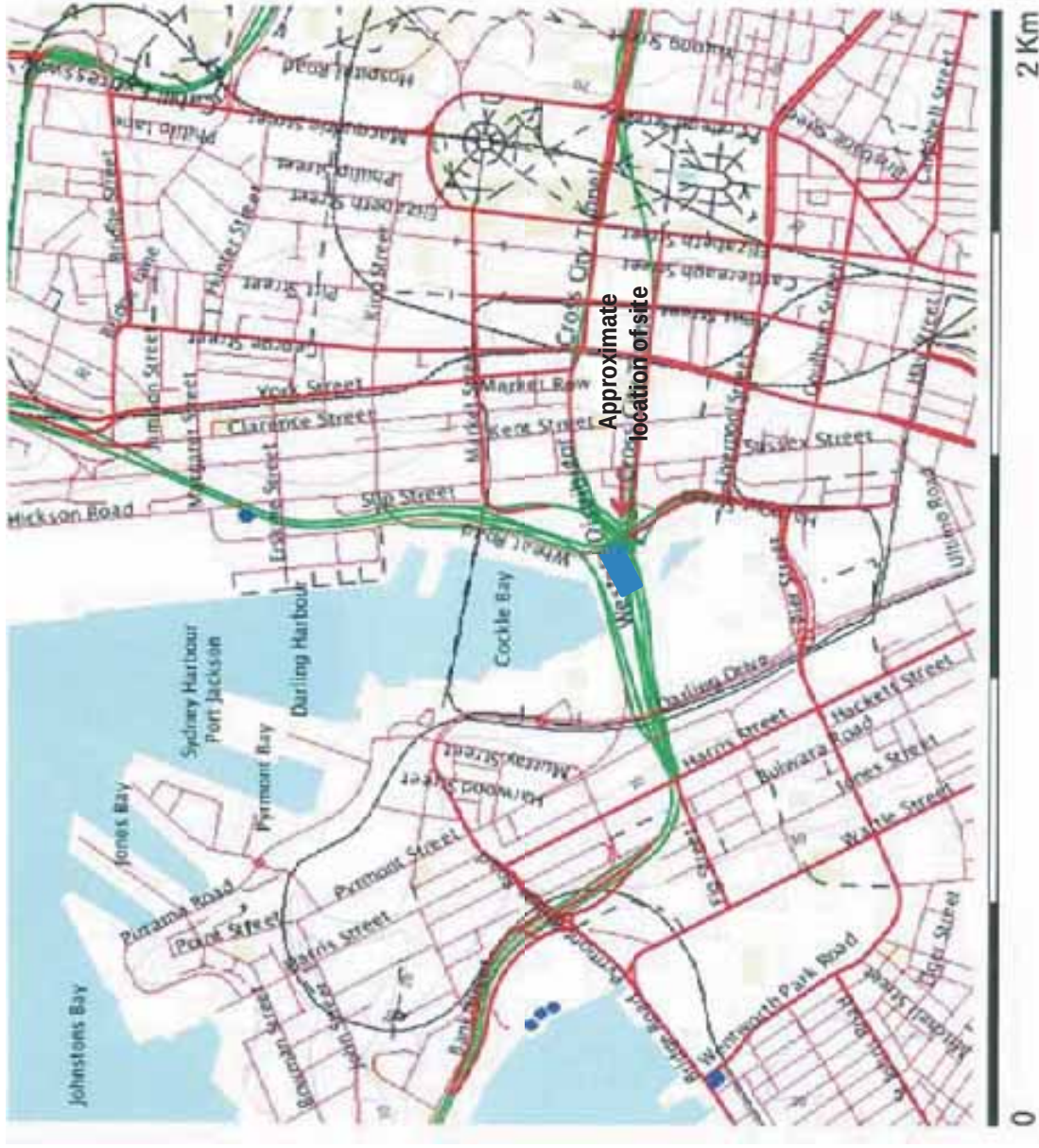
Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

Appendix B

Groundwater Bore Search



CLIENT: Grocon

OFFICE: Sydney

DATE: 19 Nov 2012

Ground Water Bore Search
Phase 1 Contamination Assessment
IMAX Theatre, Darling Harbour

PROJECT No: 73201.01

DWG No: 1

REVISION: A

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Friday, November 16, 2012

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW109087

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW109087
LIC-NUM 10BL602334
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS
CONSTRUCTION-METHOD
OWNER-TYPE Other Govt
COMMENCE-DATE
COMPLETION-DATE 2008-07-22
FINAL-DEPTH (metres) 8.50
DRILLED-DEPTH (metres) 8.50
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY SYDNEY WATER
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6251252.00
EASTING 333783.00
LATITUDE 33 51' 57"
LONGITUDE 151 12' 11"
GS-MAP

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST PHILIP
 PORTION-LOT-DP 1/87659

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST PHILIP
 PORTION-LOT-DP 1 87659

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	8.50	120			
1	1	Casing	P.V.C.	0.00	3.20	40			

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	1.00	1.00	FILL,CLAY MIXED WITH COARSE GRAVEL		
1.00	1.50	0.50	FILL SAND MEDIUM GRAINED		
1.50	2.20	0.70	FILL,SILTY SAND,MOIST,FIRM WITH GRAVEL		
2.20	3.50	1.30	FILL,SAND MEDIUM GRAINED,GREY/BROWN		
3.50	4.00	0.50	FILL,SILTY SAND,MOIST,LOOSE TO FIRM		
4.00	4.50	0.50	FILL,CRUSHED SANDSTONE		
4.50	5.90	1.40	SAND MEDIUM TO FINE ,SILT BROWN,CLAY		
5.90	7.00	1.10	CLAY,HIGH PLASTICITY,WET,SHELLS		
7.00	8.50	1.50	SAND,FINE TO MEDIUM GRAINED,BEIGE		

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Friday, November 16, 2012

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW109086

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW109086
LIC-NUM 10BL602334
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS
CONSTRUCTION-METHOD
OWNER-TYPE Other Govt
COMMENCE-DATE
COMPLETION-DATE 2008-07-22
FINAL-DEPTH (metres) 5.68
DRILLED-DEPTH (metres) 5.68
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY SYDNEY WATER
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6251262.00
EASTING 333781.00
LATITUDE 33 51' 57"
LONGITUDE 151 12' 11"
GS-MAP

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST PHILIP
 PORTION-LOT-DP 1/87659

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST PHILIP
 PORTION-LOT-DP 1 87659

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	5.80	120			
1	1	Casing	P.V.C.	0.00	3.20	40			

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.50	0.50	FILL,MEDIUM TO COARSE		
0.50	1.00	0.50	FILL,SILTY SAND		
1.00	1.80	0.80	FILL,CLAYEY SAND FINE GRAINED		
1.80	2.00	0.20	FILL,GRAVELLY SAND		
2.00	3.20	1.20	FILL,SAND WITH SOME SILT		
3.20	3.80	0.60	FILL SILTY SAND		
3.80	4.50	0.70	FILL CLAY SILT SAND MIXTURE		
4.50	5.68	1.18	SAND,FINE TO MEDIUM GRAINED		

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Groundwater Works Summary

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[Works Details](#) [Site Details](#) [Form A Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW109085

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW109085
LIC-NUM 10BL602334
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS
CONSTRUCTION-METHOD
OWNER-TYPE Other Govt
COMMENCE-DATE
COMPLETION-DATE 2008-07-22
FINAL-DEPTH (metres) 5.68
DRILLED-DEPTH (metres) 5.68
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY SYDNEY WATER
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6251263.00
EASTING 333786.00
LATITUDE 33 51' 57"
LONGITUDE 151 12' 11"
GS-MAP

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST PHILIP
 PORTION-LOT-DP 1/87659

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST PHILIP
 PORTION-LOT-DP 1 87659

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL DETAIL
1		Hole	Hole	0.00	5.68	120		
1	1	Casing	P.V.C.	0.00	3.20	40		

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL COMMENT
0.00	1.30	1.30	FILL,SILTY SAND MEDIUM TO COARSE	
1.30	2.10	0.80	FILL,SILT SAND CLAY MIXTURE	
2.10	2.20	0.10	FILL, SHINY GRAVEL ,BLACK SILT	
2.20	3.10	0.90	FILL,SILTY SAND BROWN RED	
3.10	4.00	0.90	FILL CLAY,GREY,BROWN,MOIST	
4.00	5.68	1.68	SAND,FINE TO MEDIUM	

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Groundwater Works Summary

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Document Generated on Friday, November 16, 2012

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW111329

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW111329
LIC-NUM	10BL604323
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	Equipped - bore used for obs
CONSTRUCTION-METHOD	Auger - Solid Flight
OWNER-TYPE	Other Govt
COMMENCE-DATE	
COMPLETION-DATE	2010-07-20
FINAL-DEPTH (metres)	6.00
DRILLED-DEPTH (metres)	6.00
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	SYDNEY FISH MARKETS
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6250560.00
EASTING	332704.00
LATITUDE	33 52' 19"
LONGITUDE	151 11' 28"
GS-MAP	

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 2//827434

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 2 827434

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	6.00	100			Auger - Solid Flight
1	1	Casing	Steel Stainless 316	0.00	3.00	50			Screwed Stainless Steel 304;
1	1	Opening	Slots - Horizontal	3.00	6.00	50			Casing - Machine Slotted; Screwed
1		Annulus	Waterworn/Rounded	2.00	6.00				Graded; GS: 0- 2mm

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.15	0.15	(UNKNOWN)		
0.15	1.50	1.35	FILL,SILTY SAND		
1.50	6.00	4.50	SANDSTONE		

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Friday, November 16, 2012

[Print Report](#)

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW111330

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW111330
LIC-NUM	10BL604323
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	Equipped - bore used for obs
CONSTRUCTION-METHOD	Auger - Solid Flight
OWNER-TYPE	Other Govt
COMMENCE-DATE	
COMPLETION-DATE	2010-07-20
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	4.00
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	SYDNEY FISH MARKETS
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6250538.00
EASTING	332729.00
LATITUDE	33 52' 20"
LONGITUDE	151 11' 29"
GS-MAP	

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 2//827434

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 2 827434

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	4.00	100			Auger - Solid Flight
1	1	Casing	Steel Stainless 316	0.00	1.00	50			Screwed Stainless Steel 316;
1	1	Opening	Slots - Horizontal	1.00	4.00	50			Casing - Machine Slotted; Screwed
1		Annulus	Waterworn/Rounded	0.00	0.70				Graded; GS: 0- 2mm

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.19	0.19	CONCRETE PAVEMENT ALL OVER		
0.19	2.50	2.31	FILL CLAYEY SAND, GRAVELLY		
2.50	4.00	1.50	SANDSTONE, LIGHT GREY		

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Groundwater Works Summary

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[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW111331

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW111331
LIC-NUM 10BL604323
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS Equipped - bore used for obs
CONSTRUCTION-METHOD Auger - Solid Flight
OWNER-TYPE Other Govt
COMMENCE-DATE
COMPLETION-DATE 2010-07-20
FINAL-DEPTH (metres) 6.00
DRILLED-DEPTH (metres) 6.00
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY SYDNEY FISH MARKETS
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6250509.00
EASTING 332742.00
LATITUDE 33 52' 21"
LONGITUDE 151 11' 30"
GS-MAP

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 2/827434

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 2 827434

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	6.00	100			Auger - Solid Flight
1	1	Casing	Steel Stainless 316	0.00	3.00	50			Screwed Stainless Steel 316;
1	1	Opening	Slots - Horizontal	3.00	6.00	50			Casing - Machine Slotted; Screwed
1		Annulus	Waterworn/Rounded	0.00	1.00				Graded; GS: 0- 2mm

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.29	0.29	CONCRETE PAVEMENT		
0.29	2.20	1.91	FILL SILTY SAND,SILTY GRAVEL		
2.20	5.30	3.10	SILTY SAND,SHELL FRAGMENTS		
5.30	6.00	0.70	SILTY CLAY,ORANGE BROWN		

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Groundwater Works Summary

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[Print Report](#)

[Works Details](#) [Site Details](#) [Form A Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW109649

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW109649
LIC-NUM	10BL602485
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	
CONSTRUCTION-METHOD	Auger - Hollow Flight
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2008-05-03
FINAL-DEPTH (metres)	7.20
DRILLED-DEPTH (metres)	7.20
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	WEST APARTMENTS PTY LTD
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	2.95
SALINITY	869.00
YIELD	1.00

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6249352.00
EASTING	333320.00
LATITUDE	33 52' 59"
LONGITUDE	151 11' 52"
GS-MAP	

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A (top)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 1/546296

Licensed (top)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 1 546296

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	7.20	100			Auger - Hollow Flight
1	1	Casing	PVC Class 18	0.00	1.10	61	51		Screwed; Seated on Bottom PVC Class 18; Casing - Machine Slotted; SL: 42mm; A: .2mm; Screwed
1	1	Opening	Slots - Horizontal	1.10	7.20	61			Graded; GS: 3- 5mm
1		Annulus	Waterworn/Rounded	1.00	7.20				

Water Bearing Zones (top)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
3.20	6.20	3.00		2.95		1.00			

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-	COMMENT
------	----	-----------	------	------	---------

			MATERIAL
0.00	4.80	4.80	FILL,GREY,BROWN,GRAVEL,CLAY,SILT
4.80	5.90	1.10	SILTY SAND,LT GREY,RED,MED COARSE GRAINED
5.90	7.20	1.30	SANDSTONE RED BROWN,WEATHERED WITH CLAY BANDS

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Groundwater Works Summary

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[Works Details](#) [Site Details](#) [Form A](#) [Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW109648

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW109648
LIC-NUM	10BL602485
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	
CONSTRUCTION-METHOD	Auger - Hollow Flight
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2008-05-03
FINAL-DEPTH (metres)	6.20
DRILLED-DEPTH (metres)	6.20
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	WEST APARTMENTS PTY LTD
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	5.23
SALINITY	1302.00
YIELD	0.50

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6249333.00
EASTING	333342.00
LATITUDE	33 52' 60"
LONGITUDE	151 11' 52"
GS-MAP	

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A (top)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 1//546296

Licensed (top)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 1 546296

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	6.20	100			Auger - Hollow Flight
1	1	Casing	PVC Class 18	0.00	2.60	61	51		Screwed; Seated on Bottom PVC Class 18; Casing - Machine Slotted; SL: 42mm; A: .2mm; Screwed
1	1	Opening	Slots - Horizontal	2.60	6.20	61			Graded; GS: 3- 5mm
1		Annulus	Waterworn/Rounded	1.00	6.20				

Water Bearing Zones (top)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
5.20	6.20	1.00		5.23		0.50			

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-	COMMENT
------	----	-----------	------	------	---------

			MATERIAL
0.00	2.90	2.90	FILL,BROWN/GREY,LOOSE GRAVEL,CONCRETE,SAND
2.90	4.90	2.00	SILTY CLAY,LT GREY,MOTT.BROWN HIGH PLASTICITY
4.90	5.80	0.90	SILTY SAND,LT GREY,MED COURSE GRAINED
5.80	6.20	0.40	SANDSTONE,RED,BROWN,WEATHERED,CLAY BANDS

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
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[Works Details](#) [Site Details](#) [Form A Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW109646

Works Details [\(top\)](#)

GROUNDWATER NUMBER	GW109646
LIC-NUM	10BL602486
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	
CONSTRUCTION-METHOD	Auger
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2008-05-03
FINAL-DEPTH (metres)	8.20
DRILLED-DEPTH (metres)	8.20
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	WEST APARTMENTS PTY LTD
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	5.93
SALINITY	1258.00
YIELD	1.00

Site Details [\(top\)](#)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6249293.00
EASTING	333312.00
LATITUDE	33 53' 1"
LONGITUDE	151 11' 51"
GS-MAP	

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 1/216724

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH ST ANDREW
 PORTION-LOT-DP 1 216724

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	8.20	100			Auger
1	1	Casing	PVC Class 18	0.00	1.10	61	51		Screwed; Seated on Bottom PVC Class 18; Casing - Machine Slotted; SL: 4.2mm; A: 2mm
1	1	Opening	Slots - Horizontal	1.10	8.20	61			Graded; GS: 3- 5mm
1		Annulus	Waterworn/Rounded	1.10	8.20				

Water Bearing Zones [\(top\)](#)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
6.30	8.20	1.90		5.93	1.00				

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO- MATERIAL	COMMENT
0.00	0.80	0.80	FILL,LT GREY,SAND,CONCRETE,BRICK,METAL FRAG.		

0.80	2.80	2.00	SILTY CLAY,BROWN,GREY,MED PLASTICITY
2.80	5.00	2.20	CLAYEY SAND,GREY/DARK GREY
5.00	8.00	3.00	SILTY SAND,LT GREY/RED
8.00	8.20	0.20	SANDSTONE,RED,BROWN,WEATHERED,CLAY BANDS

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
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[Works Details](#) [Site Details](#) [Form A](#) [Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW110373

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW110373
LIC-NUM 10BL160269
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Well
WORK-STATUS
CONSTRUCTION-METHOD Auger
OWNER-TYPE Private
COMMENCE-DATE
COMPLETION-DATE 2001-04-24
FINAL-DEPTH (metres) 4.00
DRILLED-DEPTH (metres) 4.00
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY N/A
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL 0.60
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6250126.00
EASTING 332590.00
LATITUDE 33 52' 33"
LONGITUDE 151 11' 24"
GS-MAP

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A (top)

COUNTY CUMBERLAND
 PARISH PETERSHAM
 PORTION-LOT-DP //75702

Licensed (top)

COUNTY CUMBERLAND
 PARISH PETERSHAM
 PORTION-LOT-DP A 83307

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	4.00	100			Auger
1	1	Casing	PVC Class 18	0.00	0.50	50			Screwed PVC Class 18;
1	1	Opening	Slots	0.50	4.00	50			Casing - Machine Slotted; A: .4mm; Screwed
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded; GS: .3- 4mm

Water Bearing Zones (top)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
0.60	4.00	3.40		0.60					

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	1.60	1.60	FILL,SANDY CLAY		
1.60	3.40	1.80	SILT,SATURATED BLACK		
3.40	3.70	0.30	SILTY SAND		
3.70	4.00	0.30	SANDY CLAY		

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
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[Works Details](#) [Site Details](#) [Form A](#) [Licensed Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW110370

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW110370
LIC-NUM 10BL160269
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Well
WORK-STATUS
CONSTRUCTION-METHOD Auger
OWNER-TYPE Private
COMMENCE-DATE
COMPLETION-DATE 2001-04-24
FINAL-DEPTH (metres) 4.00
DRILLED-DEPTH (metres) 4.00
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY N/A
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL 0.60
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6250123.00
EASTING 332598.00
LATITUDE 33 52' 33"
LONGITUDE 151 11' 24"
GS-MAP

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A (top)

COUNTY CUMBERLAND
 PARISH PETERSHAM
 PORTION-LOT-DP //75702

Licensed (top)

COUNTY CUMBERLAND
 PARISH PETERSHAM
 PORTION-LOT-DP A 83307

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	4.00	100			Auger
1	1	Casing	PVC Class 18	0.00	0.50	50			Screwed PVC Class 18; Casing - Machine Slotted; SL: 3.5mm; Screwed
1	1	Opening	Slots	0.50	4.00	50			Graded; GS: .3- 4mm; Q: 2m ³
1		Annulus	Waterworn/Rounded	0.00	0.00				

Water Bearing Zones (top)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
0.60	4.00	3.40		0.60					

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	2.10	2.10	FILL,SANDY CLAY		
2.10	3.30	1.20	SILT,BLACK		
3.30	3.50	0.20	SAND CLAYEY		
3.50	4.00	0.50	CLAY SANDY		

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
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[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW110372

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW110372
LIC-NUM 10BL160269
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Well
WORK-STATUS
CONSTRUCTION-METHOD Auger
OWNER-TYPE Private
COMMENCE-DATE
COMPLETION-DATE 2001-04-24
FINAL-DEPTH (metres) 4.00
DRILLED-DEPTH (metres) 4.00
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY N/A
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL 0.60
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6250121.00
EASTING 332606.00
LATITUDE 33 52' 34"
LONGITUDE 151 11' 24"
GS-MAP

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH PETERSHAM
 PORTION-LOT-DP //75702

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH PETERSHAM
 PORTION-LOT-DP A 83307

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	4.00	100			Auger
1	1	Casing	PVC Class 18	0.00	0.50	50			Screwed PVC Class 18;
1	1	Opening	Slots	0.50	4.00	50			Casing - Machine Slotted; A: .4mm; Screwed
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded; GS: .3- 4mm

Water Bearing Zones [\(top\)](#)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
0.60	4.00	3.40		0.60					

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	2.20	2.20	FILL,SILTY CLAY		
2.20	2.70	0.50	SANDY CLAY		
2.70	3.30	0.60	SILT,SOFT BLACK		
3.30	4.00	0.70	SILTY SAND		

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Groundwater Works Summary

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Document Generated on Friday, November 16, 2012

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[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW110371

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW110371
LIC-NUM 10BL160269
AUTHORISED-PURPOSES MONITORING BORE
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Well
WORK-STATUS
CONSTRUCTION-METHOD Auger
OWNER-TYPE Private
COMMENCE-DATE
COMPLETION-DATE 2001-04-24
FINAL-DEPTH (metres) 4.00
DRILLED-DEPTH (metres) 4.00
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY N/A
GWMA -
GW-ZONE -
STANDING-WATER-LEVEL 0.70
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 10 - SYDNEY SOUTH COAST
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6250115.00
EASTING 332598.00
LATITUDE 33 52' 34"
LONGITUDE 151 11' 24"
GS-MAP

AMG-ZONE 56
 COORD-SOURCE
 REMARK

Form-A [\(top\)](#)

COUNTY CUMBERLAND
 PARISH PETERSHAM
 PORTION-LOT-DP //75702

Licensed [\(top\)](#)

COUNTY CUMBERLAND
 PARISH PETERSHAM
 PORTION-LOT-DP A 83307

Construction [\(top\)](#)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
 ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE- NO	PIPE- NO	COMPONENT- CODE	COMPONENT- TYPE	DEPTH- FROM (metres)	DEPTH- TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	4.00	100			Auger
1	1	Casing	PVC Class 18	0.00	0.50	50			Screwed PVC Class 18; Casing - Machine Slotted; SL: 3.5mm; A: .4mm; Screwed
1	1	Opening	Slots	0.50	4.00	50			Graded; GS: .3- 4mm
1		Annulus	Waterworn/Rounded	0.00	0.00				

Water Bearing Zones [\(top\)](#)

FROM- DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK- CAT- DESC	S- W-L	D- D- L	YIELD	TEST-HOLE- DEPTH (metres)	DURATION	SALINITY
0.70	4.00	3.30		0.70					

Drillers Log [\(top\)](#)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	2.50	2.50	FILL,SANDY CLAY		
2.50	3.10	0.60	SILT,SATURATED BLACK		
3.10	4.00	0.90	SILTY SAND		

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Appendix C

Aerial Photographs



N

Phase 1 Contamination Investigation
 IMAX Theatre, 31 Wheat Road
 Darling Harbour

Project
 73201.01

December
 2012

Plate
 1
 1930

N ←



Phase 1 Contamination Investigation
IMAX Theatre, 31 Wheat Road
Darling Harbour

Project
73201.01

December
2012

Plate
2
1943



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Geotechnics - Environment - Groundwater



Phase 1 Contamination Investigation
 IMAX Theatre, 31 Wheat Road
 Darling Harbour

Project
 73201.01

December
 2012

Plate
 3
 1951



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Phase 1 Contamination Investigation
IMAX Theatre, 31 Wheat Road
Darling Harbour

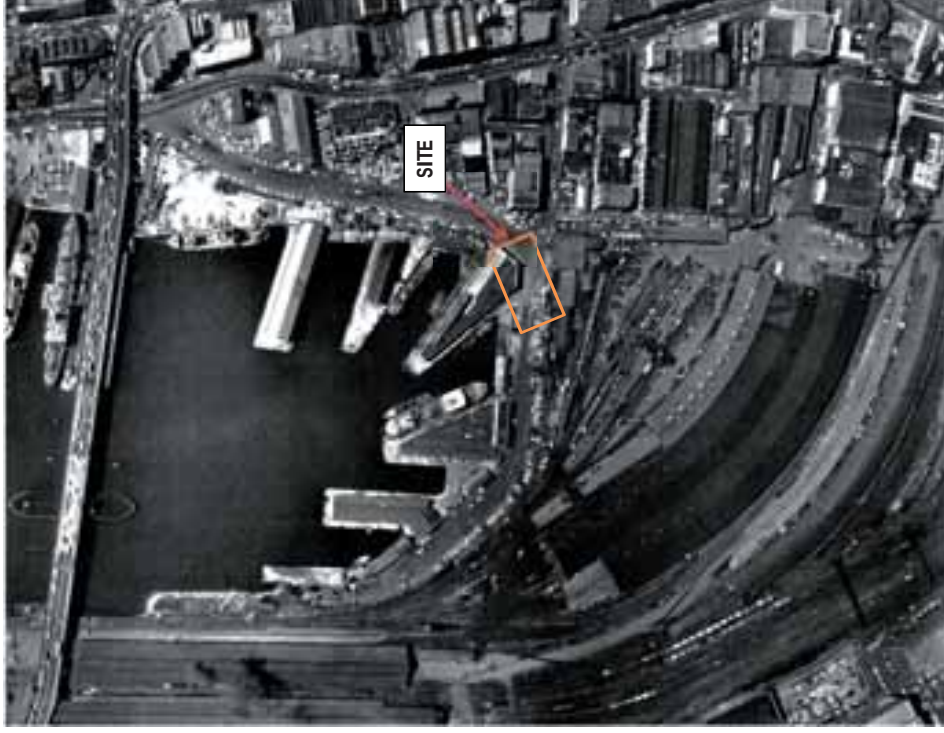
Project
73201.01

December
2012

Plate
4
1961



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Phase 1 Contamination Investigation
 IMAX Theatre, 31 Wheat Road
 Darling Harbour

Project
 73201.01

December
 2012

Plate
 5
 1968



N

Phase 1 Contamination Investigation
IMAX Theatre, 31 Wheat Road
Darling Harbour

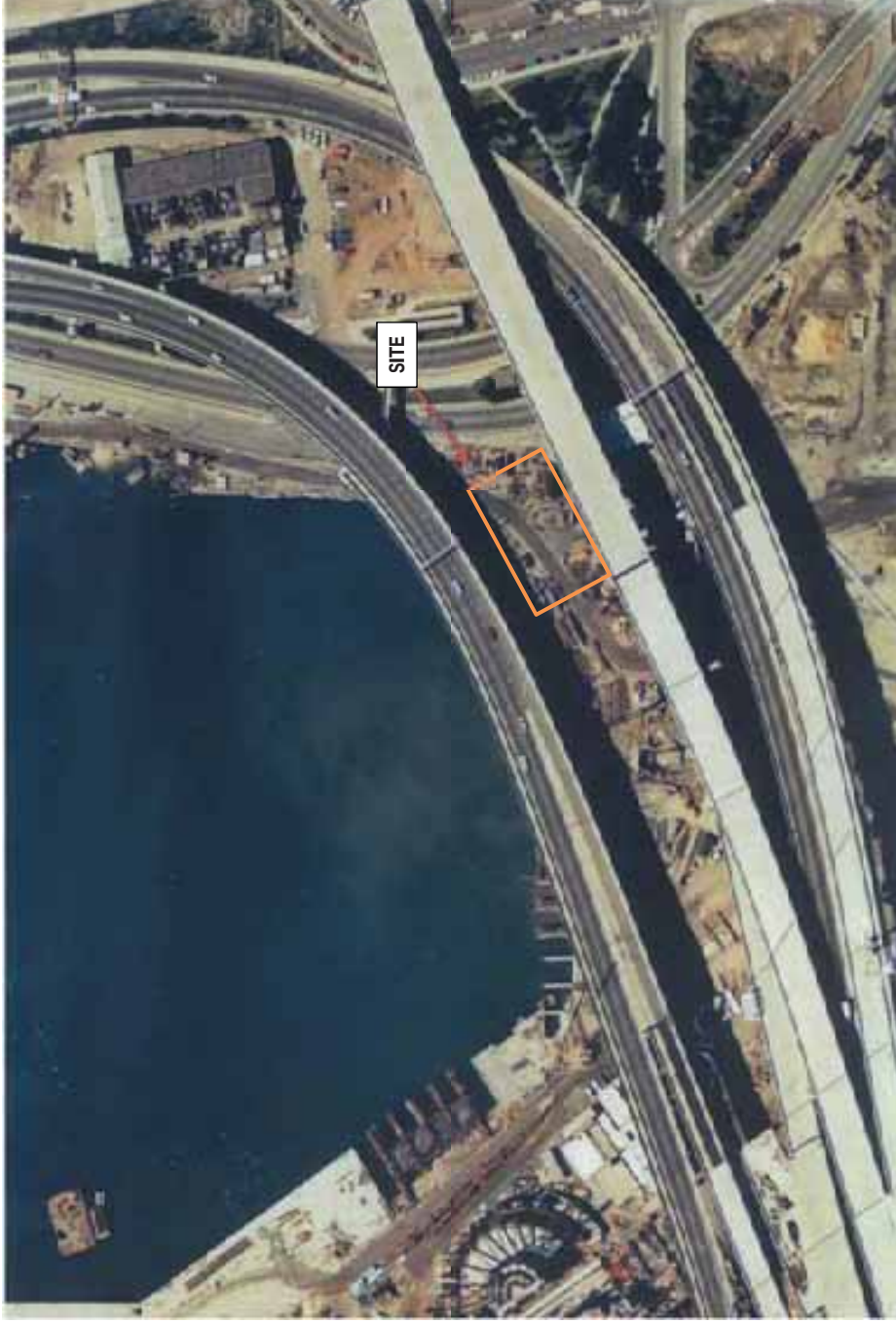
Project
73201.01

December
2012

Plate
6
1972



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N

Phase 1 Contamination Investigation
IMAX Theatre, 31 Wheat Road
Darling Harbour

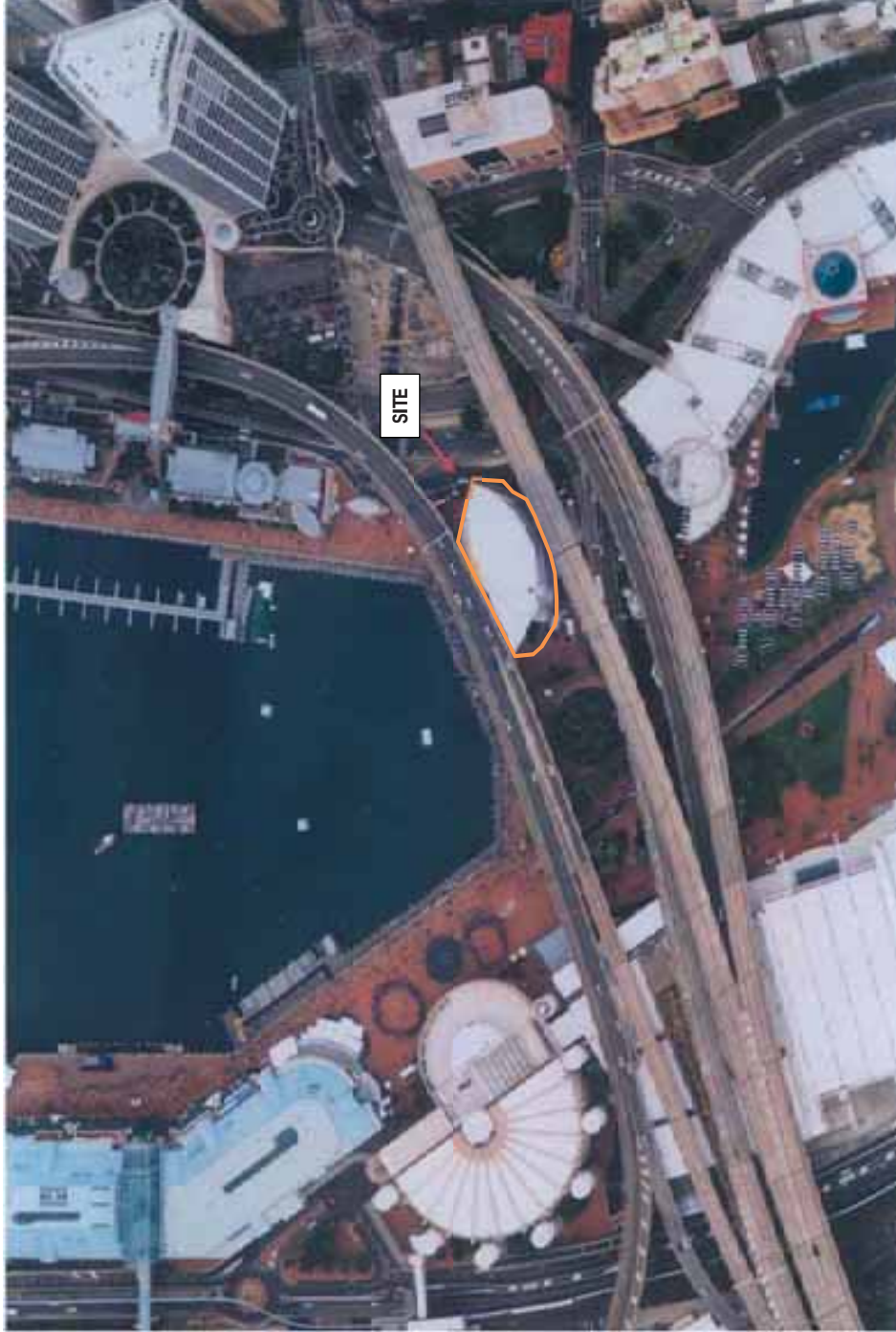
Project
73201.01

December
2012

Plate
7
1986



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N

Phase 1 Contamination Investigation
 IMAX Theatre, 31 Wheat Road
 Darling Harbour

Project
 73201.01

December
 2012

Plate
 8
 1999

↑ N



Phase 1 Contamination Investigation
IMAX Theatre, 31 Wheat Road
Darling Harbour

Project
73201.01

December
2012

Plate
9
2009



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Phase 1 Contamination Investigation
IMAX Theatre, 31 Wheat Road
Darling Harbour

Project
73201.01

December
2012

Plate
10
2012



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