ENVIRONMENTAL INVESTIGATION SERVICES

REPORT

TO

CAPITAL CORPORATION

ON

STAGE 1 PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT

FOR

PROPOSED MULTI-STOREY DEVELOPMENT

AT

2 AUSTRALIA AVENUE, SYDNEY OLYMPIC PARK

OCTOBER 2010

REF: E24351Krpt

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EXECUTIVE SUMMARY

Capital Corporation commissioned Environmental Investigation Services (EIS), a division of Jeffery & Katauskas Pty Ltd (J&K), to undertake a Stage 1 preliminary environmental site assessment to assess the likelihood of contamination of the subsurface soils for a proposed multi-storey development at 2 Australia Ave, Sydney Olympic Park.

The site is identified as Lot 56 in DP 1134933 and the adjacent Lot 72 in DP 1134933 and at the time of this investigation was occupied by an industrial/commercial building. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2.

EIS understands that the proposed development includes excavation for the construction of a new office/retail building of up to eight storeys above ground level and three basement car park levels.

The primary objectives of the investigation were to:

- Assess the potential risk of significant widespread contamination of the site;
- Assess the soil contamination conditions as a preliminary screening at the site in relation to the proposed commercial land use;
- Undertake a waste classification assessment for off-site disposal of excavated soil associated with the proposed development works; and
- Prepare a report presenting the results of the assessment.

The scope of work undertaken to achieve the objective included:

- Review of historical aerial photographs;
- Review of historical land title records;
- Search of the NSW DECCW notices for the site under Section 58 of the *Contaminated Land Management Act* (1997);
- Search of the NSW DECCW public register (POEO) for licences, applications or notices for the site;
- Search of WorkCover databases for licenses to store dangerous goods including underground fuel storage tanks (USTs);
- Review of Auburn City Council historical development applications (DA) and building approvals (BA) records for the site;
- Review of regional geology and groundwater conditions, including the location of registered groundwater bores and major underground services in the vicinity of the site;
- Design and implementation of a field sampling program;
- Laboratory analysis of selected soil samples; and
- Preparation of a report presenting the results of the assessment together with recommendations and comments on the suitability of the site for the proposed development.

Field work for this investigation was undertaken on the 1 October 2010, seven boreholes were drilled across the site.

The search of historical information has indicated the following:

- The site was part of the state abattoir since at least the early 1920's until the early 1990's and may have been used as a holding yard for cattle waiting to be processed;
- The section of the site identified as Lot 56 in DP 773763 was subleased to various industrial companies since 1988 to date. Activities associated with the companies included the manufacturing and distribution of audio equipment and solar panels;
- WorkCover has identified a current licence for the storage of dangerous goods at the site identified as Lot 56 in DP 773763;
- WorkCover has identified a number of records pertaining to USTs at the former abattoir site; and
- There are no recorded notices listed on the NSW DECCW CLM or POEO register.

Potential contamination at the site would be anticipated to be associated with:

- Potentially contaminated, imported fill material;
- Potential asbestos contamination associated with demolition of the former site buildings/sheds;
- Historical use of the site for commercial/industrial purposes; and
- Historical activities such as use of pesticides.

Based on the information obtained during this Stage 1 preliminary environmental assessment, EIS consider that the potential for significant soil and groundwater contamination to be low.

The conclusions presented in this report have been made within the limitations of the scope of works undertaken for the investigation. The conclusions and recommendations should be read in conjunction with the limitations presented in the body of the report.

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1 INTRODUCTION

Capital Corporation commissioned Environmental Investigation Services (EIS), a division of Jeffery & Katauskas Pty Ltd (J&K), to undertake a Stage 1 preliminary environmental site assessment to assess the likelihood of contamination of the subsurface soils for a proposed multi-storey development at 2 Australia Ave, Sydney Olympic Park.

The site is identified as Lot 56 in DP 1134933 and the adjacent Lot 72 in DP 1134933 and at the time of this investigation was occupied by an industrial/commercial building. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2.

The screening was undertaken generally in accordance with an EIS proposal (Ref: EP5127Krev1) of 10 September 2010 and written acceptance from Capital Corporation via the services agreement letter regarding the environmental assessment and reporting project – 2 Australia Avenue, Sydney Olympic Park of 24 September 2010.

This report describes the investigation procedures and presents the results of the environmental site assessment, together with comments, discussion and recommendations.

1.1 Proposed Development Details

EIS understands that the proposed development includes excavation for the construction of a new office/retail building of up to eight storeys above ground level and with three basement car park levels.

2 OBJECTIVES AND SCOPE OF WORK

2.1 Objectives

The primary objectives of the investigation were to:

- Assess the potential risk of significant widespread contamination of the site;
- Assess the soil contamination conditions as a preliminary screening at the site in relation to the proposed commercial land use;
- Undertake a waste classification assessment for off-site disposal of excavated soil associated with the proposed development works; and
- Prepare a report presenting the results of the assessment/investigation generally in accordance with the *NSW EPA (now DECCW) Guidelines for Consultants Reporting on Contaminated Sites (1997[1])* and *State Environmental Planning Policy No.55 – Remediation of Land (1998[2])*.

2.2 Scope of Work

The scope of work undertaken to achieve the objective included:

1. Review of historical aerial photographs;
2. Review of historical land title records;
3. Search of the NSW DECCW notices for the site under Section 58 of the *Contaminated Land Management Act* (1997[3])[4];
4. Search of the NSW DECCW public register (POEO[5]) for licences, applications or notices for the site;
5. Search of WorkCover databases for licenses to store dangerous goods including underground fuel storage tanks (USTs);
6. Review of Auburn City Council historical development applications (DA) and building approvals (BA) records for the site;
7. Review of regional geology and groundwater conditions, including the location of registered groundwater bores and major underground services in the vicinity of the site;
8. Design and implementation of a field sampling program;
9. Laboratory analysis of selected soil samples; and

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[1] *Guidelines for Consultants Reporting on Contaminated Sites,* NSW EPA (now DECCW), 1997 (Reporting Guidelines 1997)

[2] *State Environmental Planning Policy No. 55 – Remediation of Land,* NSW Government, 1998 (SEPP55)

[3] *Contaminated Land Management Act,* NSW Government Legislation, 1997 (CLM Act 1997)

[4] http://www.environment.nsw.gov.au/prclmapp/searchregister.aspx visited on 30 September 2010

[5] http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx visited on 30 September 2010

10. Preparation of a report presenting the results of the assessment together with recommendations and comments on the suitability of the site for the proposed development.

Field work for this investigation was undertaken on the following dates:

- Drilling and soil sampling was undertaken on 1 October 2010.

3 SITE INFORMATION

3.1 Site Identification

The site identification details are summarised in the following table:

Site Owner:	Sydney Olympic Park Authority
Site Address:	2 Australia Avenue, Sydney Olympic Park
Lot & Deposited Plan:	Lot 56 in DP 773763 & Lot 72 in DP 1134933
Current Land Use:	Industrial/Commercial
Proposed Land Use:	Industrial/Commercial
Local Government Authority:	Auburn City Council
Current Zoning:	Unknown
Site Area:	Approximately 1,200m^2
Geographical Location (MGA):	Lat: 33°50'49.81" S Long: 151°04'18.46" E
Site Locality Plan:	Refer to Figure 1
Borehole Location Plan:	Refer to Figure 2

3.2 Site Description

The site is located at the south east corner of Australia Avenue and Herb Elliot Drive, Homebush, within Sydney Olympic Park complex. The site is located on top of a hillside slope that generally falls to the north east at approximately 3-5°.

At the time of the investigation the site was spilt into two separate areas. The area to the north west of the site was triangular in shape and grassed. Asphaltic concrete pathways were located along the perimeters of the triangular section of the site, large trees were also evident along the perimeter of this section of the site. A raised garden bed approximately 1m from the grassed area was located in the south central section of the site. This section of the site was accessible to the general public.

The south east section of the site was occupied by SilexSolar a manufacturer and distributor of Solar panels. The entire perimeter of this section of the site was fenced. Entry to the site was gained via electronic sliding gates located to the north of the site (off Australia Avenue) and to the west of the site (off Herb Elliot Avenue). The majority of the site was covered by a large freestanding building, the section of the building to the north appeared to be used as office space with the rear south section of the building used for manufacturing purposes. An asphaltic gravel car park for approximately fifty car spaces was located in the north section of the site. A concrete slab surface was located in the south west section of the site, this section of the site

was approximately 1.5 – 2.0m lower than the remainder of the site and approximately 1.0 - 1.5m lower than the road surface level on Herb Elliot Drive. This area appeared to be used as a loading dock. A concrete driveway appeared to run through the central section of this concreted area, rising approximately 2m into the building. To the north of the driveway was what appeared to be an effluent treatment system. Car spaces, rubbish skip bins and an electrical transformer green box were located along the west boundary in this section of the site. Dangerous goods were stored in cylinders, drums and containers along the south boundary of the site, with sections of this storage area bunded.

The Site was bound by what appeared to be industrial/commercial properties to the south and east. Herb Elliot Drive was located immediately to the north of the site beyond which were industrial/commercial properties. Australia Avenue was located immediately to the north of the site. Significant construction works had begun further to the north approximately 20m from the site boundary, with excavation at the time of the site visit approximately 20m lower than the current ground level.

3.3 Regional Geology

The geological map of Sydney (1983[6]) indicates the site to be underlain by Ashfield Shale of the Wianamatta Group, which typically consists of black to dark grey shale and laminite.

3.4 Hydrogeology

NSW Office of Water (formerly Department of Water and Energy[7]) records were researched for the investigation and indicated that ten registered groundwater bores lie within 1km of the site. The groundwater works summaries and a map indicating the location of the bores in relation to the site are attached in Appendix C. The details are summarised in the following table:

[6] *1:100,000 Geological Map of Sydney (Series 9130),* Department of Mineral Resources (1983) [now Department of Primary Industries]

[7] http://www.waterinfo.nsw.gov.au/gw/ visited on 14 October 2010

Ref No	Approximate Distance from site (m)	Approximate Direction from site	Gradient from site	Depth (m)	Registered Purpose
GW102550	300 - 350	north east	Down/Cross	4.0	Monitoring Bore
GW102553	300 - 350	north east	Down/Cross	4.0	Monitoring Bore
GW102554	300 - 350	north east	Down/Cross	4.0	Monitoring Bore
GW102555	300 - 350	north east	Down/Cross	4.0	Monitoring Bore
GW102556	300 - 350	north east	Down/Cross	4.0	Monitoring Bore
GW102557	300 - 350	north east	Down/Cross	4.0	Monitoring Bore
GW102558	300 - 350	north east	Down/Cross	4.0	Monitoring Bore
GW102559	300 - 350	north east	Down/Cross	4.0	Monitoring Bore
GW102561	300 - 350	north east	Down/Cross	4.0	Monitoring Bore
GW102562	300 - 350	north east	Down/Cross	4.0	Monitoring Bore

The stratigraphy of the site is expected to consist of residual clayey soils overlying relatively shallow bedrock. Based on these conditions and the results of the groundwater bore search groundwater is not considered to be a significant resource in the immediate area of the site.

4 REPORTS BY OTHERS

A detailed review of reports prepared by other consultants was outside the scope of the Environmental Site Assessment. However, EIS were provided with a report prepared by Douglas Partners Pty Ltd. The report is referenced as **"Soil Testing, Above-Ground Storage Tanks, BP Solar, 2 Australia Ave, Sydney Olympic Park"**, dated 13 November (2010[8]).

The 2007 Douglas Partners report was prepared for due diligence purposes and a preliminary screening of subsurface conditions to assess whether there was any sign of leakage from the effluent treatment system. Three boreholes were drilled that ranged in depth from 0.47m to 1.5m. The boreholes were drilled within close proximity of the effluent treatment systems in the south west section of the site known as the goods yard. No groundwater was encountered in any of the borehole locations. Subsurface conditions generally consisted of roadbase fill, underlain by natural silty clay, underlain by shale that was encountered at depths ranging from 0.42m to 1.4m. Soil samples were analysed for heavy metals, Polycyclic aromatic hydrocarbons (PAHs), Total petroleum hydrocarbons (TPH), benzene, toluene, ethyl benzene, xylenes (BTEX), Phenols, polychlorinated biphenyls (PCBs), organochlorine pesticides (OCPs), volatile organic compounds (VOCs) and pH. All sample analysed were within the adopted site assessment criteria.

5 SITE HISTORY ASSESSMENT

5.1 Aerial Photographs

Aerial photographs of the site taken in 1930, 1951, 1961, 1970, 1978, 1986, 1994, 2002 & 2005 were obtained from the Department of Lands and were reviewed as part of the assessment of the site history. EIS has also reviewed the 1943 historical aerial photograph available for the site on the NSW Department of Lands SIX Viewer[9]. The information obtained from the photographs are summarised in the following table:

[8] *Soil Testing, Above-Ground Storage Tanks, BP Solar* – Douglas Partners Pty Ltd, 13 November 2007 (Douglas Partners 2007)

[9] https://six.maps.nsw.gov.au/wps/portal/SIXViewer

Year	Details
1930	The site appeared to be grassed with scattered trees along a fence line. What appeared to be a dirt road running from east to west dissected the site. To the west of the site was a large complex of buildings known as the State Abattoir. The surrounding areas to the north, east and south were grassed with scattered trees and appeared angular in shape. The surrounding areas and the site itself may have been holding pens for the abattoir.
1943	The site and surrounding area appeared similar to the 1930 photograph.
1951	The site and surrounding area appeared similar to the 1943 photograph.
1961	The site and surrounding area appeared similar to the 1951 photograph. What appeared to be a shed/shelter was located towards the north section of the site.
1970	The site and surrounding area appeared similar to the 1961 photograph. What appeared to be a train line was located to the west of the Abattoir.
1978	The site and surrounding area appeared similar to the 1970 photograph.
1986	The site and immediate surrounding areas appeared to have been partly excavated with the grassed areas stripped of topsoil.
1994	The site appeared to be dissected by an asphaltic concrete road. The north west of the section of the site appeared to be grassed, The south east section of the site appeared to be occupied by a large building with an associated car park. The Abattoir to the west of the site appeared to have been demolished. What appeared to be commercial/industrial buildings were located to the south of the site. Construction works for the 2000 Olympic Games appeared well underway.
2002	The road (which, previously dissected the site) appeared no longer evident. What appeared to be newly constructed road ran along the west and north boundary. The grassed area in the north west of the site appeared to be landscaped.
2005	The site and surrounding area appeared similar to the 2002 photograph.

5.2 Land Title Search

A limited historical land title search was performed on our behalf by Advance Legal Search Pty Ltd. Copies of the title records are presented in Appendix C and a summary of the relevant information is provided in the following table:

Registration Date	Proprietor
(Lot 56 DP 773763)	
2002 – todate	Sydney Olympic Park Authority
(2009 – todate)	(sublease to Silex Systems Limited of building 1, 2 Australia Ave, Sydney Olympic Park part)
(2002 – todate)	(sublease of part to Energyaustralia of sub-station No 7809)
(2000 – todate)	(lease to 2 Australia Avenue Custodian Pty Limited)
(1989 – 2000)	(lease to Akai Pty Limited)
(1988 – 1989)	(lease to Akai Audio/Video Australia Pty Limited)
(1988 – todate)	(various commercial sub leases see Historical Folio 56/773763)
1993 – 2002	Olympic Co-Ordination Authority
1988 – 1993	Homebush Abattoir Corporation
(Lot 51 DP 747909)	
1987 – 1988	Homebush Abattoir Corporation
(Lot 5 DP 740790)	
1987 – 1987	Homebush Abattoir Corporation
	(Land in DP 977076 - CT Vol 6129 Fol 216)
1987 – 1987	Homebush Abattoir Corporation
1950 – 1987	The Metropolitan Meat Industry Board
(1950 – 1987)	(various commercial leases shown in CTVol 6129 Fol 216)
	(Part Portion 238 Parish Concord - Area 940 Acres 2 Roods 5 ½ Perches - CT Vol 5326 Fol 143)
1948 – 1950	The Metropolitan Meat Industry Board
1942 – 1948	The Metropolitan Meat Industry Commissioner
(1942 – 1950)	(various commercial leases shown in CTVol 5326 Fol 143)
	(Part Portion 238 Parish Concord - Area 939 acres 1 Rood 31 ¾ Perches - CT Vol 5056 Fol 217)
1939 – 1942	The Metropolitan Meat Industry Commissioner
(1939 – 1942)	(various commercial leases shown in CTVol 5056 Fol 217)
	(Part Portion 238 Parish Concord - Area 1031 Acres 1 Rood 10 ¼ perches - CT Vol 4553 Fol 104)
1933 – 1939	The Metropolitan Meat Industry Commissioner
1932 – 1933	Metropolitan Meat Industry Board
(1932 – 1939)	(various commercial leases shown in CTVol 4553 Fol 104)

	(Part Portion 238 Parish Concord - Area 1042 Acres - CT Vol 2106 Fol 53)
1929 – 1932	Metropolitan Meat Industry Board
1910 – 1929	The Minister for Public Works of the Shire of New South Wales

(Lot 72 DP 1134933)	
2009 – todate	Sydney Olympic Park Authority

See Notes (a) & (b)

Note a

(Lot 14 DP 1110035)	
2007 – 2009	Sydney Olympic Park Authority

See Notes (ai) & (aii)

Note (ai)

(Lot 79 DP 875562)	
2002 – 2007	Sydney Olympic Park Authority
1998 – 2002	Olympic Co-Ordination Authority
(Lot 74 DP 818981)	
1993 – 1998	Olympic Co-Ordination Authority
1992 – 1993	Homebush Abattoir Corporation
(Lot 5 DP 774130)	
1988 – 1992	Homebush Abattoir Corporation
(1988 – 1992)	(various commercial leases see Historical Folio 5/774130)
(Lot 6 DP 740790)	
1987 – 1988	Homebush Abattoir Corporation
	(Land in DP 977076 - CT Vol 6129 Fol 216)
1987 – 1987	Homebush Abattoir Corporation
1950 – 1987	The Metropolitan Meat Industry Board
(1950 – 1987)	(various commercial leases shown in CTVol 6129 Fol 216)
	(Part Portion 238 Parish Concord - Area 940 Acres 2 Roods 5 ½ Perches - CT Vol 5326 Fol 143)
1948 – 1950	The Metropolitan Meat Industry Board
1942 – 1948	The Metropolitan Meat Industry Commissioner
(1942 – 1950)	(various commercial leases shown in CTVol 5326 Fol 143)
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1939 – 1942	The Metropolitan Meat Industry Commissioner

(1939 – 1942)	(various commercial leases shown in CTVol 5056 Fol 217)
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1933 – 1939	The Metropolitan Meat Industry Commissioner
1932 – 1933	Metropolitan Meat Industry Board
(1932 – 1939)	(various commercial leases shown in CTVol 4553 Fol 104)
	(Part Portion 238 Parish Concord - Area 1042 Acres - CT Vol 2106 Fol 53)
1929 – 1932	Metropolitan Meat Industry Board
1910 – 1929	The Minister for Public Works of the Shire of New South Wales

Note (aii)

(Lot 151 DP 1108154)	
2007 – 2007	Sydney Olympic Park Authority
(Lot 50 DP 1045522)	
2002 – 2007	Sydney Olympic Park Authority
2002 – 2002	Olympic Co-Ordination Authority
	(Land in DP 977076 - CT Vol 6129 Fol 216)
1993 – 2002	Olympic Co-Ordination Authority
1987 – 1993	Homebush Abattoir Corporation
1950 – 1987	The Metropolitan Meat Industry Board
(1950 – 1987)	(various commercial leases shown in CTVol 6129 Fol 216)
	(Part Portion 238 Parish Concord - Area 940 Acres 2 Roods 5 ½ Perches - CT Vol 5326 Fol 143)
1948 – 1950	The Metropolitan Meat Industry Board
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1939 – 1942	The Metropolitan Meat Industry Commissioner
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	(Part Portion 238 Parish Concord - Area 1031 Acres 1 Rood 10 ¼ perches - CT Vol 4553 Fol 104)
1933 – 1939	The Metropolitan Meat Industry Commissioner
1932 – 1933	Metropolitan Meat Industry Board
(1932 – 1939)	(various commercial leases shown in CTVol 4553 Fol 104)

	(Part Portion 238 Parish Concord - Area 1042 Acres - CT Vol 2106 Fol 53)
1929 – 1932	Metropolitan Meat Industry Board
1910 – 1929	The Minister for Public Works of the Shire of New South Wales

Note (b)

(Lot 12 DP 1125680)	
2009 – 2009	Sydney Olympic Park Authority
(Lot 15 DP 1110035)	
2007 – 2009	Sydney Olympic Park Authority
(Lot 151 DP 1108154)	
2007 – 2007	Sydney Olympic Park Authority
(Lot 50 DP 1045522)	
2002 – 2007	Sydney Olympic Park Authority
2002 – 2002	Olympic Co-Ordination Authority
	(Land in DP 977076 - CT Vol 6129 Fol 216)
1993 – 2002	Olympic Co-Ordination Authority
1987 – 1993	Homebush Abattoir Corporation
1950 – 1987	The Metropolitan Meat Industry Board
(1950 – 1987)	(various commercial leases shown in CTVol 6129 Fol 216)
	(Part Portion 238 Parish Concord - Area 940 Acres 2 Roods 5 ½ Perches - CT Vol 5326 Fol 143)
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1933 – 1939	The Metropolitan Meat Industry Commissioner
1932 – 1933	Metropolitan Meat Industry Board
(1932 – 1939)	(various commercial leases shown in CTVol 4553 Fol 104)
	(Part Portion 238 Parish Concord - Area 1042 Acres - CT Vol 2106 Fol 53)
1929 – 1932	Metropolitan Meat Industry Board
1910 – 1929	The Minister for Public Works of the Shire of New South Wales

The land titles search has indicated that the site was owned by the Metropolitan Meat Industry Board, The Metropolitan Meat Industry Commissioner and the Homebush Abattoir Corporation from the late 1920's until the early 1990's.

From the early 1990's until 2002 the site was owned by the Olympic Coordination Authority. The Sydney Olympic Park Authority (SOPA) subsequently took ownership of the site to date.

The section of the site identified as Lot 56 in DP 773763 was subleased to various commercial companies, including:

- Akai Pty Ltd 1988 until 2000;
- unidentified subleases 2000 until 2009; and
- Silex Systems Limited 2009 to date.

5.3 Council Records

A search of Development Application (DA) and Building Approval (BA) records/the property file held by Auburn City Council was undertaken by EIS. A summary of the relevant information is provided in the following table:

DA/BA Number	Date of Approval	Application Details
BA - 809/87 & DA – 359/87	25/1/1988	Application Homebush Abattoir Corporation & Akai Australia approved by Council for the construction of a new factory and warehouse complex.
BA – 20/1-56	10/8/1994	Application approved by Council for the reconfiguration of the existing first floor office layout and construction of a new en-suite.

The council records search has not indicated any particular site use or development that may be considered to have resulted in significant contamination of the soil and at the site.

5.4 WorkCover Database Records

A records search for licenses to store dangerous goods was undertaken on our behalf by WorkCover. Information provided by WorkCover has indicated that a current licence (licence number 35/035634) is valid for the storage of dangerous at the site known as 2 Australia Avenue, Sydney Olympic Park. Dangerous goods stored at various depot across the site under this licence include:

- Compressed Nitrogen gas;
- Hydrochloric and Phosphoric acid;
- Sodium hydroxide;
- Isopropanol;
- Helium;
- Acetylene;
- Ammonia;
- Argon;
- Silane; and
- Petroleum gases (including LPG).

Additional information provided by Work cover has indicated that there are a number of records indicating the presence of USTs associated with the former abattoirs. The location and status of these facilities (i.e. whether they were removed, validated etc) is unknown.

Following further liaison with WorkCover, EIS understand that the locations of the USTs associated with the former abattoir cannot be established. This is likely to be a result of poor documentation and also due to the significant changes associated with the construction of the Sydney Olympic Park facilities.

5.5 NSW DECCW Records

A search of the NSW DECCW (EPA) on-line database did not indicate the existence of any EPA notices for the site under section 58 of the CLM Act 1997. A search of the NSW DECCW public register (POEO) did not indicate the existence of any EPA notices, applications and licenses for the site.

5.6 Assessment of Historical Information Integrity

The site history assessment has generally been obtained from: government records including the NSW land titles office, local government historical archives, historical aerial photographs and NSW WorkCover records. The veracity of the information from these sources is considered to be high, however, given the age of the development,

the gap of up to thirteen years between aerial photographs and the lack of information available on activities prior to 1930's, a certain degree of information loss is to be expected.

Non verifiable anecdotal information has not been relied upon during assessment of historical site use. Therefore, there is considered to be a high level of integrity associated with information obtained with respect to historical use of the site.

5.7 Summary of Historical Site Use

The search of historical information has indicated the following:

- The site was part of the state abattoir since at least the early 1920's until the early 1990's and may have been used as a holding yard for cattle waiting to be processed;
- The section of the site identified as Lot 56 in DP 773763 was subleased to various industrial companies since 1988 to date. Activities associated with the companies included the manufacturing and distribution of audio equipment and solar panels;
- WorkCover has identified a current licence for the storage of dangerous goods at the site identified as Lot 56 in DP 773763;
- WorkCover has identified a number of records pertaining to USTs at the former abattoir site; and
- There are no recorded notices listed on the NSW DECCW CLM or POEO register.

6 POTENTIAL CONTAMINATION SOURCES

6.1 Potential Site Specific Contamination

Potential contamination at the site would be anticipated to be associated with:

- Potentially contaminated, imported fill material;
- Potential asbestos contamination associated with demolition of the former site buildings/sheds;
- Historical use of the site for commercial/industrial purposes; and
- Historical activities such as use of pesticides.

6.1.1 Site Specific Soil Contaminants of Concern

The compounds identified as soil contaminants of concern at the site include:

- Heavy metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc;
- Total petroleum hydrocarbons (TPH);

- Monocyclic aromatic hydrocarbon compounds: benzene, toluene, ethyl benzene and xylenes (BTEX);
- Polycyclic aromatic hydrocarbons (PAHs) including benzo(a)pyrene;
- Organochlorine pesticides (OCPs) including Aldrin, dieldrin, chlordane, DDT, DDD, DDE and heptachlor;
- Organophosphorus pesticides (OPPs);
- Polychlorinated Biphenyls (PCBs); and
- Asbestos.

6.2 Potential Receptors

The main potential contamination receptors are considered to include:

- Bennelong Pond located approximately 200m to the north east of the site;
- Site visitors, workers and adjacent property owners, who may come into contact with contaminated soil and/or be exposed to contaminated dust arising from construction activity; and
- Future site occupants.

6.3 Contaminant Laydown and Transport Mechanisms

At this site, mobile contaminants would be expected to move down to the rock surface and migrate laterally down-slope from the source. The movement of contaminants would be expected to be associated with groundwater flow and seepage at the top of the bedrock.

7 ASSESSMENT CRITERIA DEVELOPMENT

7.1 Regulatory Background

In 1997 the NSW Government introduced the CLM Act. This Act has recently been amended by the *Contaminated Land Management Amendment Act* (2008[10]).

The CLM Act 1997, associated regulations, SEPP55 and NSW DECCW (EPA) guidelines, were designed to provide uniform state-wide control of the management, investigation and remediation of contaminated land.

Prior to granting consent for any proposed rezoning or development, SEPP55 requires the consent authority to:

- Consider whether the land is contaminated;
- Consider whether the site is suitable, or if contaminated, can be made suitable by remediation, for the proposed land use; and
- Be satisfied that remediation works will be undertaken prior to use of the site for the proposed use.

Should the assessment indicate that the site poses a risk to human health or the environment, remediation of the site may be required prior to occupation of the proposed development. SEPP55 requires that the relevant local council be notified of all remediation works, whether or not development consent is required. Where development consent is not required, 30 days written notice of the proposed works must be provided to council. Details of validation of remediation work must also be submitted to Council within one month of completion of remediation works.

The consent authority may request that a site audit be undertaken during, or following the completion of the site assessment process. Under the terms of the CLM Act 1997 the NSW DECCW (EPA) Site Auditor Scheme was developed to provide a system of independent review for assessment reports. An accredited Contaminated Site Auditor is engaged to review reports prepared by suitably qualified consultants to ensure that the investigation has been undertaken in accordance with the guidelines and confirm that the sites are suitable for their intended use.

Section 59(2) of the CLM Act 1997 states that specific notation relating to contaminated land issues must be included on Section149 (s149) planning certificates prepared by Council where the land to which the certificate relates is:

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[10] *Contaminated Land Management Amendment Act,* NSW Government Legislation, 2008 (CLM Amendment Act 2008)

- Within an investigation or remediation area;
- Subject to an investigation or remediation order by the DECCW (EPA);
- The subject of a voluntary investigation or remediation proposal; and/or
- The subject of a site audit statement.

Submission of contaminated site investigation and validation reports to council as part of rezoning or development application submissions may also result in notation of actual or potential site contamination on future s149 certificates prepared for the site.

Section 60 of the CLM Amendment Act 2008 sets out a positive duty on a land owner, or person whose activities have caused contamination, to notify the DECCW if they are or become aware that contamination exists on a site that generally poses *"an unacceptable risk to human health or the environment, given the site's current or approved use"*. This duty to report is based on trigger values, above which notification is required.

Off-site disposal of fill, contaminated material and excess soil/rock excavated as part of the proposed development works is regulated by the provisions of the *Protection of the Environment Operations Act* (1997[11]) and associated regulations and guidelines including the *NSW DECC (now DECCW) Waste Classification Guidelines - Part 1: Classifying Waste* (2009[12]). All materials should be classified in accordance with these guidelines prior to disposal.

Section 143 of the POEO Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have a duty to ensure that the waste is disposed of in an appropriate manner.

7.2 Soil Contaminant Threshold Concentrations

The soil investigation levels adopted for this investigation are derived from the NSW DEC (now DECCW) document *Guidelines for the NSW Site Auditor Scheme, 2nd Edition* (2006[13]) and the National Environmental Protection Council document *National Environmental Protection (Assessment of Site Contamination) Measure* (1999[14]). The contaminant thresholds listed below are levels at which further investigation and

[11] *Protection of Environment Operations Act,* NSW Government, 1997 (POEO Act 1997)

[12] *Waste Classification Guidelines, Part 1: Classifying Waste,* NSW DECC, 2009 (Waste Classification Guidelines 2009)

[13] *Guidelines for the NSW Site Auditor Scheme, 2nd ed.,* NSW DEC, 2006 (Site Auditor Guidelines 2006)

[14] *National Environmental Protection (Assessment of Site Contamination) Measure,* National Environment Protection Council (NEPC), 1999 (NEPM 1999)

evaluation is required to assess whether the site is considered suitable for the proposed urban land use.

To accommodate the range of human and ecological exposure settings, a number of generic settings are used on which the Health based Investigation Levels (HILs) can be based. Four categories of HILs are adopted for urban site assessments. Contaminant levels for a standard residential site with gardens and accessible soil (Column A) are based on protection of a young child resident at the site. The remaining categories (Columns D to F) present alternative exposure settings where there is reduced access to soil or reduced exposure time. These categories include residential land use with limited soil access, recreational and public open space and commercial/industrial use. Where the proposed land use will include more than one land use category (eg. mixed residential/commercial development) the exposure setting of the most "sensitive" land use is adopted for the site.

Threshold concentrations for petroleum hydrocarbon contaminants including total TPH and BTEX compounds have previously been established in the *NSW EPA (now DECCW) Contaminated Sites: Guidelines for Assessing Service Station Sites* (1994[15]) publication and this document is referenced in the Site Auditor Guidelines 2006. Heavy fraction petroleum hydrocarbon aliphatic/aromatic component threshold concentrations have also been introduced in NEPM 1999.

Soil samples for this investigation have been analysed for total recoverable hydrocarbons (TRH) rather than TPH. TRH analysis is undertaken without a preliminary silica gel clean-up of the sample. Consequently the TRH result may include other compounds such as phthalates, humic acids, fatty acids and sterols (if present). For comparative purposes in relation to the threshold concentrations, we have referred to TRH as TPH within this report.

7.2.1 Asbestos in Soil

NEPM 1999 does not provide numeric guidelines for the assessment of asbestos in soil. NSW DECCW (EPA) advice (2006) has indicated that consultants should use their 'professional judgement' regarding determination of appropriate investigation and remediation levels for asbestos in soils; however the NSW DECCW (EPA) have not published numerical guidelines for the assessment of asbestos in subsurface soils.

[15] *Guidelines for Assessing Service Station Sites,* NSW EPA, 1994 (Service Station Guidelines 1994)

The WorkCover publication *Working with Asbestos Guide* (2008[16]) states that, where buried asbestos is encountered, "A competent occupational hygienist should assess the site to determine:

- If asbestos material is bonded or friable
- The extent of asbestos contamination
- Safe work procedures for the remediation of the site"

"Any asbestos cement products that have been subjected to weathering, or damaged by hail, fire or water blasting are considered to be friable asbestos and an asbestos removal contractor with a WorkCover license for friable asbestos removal is required for its removal". Under the *NSW Occupational Health and Safety (OHS) Regulations 2001*[17] and WorkCover requirements all necessary disturbance works associated with asbestos containing materials must be conducted by a licensed AS-1 Asbestos Removal Contractor.

7.2.2 Site Assessment Criteria (SAC) for Soil Contaminants

The 'commercial/industrial' (Column F) exposure setting has been adopted for this assessment and the appropriate soil criteria are listed in the following table:

[16] *Working with Asbestos Guide,* NSW WorkCover, 2008 (WorkCover Working with Asbestos Guide 2008)
[17] *Occupational Health and Safety Regulation,* NSW Government, 2001 (NSW OH&S Regulation 2001)

Contaminant	SAC - HILs Column F (mg/kg)
Heavy Metals	
Arsenic (total)	500
Cadmium	100
Chromium (III)	60%
Copper	5000
Lead	1500
Mercury (inorganic)	75
Nickel	3000
Zinc	35000
Petroleum Hydrocarbons	
TPH (C_6-C_9)	65 [a]
TPH (C_{10}-C_{36})	1000 [a]
Benzene	1 [a]
Toluene	1.4 [a]
Ethylbenzene	3.1 [a]
Total Xylenes	14 [a]
PAHs	
Total PAHs	100
Benzo(a)pyrene	5
Pesticides (OCPs & OPPs)	
Aldrin + Dieldrin	50
Chlordane	250
DDT + DDD + DDE	1000
Heptachlor	50
Total OPPs	0.1[b]
Asbestos	NDLR [c]

Note:

[a] Service Station Guidelines 1994

[b] Due to the absence of locally endorsed guideline criteria, the laboratory practical quantitation limit (PQL) has been adopted.

[c] Not Detected at Limit of Reporting (NDLR)

7.2.3 Waste Classification Assessment Criteria

For the purpose of off-site disposal, the classification of soil into 'General Solid Waste (non-putrescible)', 'Restricted Solid Waste (non-putrescible)' and 'Hazardous Waste (non-putrescible)' categories is defined by chemical contaminant criteria outlined in the Waste Classification Guidelines 2009. The contaminant criteria are summarised in Table A-2.

7.3 Evaluation of Soil Analysis Data and Contaminant Threshold Concentrations

Assessment of the soil analytical data using the soil contaminant threshold concentrations has been undertaken in accordance with the methodology outlined in the NEPM 1999 Schedule 7(a).

The following criteria have been adopted for assessment of the analytical data:

- For a site to be considered suitable for the proposed land use each individual contaminant concentration should be less than the SAC; and
- Where the concentration of each contaminant is less than the SAC in all samples, the suitability of the site for the proposed use may be assessed based solely on individual analytical results.

Where contamination results exceed the SAC, a method of remediating the site is to physically and selectively remove the contamination hotspots from the site. This process should be continued until statistical analysis of the data meets the SAC. Validation of the remediated site is generally required to demonstrate that the site is suitable for the proposed land use.

8 ASSESSMENT PLAN

8.1 Soil Sampling Density

The *NSW EPA (now DECCW) Contaminated Sites Sampling Design Guidelines* (1995[18])/EPA Sampling Design Guidelines 1995 for contaminated site investigations state that samples should be obtained from a minimum of 23 evenly spaced sampling points for a site of this size (approximately 12,000m^2).

Samples were obtained from 8 sampling locations for this investigation. This density is approximately 35% of the minimum sampling density.

[18] *Contaminated Sites Sampling Design Guidelines,* NSW EPA, 1995 (EPA Sampling Design Guidelines 1995)

The boreholes were drilled on a judgemental sampling plan with a spacing of up to 30m between sampling points. A judgemental sampling plan was considered most appropriate for this investigation as:

- no specific potential contaminant sources were identified by the available site history; and
- the distribution of contamination is expected to be associated with imported potentially contaminated fill material and is therefore likely to be random.

Sampling was not undertaken beneath the existing buildings at the site as access was not possible during the field investigation.

8.2 Data Quality Objectives (DQOs)

The DQOs for the assessment were developed with reference to the US EPA document *Data Quality Objectives Process for Hazardous Waste Site Investigations* (2000[19]). The document includes seven steps as follows:

DQO		Where addressed in report
1.	State the problem	Section 1
2.	Identify the decision	Section 2.1
3.	Identify inputs into the decision	Section 3,4,5,6,9 and 10
4.	Study Boundaries	Section 8 and Figure 2
5.	Develop a Decision Rule	Section 7
6.	Specify Limits on Decision Errors	Section 8 and 11
7.	Optimise the Design for Obtaining data	Section 12

Field investigations are undertaken generally in accordance with EIS sampling protocols outlined in Appendix D.

8.3 Data Quality Indicators (DQIs) and Quality Assurance

The validation, as part of the DQOs, involves the technical review of the data using defined QA Assessment Criteria. The success of the DQIs is based on assessment of the data set as a whole and not on individual acceptance or exceedance within the data set.

Review of QA criteria was based on laboratory data including surrogate recovery, repeat analysis, duplicates, matrix spikes and method blanks.

[19] *Data Quality Objectives Process for Hazardous Waste Site Investigations,* US EPA, *2000* (US EPA 2000)

Field QA/QC included collection and analysis of the following for the contaminants of concern:

- approximately 10% of field soil samples as intra-laboratory duplicates.

Success of field DQIs is based on the following criteria:

- Relative percentage differences (RPDs) were calculated for the intra-laboratory duplicates. The RPD was calculated as the absolute value of the difference between the initial and repeat result divided by the average value, expressed as a percentage. The following acceptance criteria were used to assess the RPD results:
  - For results that were greater than 10 times the Practical Quantitation Limit (PQL) RPDs less than 50% were considered acceptable.
  - For results that were between 5 and 10 times PQL RPDs less than 75% were considered acceptable.
  - For results that were less than 5 times the PQL RPDs less than 100% were considered acceptable.
- Acceptable concentrations in blank samples.

9 INVESTIGATION PROCEDURE

9.1 Soil Sampling Methods

Subsurface investigation was undertaken using a four-wheel-drive (4wd) mounted hydraulically push tube rig. Soil samples were obtained from disposable polyethylene push tube samplers.

Soil and rock samples were obtained at various depths, based on observations made during the field investigation. During sampling, soil at selected depths was split into initial and duplicate samples for QA/QC assessment.

All samples were placed in glass jars with plastic caps and teflon seals with minimal headspace. Samples for asbestos analysis were placed in zip-lock plastic bags. Sampling personnel used disposable nitrile gloves during sampling activities.

During the investigation, soil samples were preserved by immediate storage in an insulated sample container with ice in accordance with AS 4482.1-2005[20] and AS 4482.2-1999[21] as summarised in the following table:

Analyte	Preservation	Storage
Heavy metals	Unpreserved glass jar with Teflon lined lid	Store at <4°, analysis within 28 days (mercury and Cr[VI]) and 180 days (other metals).
VOCs (TPH/BTEX)		Store at <4°, nil headspace, extract within 14 days, analysis within forty days
PAHs, OCP, OPP & PCBs		
Asbestos	Sealed plastic bag	None

The samples were labelled with the job number, sampling location, sampling depth and date. All samples were recorded on the borehole logs presented in Appendix A and on the laboratory chain of custody (COC) record presented in Appendix B.

On completion of the fieldwork, the samples were delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures. Detailed EIS field sampling protocols are included in Appendix D.

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[20] *Guide to the Investigation and Sampling of sites with Potentially Contaminated Soil,* Standards Australia, 2005 (AS 2005)

[21] *Guide to the Sampling and Investigation of Potentially Contaminated Soil Part2: Volatile Substances,* Standards Australia, 1999 (AS 1999)

9.2 Photoionisation Detector (PID) Screening

A portable PID was used in this investigation to assist with selection of samples for laboratory hydrocarbon (TPH/BTEX) analysis.

The sensitivity of the PID is dependent on the organic compound and varies for different mixtures of hydrocarbons. Some compounds give relatively high readings and some can be undetectable even though present in identical concentrations. The portable PID is best used semi-quantitatively to compare samples contaminated by the same hydrocarbon source.

The PID is calibrated before use by measurement of an isobutylene standard gas. All the PID measurements are quoted as parts per million (ppm) isobutylene equivalents.

PID screening of detectable volatile organic compounds (VOCs) was undertaken on soil samples using the soil sample headspace method. VOC data was obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases. The PID headspace data is presented on the COC documents.

9.3 Laboratory Analysis

Laboratory analysis was undertaken by Envirolab Services Pty Ltd (NATA Accreditation No. 2901).

9.3.1 Soil Samples

Soil samples were analysed using the following analytical methods detailed in Schedule B(3) of NEPM (1999[22]):

- Heavy metals – Nitric acid digestion. Analysis by ICP/AES.
- Low level mercury – cold vapour AAS.
- OC and OP pesticides and PCBs – Extracted with dichloromethane/acetone. Analysis by GC/ECD.
- PAHs – Soil extracted with dichloromethane/acetone. Analysis by GC/MS.
- TPH (volatile) – Soil extracted with methanol. Analysis by P&T GC/MS.
- TPH – Soil extracted with dichloromethane/acetone. Analysis by GC/FID.
- BTEX – Soil extracted with methanol. Analysis by P&T GC/MS.
- Asbestos – Polarizing light microscopy.

[22] *Guideline on Laboratory Analysis of Potentially Contaminated Soils*, Schedule B(3), NEMP, 1999 (Schedule B(3))

Toxicity characteristic leaching procedure (TCLP) leachates were prepared by rotating soil samples in a mild acid solution for 18 hours (NSW EPA WD-3 Method). Leachates were analysed using the analytical procedures outlined above.

10 RESULTS OF INVESTIGATION

10.1 Subsurface Conditions

Borehole locations are shown on Figure 2. For details of the subsurface soil profile reference should be made to the borehole logs in Appendix A. A summary of the subsurface conditions encountered in the boreholes is presented below:

Pavement

An asphaltic gravel slab was encountered at BH5, BH6 and BH7 that ranged in thickness from 0.04m to 0.06m. A concrete pavement 0.2m thick was encountered at BH8. The remainder of the boreholes were in the grassed sections of the site.

Fill

Fill was encountered at all borehole locations. The fill material was either a silty sand or a silty clay and ranged in depth from approximately 0.27m to 1.3m. BH3 was terminated in the fill material at a depth of approximately 0.65m. The fill material contained inclusions of igneous, sandstone, ironstone and shale gravels, ash and root fibres. A trace of coal gravel was found in fill material in BH3.

Natural Soils

Natural Silty clay was encountered beneath the fill material in BH1, BH4, BH5, BH6, BH7 and BH8. The natural soils extended ranged in depth from approximately 0.27m to 2.0m. BH1 and BH4 were terminated in the natural silty clay at the approximate depths of 2.0m and 1.8m respectively. The natural silty clay was generally brown mottled grey and orange.

Bedrock

Natural shale bedrock was encountered beneath the silty clay in BH2, BH5, BH6, BH7 and BH8. BH2, BH5, BH6, BH7 and BH8 were terminated in the natural shale bedrock at the approximate depths of 1.5m, 0.85m, 0.75m, 0.65m and 1.45m respectively.

10.2 Laboratory Results

The laboratory reports are presented in Appendix B. The results have been assessed against the SAC adopted for this investigation.

10.2.1 Soil Samples

The soil laboratory results are presented in Table B to Table D inclusive. The results of the analyses are summarised below.

Heavy Metals

Eight fill and two natural soil samples were analysed for heavy metals. The results of the analyses were below the SAC.

Waste Classification:

The results of all analyses were less than the SCC2 criteria outlined in the Waste Classification Guidelines 2009. The arsenic, lead and nickel results of 120mg/kg, 530mg/kg and 3,200mg/kg respectively in the BH3 (0.45-0.65) sample and the nickel results of 170mg/kg in the BH7 (0.05-0.3) sample exceeded the CT1 criterion outlined in the Waste Classification Guidelines 2009.

TCLP leachates were prepared from the BH3 (0.45-0.65) sample and analysed for arsenic, lead and nickel. TCLP leachates were prepared from the BH7 (0.05-0.3) sample and analysed for nickel. The results were less than the TCLP1 criteria.

Petroleum Hydrocarbons (TPH) and Monocyclic Aromatic Hydrocarbons (BTEX)

PID soil sample headspace measurements were taken on all samples obtained for this assessment. All PID measurements were less than 3.9ppm equilivent iso-butylene which generally indicates a lack of PID detectable volatile organic compounds in the sample

Eight fill and two natural soil samples were analysed for TPH and BTEX compounds. The results of the analyses were below the SAC.

Waste Classification:

The results of all analyses were less than the relevant CT1 and SCC1 criteria outlined in the Waste Classification Guidelines 2009.

Polycyclic Aromatic Hydrocarbons (PAHs)

Eight fill and two natural soil samples were analysed for a range of PAHs including Benzo(a)pyrene. The results of the analyses were below the SAC.

Waste Classification:

The results of all analyses were less than the relevant CT1 and SCC1 criteria outlined in the Waste Classification Guidelines 2009.

Organochlorine (OCPs) and Organophosphorous (OPPs) Pesticides

Eight fill and two natural soil samples were analysed for a range of OCPs and OPPs. The results of the analyses were below the laboratory PQL and less than the SAC.

Waste Classification:

The results of all analyses were less than the SCC1 criteria outlined in the Waste Classification Guidelines 2009.

Polychlorinated Biphenyls (PCBs)

Eight fill and two natural soil samples were analysed for a range of PCBs. The results of the analyses were below the laboratory PQL and less than the SAC.

Waste Classification:

The results of all analyses were less than the SCC1 criteria outlined in the Waste Classification Guidelines 2009.

Asbestos

Eight fill and two natural soil samples were screened for the presence of asbestos fibres. The results of the analyses indicated that asbestos fibres were not encountered within the samples and no respirable fibres were detected

11 ASSESSMENT OF ANALYTICAL QA/QC

The DQOs and DQIs established for the investigation have been assessed in this section of the report. The assessment includes a review of the laboratory QA/QC procedure to assess whether the sample data is reliable.

The laboratory reports for this investigation have been checked and issued as final by:

- Envirolab Services Pty Ltd
  NATA Accreditation No. 2901
  Report numbers: 46571 & 46571-A.

The RPD results for the field QA/QC duplicate samples are summarised in Table D. An assessment of the DQIs adopted for this investigation is summarised in the following table. A brief explanation of the individual DQI is presented in Appendix D.

DQO	Number of Samples	DQI
Precision:		
Intra-laboratory duplicate Sample Reference: Dup 1 is a duplicate of soil sample BH1 (0-0.3)	Soil x 1	Intra-laboratory duplicates were prepared for metals only. The intra-laboratory RPD values indicated that field precision was acceptable. Elevated RPD values were encountered for copper, nickel and zinc. Values outside the acceptable limits can be attributed to results that are close to PQL and /or sample heterogeneity. As both the initial results and the duplicate results were less than the SAC these results are not considered that have had an adverse impact on the data set at a whole.
Laboratory repeat (duplicate)	Soil x 1	The inter-laboratory RPD values indicated that field precision was acceptable. The comment in the report the "RPD for duplicate results is accepted due to the non-homogenous nature of the sample' arose from the fact that traces of PAH's were detected in the repeat sample whilst all results for the primary sample were LPQL. This is not considered to have had an adverse effect on the data set as a whole.
Accuracy:		
Surrogate Spikes	All organic analytes	Laboratory accuracy was good and that no outliers were reported.
Matrix Spike	Soil x 1	Laboratory accuracy was good and that no outliers were reported.
Laboratory Control Sample (LCS)	Soil x 2	Laboratory accuracy was good and that no outliers were reported.

Representativeness:		
Samples extracted and analysed within holding time	All Samples	All samples were extracted and analysed within the appropriate holding times outlined in the investigation procedure.
Analysis of Laboratory Blanks	Soil x 1	All laboratory blanks were found to be free of analyte concentrations above the PQLs.
Comparability:		
EIS sampling protocols	All Samples	Sampling was undertaken in accordance with the EIS sampling protocols outlined in Appendix D
Standard laboratory analytical methods used	All Samples	All Samples
Samples obtained by qualified staff	All Samples	All Samples
Completeness:		
Documentation (including site notes, borehole logs and COC etc) was correctly maintained	All Samples	All Samples
Samples obtained were analysed for the contaminants of concern	All Samples	All Samples
Appropriate analytical methods used by the laboratory.	All Samples	All Samples

12 DISCUSSION

The environmental site assessment undertaken for the proposed multi-storey commercial development was designed to assess the suitability of the site for the proposed land use and to assign a waste classification to the soils to be excavated as part of the proposed development.

12.1 Summary of Soil Conditions

Soil samples obtained for the investigation were analysed for the potential contaminants of concern identified at the site.

Elevated concentrations of contaminants were not encountered in the soil samples analysed for the investigation. All results were below the site assessment criteria (SAC).

Based on the results, EIS are of the opinion that the potential for significant widespread soil contamination at the site is relatively low.

12.1.1 Asbestos in Soil

Asbestos was not detected above the reporting limit in the soil samples analysed for the investigation.

12.1.2 Dewatering During Development

In the event groundwater is intercepted during excavation works, dewatering will be required. Council and other relevant approvals will be required prior to disposal of groundwater into the stormwater system.

12.2 Waste Classification

12.2.1 Classification of Fill Soils

Based on the results of the assessment, the fill material is classified as 'General Solid Waste (non-putrescible)' according to the criteria outlined in Waste Classification Guidelines 2009.

The material should be disposed of to a suitably licensed NSW DECCW (EPA) landfill.

12.2.2 Classification of Natural Soil and Bedrock

The natural silty clay and underlying shale bedrock at the site is considered to be virgin excavated natural material (VENM). The material is considered suitable for re-use on-site, or alternatively, the information included in this report may be used to assess whether the material is suitable for beneficial reuse at another site as fill material. Where doubt exists about the difference between fill and VENM material an environmental/geotechnical engineer should be contacted.

VENM must not be mixed with any fill material (including building rubble) as this will invalidate the VENM classification.

In the event the natural soils require disposal to a NSW DECCW (EPA) licensed landfill, the material can be disposed as 'General Solid Waste (non-putrescible)'.

12.3 Conclusion

Based on the scope of work undertaken for this assessment EIS consider that the site can be made suitable for the proposed multi-storey commercial development provided that the following recommendations are implemented:

- During demolition and excavation works, the site should be inspected by experienced environmental personnel to assess any unexpected conditions or subsurface facilities that may be discovered between investigation locations. This should facilitate appropriate adjustment of the works programme and schedule in relation to the changed site conditions. EIS deems this inspection necessary due to the unknown location of previous UST associated with the state abattoir. Any unexpected or unusual sub-surface features (including underground storage tanks, coloured or odourous soil) should be reported to EIS immediately.
- A hazardous building materials survey is undertaken of all site buildings and structures prior to demolition.
- All excavated soil is disposed off appropriately.

13 LIMITATIONS

The boreholes drilled for the investigation have enabled an assessment to be made of the existence of significant, large quantities of contaminated soils. The conclusions based on this investigation are that, while major contamination of the site is not apparent, problems may be encountered with smaller scale features between boreholes. EIS adopts no responsibility whatsoever for any problems such as underground storage tanks, buried items or contaminated material that may be encountered between sampling locations at the site. The proposed construction activities at the site should be planned on this basis, and any unexpected problem areas that are encountered between boreholes should be immediately inspected by experienced environmental personnel. This should ensure that such problems are dealt with in an appropriate manner, with minimal disruption to the project timetable and budget.

The conclusions developed in this report are based on site conditions which existed at the time of the site assessment and the scope of work outlined previously in this report. They are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, and visual observations of the site and vicinity, together with the interpretation of available historical information and documents reviewed as described in this report.

The investigation for this assessment and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined previously in this report.

Where information has been provided by third parties, EIS has not undertaken any verification process, except where specifically stated.

EIS has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination.

Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work.

EIS accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site.

EIS have not and will not make any determination regarding finances associated with the site.

Changes in the proposed or current site use may result in remediation or further investigation being required at the site.

During construction at the site, soil, fill and any unsuspected materials that are encountered should be monitored by qualified environmental and geotechnical engineers to confirm assumptions made on the basis of the limited investigation data, and possible changes in site level and other conditions since the investigation. Soil materials considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa.

This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose. Copyright in this report is the property of EIS. EIS has used a degree of care, skill and diligence normally exercised by consulting engineers in similar circumstances and locality. No other warranty expressed or implied is made or intended. Subject to payment of all fees due for the investigation, the client alone shall have a licence to use this report.

Should you require any further information regarding the above, please do not hesitate to contact us.

Yours faithfully
For and on behalf of
ENVIRONMENTAL INVESTIGATION SERVICES

Mitch Delaney
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ABBREVIATIONS

AAS	Atomic Absorption Spectrometry
AGST	Above Ground Storage Tank
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment Conservation Council
ASS	Acid Sulfate Soil
B(a)P	Benzo(a)pyrene
BH	Borehole
BTEX	Benzene, Toluene, Ethyl benzene, Xylene
COC	Chain of Custody documentation
CLM	Contaminated Land Management
DECCW	Department of Environment, Climate Change and Water (formerly DECC, DEC and EPA)
DNR	NSW Department of Natural Resources (now split between DWE and DECCW)
DWE	NSW Department of Water and Energy
DP	Deposited Plan
DQO	Data Quality Objective
EC	Electrical Conductivity
EPA NSW	Environment Protection Authority, New South Wales (now part of DECCW)
GC-ECD	Gas Chromatograph-Electron Capture Detector
GC-FID	Gas Chromatograph-Flame Ionisation Detector
GC-MS	Gas Chromatograph-Mass Spectrometer
HIL	Health Based Investigation Level
HM	Heavy Metals
ICP-AES	Inductively Couple Plasma – Atomic Emission Spectra
NATA	National Association of Testing Authorities, Australia
NEPC	National Environmental Protection Council
NHMRC	National Health and Medical Research Council
OCPs	Organochlorine Pesticides
OHS (OH&S)	Occupational Health and Safety
PAH	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PID	Photo-ionisation Detector
PPIL	Provisional Phyto-toxicity Investigation Levels
PQL	Practical Quantitation Limit
P&T	Purge & Trap
RAP	Remedial Action Plan
QA/QC	Quality Assurance and Quality Control
RPD	Relative Percentage Difference
SEPP	State Environmental Planning Policy
sPOCAS	suspension Peroxide Oxidation Combined Acidity and Sulfate
SPT	Standard Penetration Test
SWL	Standing Water Level
TCLP	Toxicity Characteristic Leaching Procedure
TP	Test Pit
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
UCL	Upper Confidence Limit
UST	Underground Storage Tank
VOC	Volatile Organic Compounds

IMPORTANT INFORMATION ABOUT THE SITE ASSESSMENT REPORT

These notes have been prepared by EIS to assist with the assessment and interpretation of this report.

An Environmental Assessment Report is Based on a Unique Set of Project Specific Factors:

This report has been prepared in response to specific project requirements as stated in the EIS proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- the proposed land use is altered;
- the defined subject site is increased or sub-divided;
- the proposed development details including size, configuration, location, orientation of the structures are modified;
- the proposed development levels are altered, eg addition of basement levels; or
- ownership of the site changes.

EIS/J&K will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the assessment. If the subject site is sold, ownership of the assessment report should be transferred by EIS to the new site owners who will be informed of the conditions and limitations under which the assessment was undertaken. No person should apply an assessment for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions

Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (eg. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an assessment report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Assessment is Based on Professional Interpretations of Factual Data

Site assessments identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Environmental Site Assessment Limitations

Although information provided by an environmental site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Environmental Site Assessments by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an environmental assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Environmental Assessment Report

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problems, however contractors can still misinterpret the

logs during bid preparation if separated from the text of the assessment. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the test of the report to obtain a proper understanding of the assessment. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site assessment is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

TABLE A-1
ENVIRONMENTAL AND HEALTH-BASED SOIL INVESTIGATION LEVELS (mg/kg)

Substances	Health Investigation Levels (HILs)[1]				Provisional Phyto-toxicity Investigation Levels (PPILs)[1]	NSW EPA Guidelines for Assessing Service Station Sites[2]	Back-ground Ranges[1]
	A	D	E	F			
	'Standard' residential with garden/ accessible soil (home-grown produce contributing less than 10% of vegetable and fruit intake; no poultry); includes children's day-care centres, kindergartens, preschools and primary schools	Residential with minimal opportunities for soil access: includes dwellings with fully and permanently paved yard space such as high-rise apartments and flats	Parks, recreational open space and playing fields: includes secondary schools	Commercial/Industrial: includes premises such as shops and offices as well as factories and industrial sites			
METALS/METALLOIDS							
Arsenic (total)	100	400	200	500	20		1-50
Barium					300		100-3000
Beryllium	20	80	40	100			
Cadmium	20	80	40	100	3		1
Chromium(III)	12%	48%	24%	60%	400		
Chromium(VI)	100	400	200	500	1		
Chromium (total)							5-1000
Cobalt	100	400	200	500			1-40
Copper	1000	4000	2000	5000	100		2-100
Lead	300	1200	600	1500	600		2-200
Manganese	1500	6000	3000	7500	500		850
Methyl mercury	10	40	20	50			
Mercury (inorganic)	15	60	30	75	1		0.03
Nickel	600	2400	600	3000	60		5-500
Vanadium					50		20-500
Zinc	7000	28000	14000	35000	200		10-300
ORGANICS							
Aldrin + Dieldrin	10	40	20	50			
Chlordane	50	200	100	250			
DDT + DDD + DDE	200	800	400	1000			
Heptachlor	10	40	20	50			
Polycyclic aromatic hydrocarbons (PAHs)	20	80	40	100			
Benzo(a)pyrene	1	4	2	5			
Phenol	8500	34000	17000	42500			
PCBs (total)	10	40	20	50			
Petroleum Hydrocarbon Components (constituents):							
>C16 - C35 Aromatics	90	360	180	450			
>C16 - C35 Aliphatics	5600	22400	11200	28000			
>C35 Aliphatics	56000	224000	112000	280000			
C6-C9						65	
C10-C40						1000	
Benzene						1	
Toluene						1.4	
Ethyl Benzene						3.1	
Total Xylenes						14	
OTHER							
Boron	3000	12000	6000	15000			
Cyanides (complexed)	500	2000	1000	2500			
Cyanides (free)	250	1000	500	1250			
Phosphorus					2000		
Sulfur					600		
Sulfate					2000		

NOTE: Reference should be made to the following guidelines for further details (as referenced in the above table):

1 National Environment Protection (Assessment of Site Contamination) Measure - 1999, National Environment Protection Council. Human exposure settings based on land use have been established for HILs and details are outlined in Taylor and Langley 1998.

2 NSW DECCW (formerly EPA) Guidelines for Assessing Service Station Sites - 1994.

TABLE A - 2
CHEMICAL CONTAMINANT CRITERIA FOR WASTE CLASSIFICATION
Waste Classification Guidelines. Part 1: Classifying Waste DECC (now DECCW) NSW July 2009

GENERAL SOLID WASTE	RESTRICTED SOLID WASTE	HAZARDOUS WASTE
IF SCC ≤ CT1, TCLP NOT NEEDED TO CLASSIFY AS GENERAL SOLID WASTE	IF SCC ≤ CT2, TCLP NOT NEEDED TO CLASSIFY AS RESTRICTED SOLID WASTE	IF SCC > CT2, TCLP NOT NEEDED TO CLASSIFY AS HAZARDOUS WASTE
IF TCLP ≤ TCLP1 AND SCC ≤ SCC1 TREAT AS GENERAL SOLID WASTE	IF TCLP ≤ TCLP2 AND SCC ≤ SCC2 TREAT AS RESTRICTED SOLID WASTE	IF TCLP > TCLP2 AND/OR SCC > SCC2 TREAT AS HAZARDOUS WASTE

	GENERAL SOLID WASTE			RESTRICTED SOLID WASTE		
CONTAMINANT	CT1 (mg/kg)	TCLP1 (mg/L)	SCC1 (mg/kg)	CT2 (mg/kg)	TCLP2 (mg/L)	SCC2 (mg/kg)
Arsenic	100	5	500	400	20	2,000
Beryllium	20	1.0	100	80	4	400
Cadmium	20	1.0	100	80	4	400
Chromium VI	100	5	1,900	400	20	7,600
Cyanide (total)	320	16	5,900	1280	64	23,600
Cyanide (Amenable)	70	3.5	300	280	14	1,200
Fluoride	3,000	150	10,000	12,000	600	40,000
Lead	100	5	1,500	400	20	6,000
Mercury	4	0.2	50	16	0.8	200
Molybdenum	100	5	1,000	400	20	4,000
Nickel	40	2	1,050	160	8	4,200
Selenium	20	1	50	80	4	200
Silver	100	5.0	180	400	20	720
Benzene	10	0.5	18	40	2	72
Toluene	288	14.4	518	1,152	57.6	2,073
Ethylbenzene	600	30	1,080	2,400	120	4,320
Total xylenes	1,000	50	1,800	4,000	200	7,200
Total petroleum hydrocarbons (C6-C9)	-	-	650	-	-	2,600
Total petroleum hydrocarbons (C10-C36) (C10-C14, C15-C28, C29-C36)	-	-	10,000	-	-	40,000
Benzo(a)pyrene	0.8	0.04	10	3.2	0.16	23
Polycyclic aromatic hydrocarbons (Total)	-	-	200	-	-	800
Polychlorinated biphenyls	-	-	<50	-	-	<50
Phenol (nonhalogenated)	288	14.4	518	1,152	57.6	2,073
Scheduled chemicals	-	-	<50	-	-	<50

NOTE:
SCC – Specific Contaminant Concentration
CT – Contaminant Threshold
TCLP – Toxicity Characteristics Leaching Procedure

TABLE B
SUMMARY OF LABORATORY RESULTS
SOIL ASSESSMENT
All data in mg/kg unless stated otherwise

ANALYTE			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES				OP PESTICIDES	PCBs	PETROLEUM HYDROCARBONS								PID VALUES	ASBESTOS FIBRES
																			Petroleum Hydrocarbons					Benzene	Toluene	Ethyl benzene	Total Xylenes		
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor			C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	C_{10} - C_{36}					
PQL - Envirolab Services			4	0.5	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	0.1	25	50	100	100	250	0.5	0.5	1	3		100
Site Assessment Criteria ^			500 *	100 *	60% *	5000 *	1500 *	75 *	3000 *	35000 *	100 *	5 *	50 *	250 *	1000 *	50 *	0.1 ^^	50 *	65 #	nsl	nsl	nsl	1000 #	1 #	1.4 #	3.1 #	14 #		100^^
General Solid Waste CT1*			100	20	100	nsl	100	4	40	nsl	nsl	0.8	nsl					nsl	nsl	nsl			nsl	10	288	600	1000	-	-
General Solid Waste SCC1*			500	100	1900	nsl	1500	50	1050	nsl	200	10	50					50	650	nsl			10000	18	518	1080	1800	-	-
Restricted Solid Waste CT2*			400	80	400	nsl	400	16	160	nsl	nsl	3.2	nsl					nsl	nsl	nsl			nsl	40	1152	2400	4000	-	-
Restricted Solid Waste SCC2*			2000	400	7600	nsl	6000	200	4200	nsl	800	23	50					50	2600	nsl			40000	72	2073	4320	7200	-	-
Sample Reference	**Sample Depth**	**Sample Description**																										
BH1	0-0.3	Fill	5	LPQL	10	22	27	LPQL	20	52	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	3.9	No Asbestos detected
BH1	1.0-1.3	Silty Clay	7	LPQL	5	22	16	LPQL	3	16	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0	No Asbestos detected
BH2	0-0.2	Fill	6	0.9	10	23	41	LPQL	16	63	LPQL	0.05	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	2.4	No Asbestos detected
BH3	0.45-0.65	Fill	120	2.9	46	550	530	0.7	57	3200	2.6	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	180	270	450	LPQL	LPQL	LPQL	LPQL	1.1	No Asbestos detected
BH4	0-0.2	Fill	LPQL	LPQL	5	7	13	LPQL	5	24	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	1.4	No Asbestos detected
BH5	0.1-0.35	Fill	<4	LPQL	7	11	9	LPQL	6	10	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0	No Asbestos detected
BH6	0.1-0.27	Fill	<4	LPQL	7	18	10	LPQL	14	15	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0	No Asbestos detected
BH7	0.05-0.3	Fill	<4	LPQL	20	69	7	LPQL	170	56	3.7	0.3	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0	No Asbestos detected
BH8	0.2-0.45	Fill	7	LPQL	13	24	16	LPQL	18	21	5.3	0.6	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0	No Asbestos detected
BH8	0.6-1.0	Silty Clay	9	LPQL	13	11	18	LPQL	2	5	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0	No Asbestos detected
Total Number of samples			10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Maximum Value			120	2.9	46	550	530	0.7	170	3200	5.3	0.6	0	0	0	0	0	0	0	0	180	270	450	0	0	0	0	3.9	nc

EXPLANATION:

^ Site Assessment Criteria: Guideline concentrations adopted for the investigation as outlined below:
* National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC Guidelines)
Health Investigation Levels (HIL) - Column F, Commercial/Industrial
NSW DECC (EPA) Guidelines for Assessing Service Station Sites (1994)
^^ In the absence of Australian guidelines, the laboratory PQL has been adopted as the site assessment criteria
' NSW DECCW (EPA) Waste Classification Guidelines (2009)

Concentration above the Site Assessment Criteria **VALUE**

ABBREVIATIONS:

PAHs: Polycyclic Aromatic Hydrocarbons
B(a)P: Benzo(a)Pyrene
PQL: Practical Quantitation Limit
LPQL: Less than PQL
OP: Organophosphorus Pesticides
PID: Photoionisation Detector
PCBs: Polychlorinated Biphenyls
UCL: Upper Level Confidence Limit on Mean Value
na: Not Analysed
nc: Not Calculated
nsl: No Set Limit

TABLE C
SUMMARY OF LABORATORY RESULTS
TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)
All data in mg/L unless stated otherwise

ANALYTE		Arsenic	Cadmium	Chromium	Lead	Mercury	Nickel	B(a)P
PQL - Envirolab Services		0.05	0.01	0.01	0.03	0.0005	0.02	0.001
TCLP1 - General Solid Waste *		5	1	5	5	0.2	2	0.04
TCLP2 - Restricted Solid Waste *		20	4	20	20	0.8	8	0.16
TCLP3 - Hazardous Waste *		>20	>4	>20	>20	>0.8	>8	>0.16
Sample Reference	**Sample Depth**							
BH3	0.45-0.65	LPQL	NA	NA	0.04	NA	0.04	NA
BH7	0.05-0.3	NA	NA	NA	NA	NA	0.1	NA
Total Number of samples		1	0	0	1	0	2	0
Maximum Value		0	0	0	0.04	0	0.1	0

EXPLANATION:

* NSW DECCW (EPA) Waste Classification Guidelines (2009)

Concentration above the General Solid Waste value **VALUE**

ABBREVIATIONS:

PQL: Practical Quantitation Limit
LPQL: Less than PQL
B(a)P: Benzo(a)Pyrene
nc: Not Calculated
na: Not Analysed

TABLE D
LABORATORY DUPLICATE RESULTS - SOIL
QA/QC - RELATIVE PERCENTAGE DIFFERENCES
All data in mg/kg unless stated otherwise

ANALYTE	HEAVY METALS								PAHs															Total OPPs	Total OCPs	Total PCBs	PETROLEUM HYDROCARBONS							
																											Petroleum Hydrocarbons				Benzene	Toluene	Ethyl Benzene	Total Xylenes
	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Nap	Acenaphthy	Acenaphthe	Fluo	Phen	Anth	Fluoro	Pyr	B(a)A	Chy	B(b+k)F	B(a)P	I(123-cd)	D(ah)A	B(ghi)P				C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}				
PQL - Envirolab Services	4	0.5	1	1	1	0.1	1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.05	0.1	0.1	0.1	0.1	0.1	0.1	25	50	100	100	0.5	0.5	1	1
Intra-laboratory Soil Duplicate Results - Envirolab Report Number 46571																																		
Initial Sample Ref	5	LPQL	10	22	27	LPQL	20	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Duplicate Sample Ref	9	LPQL	15	11	18	LPQL	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mean Value	7	0	12.5	16.5	22.5	0	10.5	27.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPD Value	57	0	40	67	40	0	181	178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

EXPLANATION:
The RPD value is calculated as the absolute value of the difference between the initial and repeat results divided by the average value expressed as a percentage. The following acceptance criteria will be used to assess the RPD results:
- Results > 10 times PQL = RPD value < 50% are acceptable
- Results between 5 & 10 time PQL = RPD value < 75% are acceptable
- Results < 5 times PQL = RPD value < 100% are acceptable

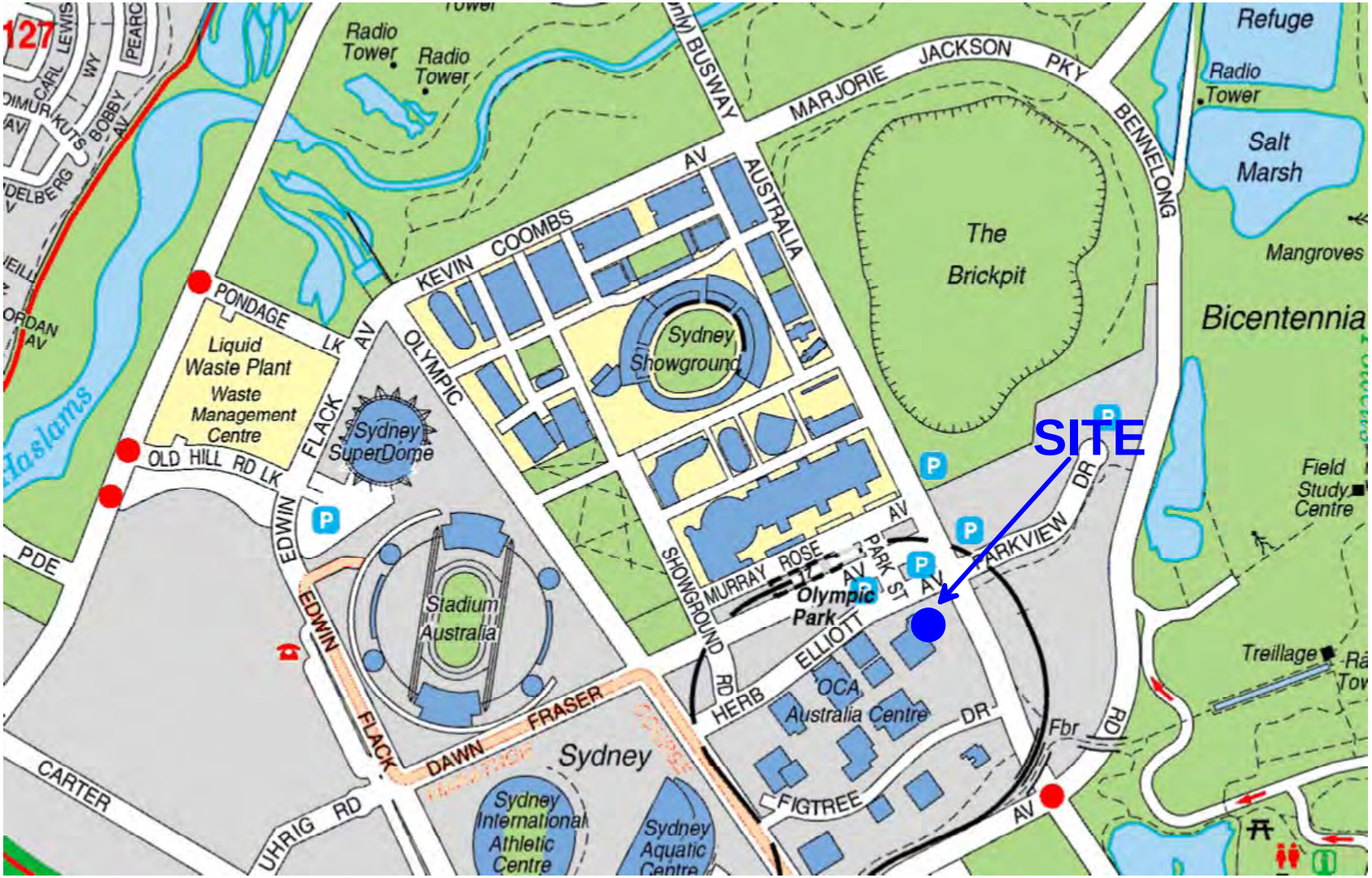
RPD Results Above the Acceptance Criteria VALUE

ABBREVIATIONS:
PQL: Practical Quantitation Limit
LPQL: Less than PQL
(-) : Not Analysed
nc: Not Calculated
OPP: Organophosphorus Pesticides
OCP: Organochlorine Pesticides
PCBs: Polychlorinated Biphenyls
RPD: Relative Percentage Difference

PAHs: Polycyclic Aromatic Hydrocarbons
Nap: Naphthalene
Acenaphty: Acenapthylene
Acenaphte: Acenaphthene
Fluo: Fluorene
Phen: Phenanthrene
Anth: Anthracene
Fluoro: Fluoranthene

Pyr: Pyrene
B(a)A: Benzo(a)anthracene
Chy: Chrysene
B(a+k)F: Benzo(a+k)fluoranthene
B(a)P: Benzo(a)pyrene
I(123-cd): Indeno(123-cd)pyrene
D(ah)A: Dibenzo(ah)anthracene
B(ghi)P: Benzo(ghi)perylene

As: Arsenic
Cd: Cadmium
Cr: Chromium
Cu: Copper
Pb: Lead
Hg: Mercury
Ni: Nickel
Zn: Zinc



Recreated from UBD on disc (version 5.0)
Map Ref: 232 P1 (not to scale)

Note: Reference should be made to the text for a full understanding of this plan

SITE LOCATION PLAN

2 Australia Ave, Sydney Olympic Park

ENVIRONMENTAL INVESTIGATION SERVICES

Job No: E24351Krpt
Figure: 1

BOREHOLE LOCATION PLAN

2 Australia Ave, Sydney Olympic Park

LEGEND:

⊕ **BH1 (0.23)** **BOREHOLE LOCATION & DEPTH OF FILL (m)**

APPROXIMATE SITE BOUNDARY

Approximate Scale (m)

0 10 20 30 40 50

Note: Reference should be made to the text for a full understanding of this plan. Site boundary and Borehole locations are shown at approximate locations.

ENVIRONMENTAL INVESTIGATION SERVICES

Job No: E24351Krpt
Figure: 2

APPENDIX A

(Borehole Logs and Geotechnical Explanatory Notes)

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. 1 1/1

Environmental logs are not to be used for geotechnical purposes

Client: CAPITAL CORPORATION

Project: PROPOSED MULTI-STOREY COMMERCIAL DEVELOPMENT

Location: No 2 AUSTRALIA AVENUE, HOMEBUSH, NSW

Job No. E24351K **Method:** EZI-PROBE **R.L. Surface:**

Date: 1-10-10 **Datum:**

Logged/Checked by: M.D./

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE -TION						0			FILL: Silty sand, fine to medium grained, dark brown, with a trace of igneous gravel, ash and brick fragments.	D-M			GRASS COVER
									FILL: Silty sand, fine tom edium grained, light brown, with igneous and ironstone gravel.	D-M			
						1		CL	SILTY CLAY: medium plasticity, light brown mottled grey and orange, with a trace of shale and ironstone gravel and ash.	MC < PL	-	-	
									SILTY CLAY: medium plasticity, brown mottled grey and orange, with a trace of shale and ironstone gravels.	MC < PL			
						2			END OF BOREHOLE AT 2.0m				
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

EIS

Borehole No. 2 1/1

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: CAPITAL CORPORATION

Project: PROPOSED MULTI-STOREY COMMERCIAL DEVELOPMENT

Location: No 2 AUSTRALIA AVENUE, HOMEBUSH, NSW

Job No. E24351K **Method:** EZI-PROBE **R.L. Surface:**

Date: 1-10-10 **Datum:**

Logged/Checked by: M.D./

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE -TION						0			FILL: Silty sand, fine to medium grained, brown with a trace of igneous gravel, ash and root fibres.	D-M			
									FILL: Silty clay, medium plasticity, brown mottled grey and orange, with a trace of igneous ironstone gravel and ash.	MC < PL			
						1			FILL: Silty sand, fine to medium grained, yellow and light brown, with a trace of igneous gravel and ash.	M			
								-	SHALE: grey and orange with ironstone bands.	DW	-	-	
									END OF BOREHOLE AT 1.5m				EZI PROBE REFUSAL
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

EIS

Borehole No. 3 1/1

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: CAPITAL CORPORATION

Project: PROPOSED MULTI-STOREY COMMERCIAL DEVELOPMENT

Location: No 2 AUSTRALIA AVENUE, HOMEBUSH, NSW

Job No. E24351K **Method:** EZI-PROBE **R.L. Surface:**

Date: 1-10-10 **Datum:**

Logged/Checked by: M.D.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE -TION	■	■	■	■		0			FILL: Silty sand, fine to medium gravell, dark brown with a trace of igneous gravel and roots.	M MC < PL			GRASS COVER
									FILL: Silty clay, low plasticity, light brown and orange, with sand and a trace of igneous, ironstone and shale gravel and ash and coal gravel.	MC < PL			
						1			FILL: Silty clay, low to medium plasticity, dark brown, with a trace of igneous gravel and ash.				EZI PROBE REFUSAL ON OBSTRUCTION IN FILL
									END OF BOREHOLE AT 0.65m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. 4 1/1

Environmental logs are not to be used for geotechnical purposes

Client: CAPITAL CORPORATION

Project: PROPOSED MULTI-STOREY COMMERCIAL DEVELOPMENT

Location: No 2 AUSTRALIA AVENUE, HOMEBUSH, NSW

Job No. E24351K **Method:** EZI-PROBE **R.L. Surface:**

Date: 1-10-10 **Datum:**

Logged/Checked by: M.D.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE -TION	■	■	■			0			FILL: Silty sand, fine to medium grained, dark brown with a trace of igneous gravel, ash and root fibres.	M			GRASS COVER
										D			
									FILL: Silty sand, fine to medium grained, orange and yellow with a trace of igneous gravel.				
	■	■	■			1			as above, but light grey.	D			
	■	■	■					CL	SILTY CLAY: medium plasticity, brown mottled grey and orange with ironstone and shale bands.	MC < PL	-	-	
				■		2			END OF BOREHOLE AT 1.8m				EZI PROBE REFUSAL
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. 5 1/1

Environmental logs are not to be used for geotechnical purposes

Client: CAPITAL CORPORATION

Project: PROPOSED MULTI-STOREY COMMERCIAL DEVELOPMENT

Location: No 2 AUSTRALIA AVENUE, HOMEBUSH, NSW

Job No. E24351K **Method:** EZI-PROBE **R.L. Surface:**

Date: 1-10-10 **Datum:**

Logged/Checked by: M.D.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE -TION						0		-	ASHPHALTIC CONCRETE: 600mm.t.	D	-	-	
									gravel.	D			
								CL-CH	FILL: Silty sand, fine to medium grained, yellow and grey with a trace of sandstone gravel.	MC < PL	-	-	
								-	FILL: Silty sand, fine to medium grained, with igneous gravel.	DW	-	-	
						1			SILTY CLAY: medium to high plasticity, grey mottled brown, with shale and ironstone gravel.				EZI PROBE REFUSAL
									SHALE: grey and orange with ironstone bands.				
									END OF BOREHOLE AT 0.85m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. 6 1/1

Environmental logs are not to be used for geotechnical purposes

Client: CAPITAL CORPORATION

Project: PROPOSED MULTI-STOREY COMMERCIAL DEVELOPMENT

Location: No 2 AUSTRALIA AVENUE, HOMEBUSH, NSW

Job No. E24351K **Method:** EZI-PROBE **R.L. Surface:**

Date: 1-10-10 **Datum:**

Logged/Checked by: M.D./

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE -TION	■	■	■	■		0		-	ASHPHALTIC CONCRETE: 400mm.	D	-	-	
								CL	FILL: Silty sand, light brown grey, fine to medium grained, with igneous gravel.	D MC < PL	-	-	
								-	FILL: Silty sand, fine to medium grained, yellow and grey with a trace of sandstone and igneous gravel.	DW	-	-	
						1			SILTY CLAY: medium plasticity, grey mottled orange, with shale and ironstone gravel.				EZI PROBE REFUSAL
									SHALE: grey.				
									END OF BOREHOLE AT 0.75m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

ENVIRONMENTAL LOG

Borehole No. 7 1/1

Environmental logs are not to be used for geotechnical purposes

Client: CAPITAL CORPORATION

Project: PROPOSED MULTI-STOREY COMMERCIAL DEVELOPMENT

Location: No 2 AUSTRALIA AVENUE, HOMEBUSH, NSW

Job No. E24351K **Method:** EZI-PROBE **R.L. Surface:**

Date: 1-10-10 **Datum:**

Logged/Checked by: M.D./

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE -TION	■		■			0		-	ASHPHALTIC CONCRETE: Gravel.	D	-	-	
	■		■					CL	FILL: Silty sand, fine to medium grained, dark brown, grey with igneous gravel.	MC<PL	-	-	
			■					-	SILTY CLAY: low plasticity, grey mottled brown, with shale and ironstone gravel.	DW	-	-	
						1			SHALE: grey.				EZI PROBE REFUSAL
									END OF BOREHOLE AT 0.65m				
						2							
						3							
						4							
						5							
						6							
						7							

ENVIRONMENTAL INVESTIGATION SERVICES

CONSULTING ENVIRONMENTAL ENGINEERS

EIS

ENVIRONMENTAL LOG

Borehole No. 8 1/1

Environmental logs are not to be used for geotechnical purposes

Client: CAPITAL CORPORATION

Project: PROPOSED MULTI-STOREY COMMERCIAL DEVELOPMENT

Location: No 2 AUSTRALIA AVENUE, HOMEBUSH, NSW

Job No. E24351K **Method:** EZI-PROBE **R.L. Surface:**

Date: 1-10-10 **Datum:**

Logged/Checked by: M.D./

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE -TION						0			CONCRETE SLAB: 0.2m				
								-	FILL: Silty clay, medium plasticity, grey mottled brown and orange, with a trace of igneous gravel and ash.	MC < PL	-	-	
								CL-CH	SILTY CLAY: medium to high plasticity, grey mottled orange and light brown with a trace of ironstone gravel and ash.	MC < PL	-	-	
						1		CL	SILTY CLAY: medium plasticity, grey mottled orange, with a trace of ironstone and shale gravel.	MC≈PL			
								-	SHALE: grey.	DW	-	-	
									END OF BOREHOLE AT 1.45m				
						2							
						3							
						4							
						5							
						6							
						7							

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ABN 17 003 550 801

REPORT EXPLANATION NOTES

INTRODUCTION

These notes have been provided to amplify the geotechnical report in regard to classification methods, field procedures and certain matters relating to the Comments and Recommendations section. Not all notes are necessarily relevant to all reports.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Geotechnical engineering involves gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726, the SAA Site Investigation Code. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geotechnical practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached Unified Soil Classification Table qualified by the grading of other particles present (eg sandy clay) as set out below:

Soil Classification	Particle Size
Clay	less than 0.002mm
Silt	0.002 to 0.06mm
Sand	0.06 to 2mm
Gravel	2 to 60mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose	less than 4
Loose	4 – 10
Medium dense	10 – 30
Dense	30 – 50
Very Dense	greater than 50

Cohesive soils are classified on the basis of strength (consistency) either by use of hand penetrometer, laboratory testing or engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength kPa
Very Soft	less than 25
Soft	25 – 50
Firm	50 – 100
Stiff	100 – 200
Very Stiff	200 – 400
Hard	Greater than 400
Friable	Strength not attainable – soil crumbles

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'Shale' is used to describe thinly bedded to laminated siltstone.

SAMPLING

Sampling is carried out during drilling or from other excavations to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on plasticity, grain size, colour, moisture content, minor constituents and, depending upon the degree of disturbance, some information on strength and structure. Bulk samples are similar but of greater volume required for some test procedures.

Undisturbed samples are taken by pushing a thin-walled sample tube, usually 50mm diameter (known as a U50), into the soil and withdrawing it with a sample of the soil contained in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Details of the type and method of sampling used are given on the attached logs.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All except test pits, hand auger drilling and portable dynamic cone penetrometers require the use of a mechanical drilling rig which is commonly mounted on a truck chassis.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for an excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Premature refusal of the hand augers can occur on a variety of materials such as hard clay, gravel or ironstone, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively lower reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock fragments. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers such as Revert or Biogel. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, an NMLC triple tube core barrel, which gives a core of about 50mm diameter, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as CORE LOSS. The location of losses are determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the top end of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, "Methods of Testing Soils for Engineering Purposes" – Test F3.1.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as

  N = 13
  4, 6, 7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

  N>30
  15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

Occasionally, the drop hammer is used to drive 50mm diameter thin walled sample tubes (U50) in clays. In such circumstances, the test results are shown on the borehole logs in brackets.

A modification to the SPT test is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as "N_c" on the borehole logs, together with the number of blows per 150mm penetration.

Static Cone Penetrometer Testing and Interpretation: Cone penetrometer testing (sometimes referred to as a Dutch Cone) described in this report has been carried out using an Electronic Friction Cone Penetrometer (EFCP). The test is described in Australian Standard 1289, Test F5.1.

In the tests, a 35mm diameter rod with a conical tip is pushed continuously into the soil, the reaction being provided by a specially designed truck or rig which is fitted with an hydraulic ram system. Measurements are made of the end bearing resistance on the cone and the frictional resistance on a separate 134mm long sleeve, immediately behind the cone. Transducers in the tip of the assembly are electrically connected by wires passing through the centre of the push rods to an amplifier and recorder unit mounted on the control truck.

As penetration occurs (at a rate of approximately 20mm per second) the information is output as incremental digital records every 10mm. The results given in this report have been plotted from the digital data.

The information provided on the charts comprise:

- Cone resistance – the actual end bearing force divided by the cross sectional area of the cone – expressed in MPa.
- Sleeve friction – the frictional force on the sleeve divided by the surface area – expressed in kPa.
- Friction ratio – the ratio of sleeve friction to cone resistance, expressed as a percentage.

The ratios of the sleeve resistance to cone resistance will vary with the type of soil encountered, with higher relative friction in clays than in sands. Friction ratios of 1% to 2% are commonly encountered in sands and occasionally very soft clays, rising to 4% to 10% in stiff clays and peats. Soil descriptions based on cone resistance and friction ratios are only inferred and must not be considered as exact.

Correlations between EFCP and SPT values can be developed for both sands and clays but may be site specific.

Interpretation of EFCP values can be made to empirically derive modulus or compressibility values to allow calculation of foundation settlements.

Stratification can be inferred from the cone and friction traces and from experience and information from nearby boreholes etc. Where shown, this information is presented for general guidance, but must be regarded as interpretive. The test method provides a continuous profile of engineering properties but, where precise information on soil classification is required, direct drilling and sampling may be preferable.

Portable Dynamic Cone Penetrometers: Portable Dynamic Cone Penetrometer (DCP) tests are carried out by driving a rod into the ground with a sliding hammer and counting the blows for successive 100mm increments of penetration.

Two relatively similar tests are used:

- Cone penetrometer (commonly known as the Scala Penetrometer) – a 16mm rod with a 20mm diameter cone end is driven with a 9kg hammer dropping 510mm (AS1289, Test F3.2). The test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various Road Authorities.
- Perth sand penetrometer – a 16mm diameter flat ended rod is driven with a 9kg hammer, dropping 600mm (AS1289, Test F3.3). This test was developed for testing the density of sands (originating in Perth) and is mainly used in granular soils and filling.

LOGS

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

The attached explanatory notes define the terms and symbols used in preparation of the logs.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than "straight line" variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

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

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it 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 and may not be the same at the time of construction.
- 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 be washed out of the hole or 'reverted' chemically if water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after stabilising at intervals ranging from several days to 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 perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg bricks, steel etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably determine the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density, strength and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse engineering characteristics or behaviour. If the volume and quality of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing is normally carried out in accordance with Australian Standard 1289 *'Methods of Testing Soil for Engineering Purposes'*. Details of the test procedure used are given on the individual report forms.

ENGINEERING REPORTS

Engineering reports are prepared by qualified personnel and are based on the information obtained and on current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal (eg. a three storey building) the information and interpretation may not be relevant if the design proposal is changed (eg to a twenty storey building). If this happens, the company 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 aspects and recommendations or suggestions for design and construction. However, the Company cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions – the potential for this will be partially dependent on borehole spacing and sampling frequency as well as investigation technique.
- Changes in policy or interpretation of policy by statutory authorities.
- The actions of persons or contractors responding to commercial pressures.

If these occur, the company will be pleased to assist with investigation or advice to resolve any problems occurring.

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, the company requests that it immediately be notified. Most problems are much more readily resolved when conditions are exposed that at some later stage, well after the event.

REPRODUCTION OF INFORMATION FOR CONTRACTUAL PURPOSES

Attention is drawn to the document *'Guidelines for the Provision of Geotechnical Information in Tender Documents'*, published by the Institution of Engineers, Australia. Where information obtained from this investigation 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. The company would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Copyright in all documents (such as drawings, borehole or test pit logs, reports and specifications) provided by the Company shall remain the property of Jeffery and Katauskas Pty Ltd. Subject to the payment of all fees due, the Client alone shall have a licence to use the documents provided for the sole purpose of completing the project to which they relate. License to use the documents may be revoked without notice if the Client is in breach of any objection to make a payment to us.

REVIEW OF DESIGN

Where major civil or structural developments are proposed or where only a limited investigation has been completed or where the geotechnical conditions/ constraints are quite complex, it is prudent to have a joint design review which involves a senior geotechnical engineer.

SITE INSPECTION

The company will always be pleased to provide engineering inspection services for geotechnical aspects of work to which this report is related.

Requirements could range from:

i) a site visit to confirm that conditions exposed are no worse than those interpreted, to

ii) a visit to assist the contractor or other site personnel in identifying various soil/rock types such as appropriate footing or pier founding depths, or

iii) full time engineering presence on site.

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GRAPHIC LOG SYMBOLS FOR SOILS AND ROCKS

SOIL


FILL


TOPSOIL


CLAY (CL, CH)


SILT (ML, MH)


SAND (SP, SW)


GRAVEL (GP, GW)


SANDY CLAY (CL, CH)


SILTY CLAY (CL, CH)


CLAYEY SAND (SC)


SILTY SAND (SM)


GRAVELLY CLAY (CL, CH)


CLAYEY GRAVEL (GC)


SANDY SILT (ML)


PEAT AND ORGANIC SOILS

ROCK


CONGLOMERATE


SANDSTONE


SHALE


SILTSTONE, MUDSTONE, CLAYSTONE


LIMESTONE


PHYLLITE, SCHIST


TUFF


GRANITE, GABBRO


DOLERITE, DIORITE


BASALT, ANDESITE


QUARTZITE

DEFECTS AND INCLUSIONS


CLAY SEAM


SHEARED OR CRUSHED SEAM


BRECCIATED OR SHATTERED SEAM/ZONE


IRONSTONE GRAVEL


ORGANIC MATERIAL

OTHER MATERIALS


CONCRETE


BITUMINOUS CONCRETE, COAL


COLLUVIUM

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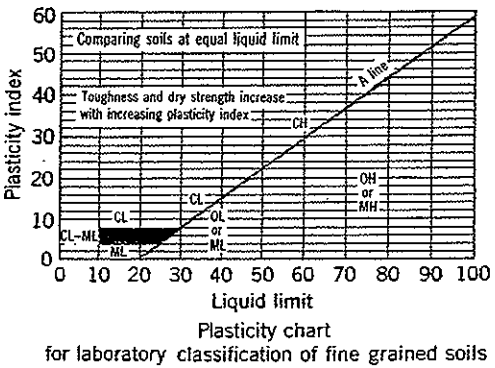
UNIFIED SOIL CLASSIFICATION TABLE

Field Identification Procedures (Excluding particles larger than 75 μm and basing fractions on estimated weights)				Group Symbols[a]	Typical Names	Information Required for Describing Soils	Laboratory Classification Criteria
Coarse-grained soils: More than half of material is *larger* than 75 μm sieve size[b] (The 75 μm sieve size is about the smallest particle visible to naked eye)	Gravels: More than half of coarse fraction is larger than 4 mm sieve size	Clean gravels (little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes	*GW*	Well graded gravels, gravel-sand mixtures, little or no fines	Give typical name; indicate approximate percentages of sand and gravel; maximum size; angularity, surface condition, and hardness of the coarse grains; local or geologic name and other pertinent descriptive information; and symbols in parentheses For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics Example: *Silty sand*, gravelly; about 20% hard, angular gravel particles 12 mm maximum size; rounded and subangular sand grains coarse to fine, about 15% non-plastic fines with low dry strength; well compacted and moist in place; alluvial sand; (*SM*)	Use grain size curve in identifying the fractions as given under field identification Determine percentages of gravel and sand from grain size curve Depending on percentage of fines (fraction smaller than 75 μm sieve size) coarse grained soils are classified as follows: Less than 5% *GW, GP, SW, SP* More than 12% *GM, GC, SM, SC* 5% to 12% *Borderline* cases requiring use of dual symbols $C_U = \frac{D_{60}}{D_{10}}$ Greater than 4 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for *GW* Atterberg limits below "A" line, or *PI* less than 4 — Above "A" line with *PI* between 4 and 7 are *borderline* cases requiring use of dual symbols Atterberg limits above "A" line, with *PI* greater than 7 $C_U = \frac{D_{60}}{D_{10}}$ Greater than 6 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting all gradation requirements for *SW* Atterberg limits below "A" line or *PI* less than 5 — Above "A" line with *PI* between 4 and 7 are *borderline* cases requiring use of dual symbols Atterberg limits below "A" line with *PI* greater than 7
		Gravels with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures see *ML* below)	*GM*	Silty gravels, poorly graded gravel-sand-silt mixtures		
			Plastic fines (for identification procedures, see *CL* below)	*GC*	Clayey gravels, poorly graded gravel-sand-clay mixtures		
	Sands: More than half of coarse fraction is smaller than 4 mm sieve size	Clean sands (little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes	*SW*	Well graded sands, gravelly sands, little or no fines		
			Predominantly one size or a range of sizes with some intermediate sizes missing	*SP*	Poorly graded sands, gravelly sands, little or no fines		
		Sands with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures, see *ML* below)	*SM*	Silty sands, poorly graded sand-silt mixtures		
			Plastic fines (for identification procedures, see *CL* below)	*SC*	Clayey sands, poorly graded sand-clay mixtures		
Fine-grained soils: More than half of material is *smaller* than 75 μm sieve size (The 75 μm sieve size is about the smallest particle visible to naked eye)	Identification Procedures on Fraction Smaller than 380 μm Sieve Size						
	Silts and clays: liquid limit less than 50	Dry Strength (crushing characteristics)	Dilatancy (reaction to shaking)	Toughness (consistency near plastic limit)		Give typical name; indicate degree and character of plasticity, amount and maximum size of coarse grains; colour in wet condition, odour if any, local or geologic name, and other pertinent descriptive information, and symbol in parentheses For undisturbed soils add information on structure, stratification, consistency in undisturbed and remoulded states, moisture and drainage conditions Example: *Clayey silt*, brown; slightly plastic; small percentage of fine sand; numerous vertical root holes; firm and dry in place; loess; (*ML*)	
		None to slight	Quick to slow	None	*ML*	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity	
		Medium to high	None to very slow	Medium	*CL*	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		Slight to medium	Slow	Slight	*OL*	Organic silts and organic silt-clays of low plasticity	
	Silts and clays: liquid limit greater than 50	Slight to medium	Slow to none	Slight to medium	*MH*	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		High to very high	None	High	*CH*	Inorganic clays of high plasticity, fat clays	
		Medium to high	None to very slow	Slight to medium	*OH*	Organic clays of medium to high plasticity	
Highly Organic Soils		Readily identified by colour, odour, spongy feel and frequently by fibrous texture			*Pt*	Peat and other highly organic soils	



Plasticity chart
for laboratory classification of fine grained soils

NOTE: 1) Soils possessing characteristics of two groups are designated by combinations of group symbols (e.g. GW-GC, well graded gravel-sand mixture with clay fines).

2) Soils with liquid limits of the order of 35 to 50 may be visually classified as being of medium plasticity.

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LOG SYMBOLS

LOG COLUMN	SYMBOL	DEFINITION
Groundwater Record	▽	Standing water level. Time delay following completion of drilling may be shown.
	C	Extent of borehole collapse shortly after drilling.
	▶	Groundwater seepage into borehole or excavation noted during drilling or excavation.
Samples	ES	Soil sample taken over depth indicated, for environmental analysis.
	U50	Undisturbed 50mm diameter tube sample taken over depth indicated.
	DB	Bulk disturbed sample taken over depth indicated.
	DS	Small disturbed bag sample taken over depth indicated.
	ASB	Soil sample taken over depth indicated, for asbestos screening.
	ASS	Soil sample taken over depth indicated, for acid sulfate soil analysis.
	SAL	Soil sample taken over depth indicated, for salinity analysis.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'R' as noted below.
	N_c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60 degree solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25	Vane shear reading in kPa of Undrained Shear Strength.
	PID = 100	Photoionisation detector reading in ppm (Soil sample headspace test).
Moisture Condition (Cohesive Soils)	MC>PL	Moisture content estimated to be greater than plastic limit.
	MC≈PL	Moisture content estimated to be approximately equal to plastic limit.
	MC<PL	Moisture content estimated to be less than plastic limit.
(Cohesionless Soils)	D	DRY - runs freely through fingers.
	M	MOIST - does not run freely but no free water visible on soil surface.
	W	WET - free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS	VERY SOFT - Unconfined compressive strength less than 25kPa
	S	SOFT - Unconfined compressive strength 25-50kPa
	F	FIRM - Unconfined compressive strength 50-100kPa
	St	STIFF - Unconfined compressive strength 100-200kPa
	VSt	VERY STIFF - Unconfined compressive strength 200-400kPa
	H	HARD - Unconfined compressive strength greater than 400kPa
	( )	Bracketed symbol indicates estimated consistency based on tactile examination or other tests.
Density Index/ Relative Density (Cohesionless Soils)		**Density Index (Id) Range (%)** / **SPT 'N' Value Range (Blows/300mm)**
	VL	Very Loose <15 0-4
	L	Loose 15-35 4-10
	MD	Medium Dense 35-65 10-30
	D	Dense 65-85 30-50
	VD	Very Dense >85 >50
	( )	Bracketed symbol indicates estimated density based on ease of drilling or other tests.
Hand Penetrometer Readings	300 250	Numbers indicate individual test results in kPa on representative undisturbed material unless noted otherwise.
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Tungsten carbide wing bit.
	T 60	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.

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ABN 17 003 550 801

LOG SYMBOLS

ROCK MATERIAL WEATHERING CLASSIFICATION

TERM	SYMBOL	DEFINITION
Residual Soil	RS	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.
Extremely weathered rock	XW	Rock is weathered to such an extent that it has "soil" properties, ie it either disintegrates or can be remoulded, in water.
Distinctly weathered rock	DW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by ironstaining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Slightly weathered rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh rock	FR	Rock shows no sign of decomposition or staining.

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index (Is 50) and refers to the strength of the rock substance in the direction normal to the bedding. The test procedure is described by the International Journal of Rock Mechanics, Mining, Science and Geomechanics. Abstract Volume 22, No 2, 1985.

TERM	SYMBOL	Is (50) MPa	FIELD GUIDE
Extremely Low:	EL	0.03	Easily remoulded by hand to a material with soil properties.
Very Low:	VL	0.1	May be crumbled in the hand. Sandstone is "sugary" and friable.
Low:	L	0.3	A piece of core 150mm long x 50mm dia. may be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.
Medium Strength:	M	1	A piece of core 150mm long x 50mm dia. can be broken by hand with difficulty. Readily scored with knife.
High:	H	3	A piece of core 150mm long x 50mm dia. core cannot be broken by hand, can be slightly scratched or scored with knife; rock rings under hammer.
Very High:	VH	10	A piece of core 150mm long x 50mm dia. may be broken with hand-held pick after more than one blow. Cannot be scratched with pen knife; rock rings under hammer.
Extremely High:	EH		A piece of core 150mm long x 50mm dia. is very difficult to break with hand-held hammer. Rings when struck with a hammer.

ABBREVIATIONS USED IN DEFECT DESCRIPTION

ABBREVIATION	DESCRIPTION	NOTES
Be	Bedding Plane Parting	Defect orientations measured relative to the normal to the long core axis (ie relative to horizontal for vertical holes)
CS	Clay Seam	
J	Joint	
P	Planar	
Un	Undulating	
S	Smooth	
R	Rough	
IS	Ironstained	
XWS	Extremely Weathered Seam	
Cr	Crushed Seam	
60t	Thickness of defect in millimetres	

APPENDIX B

(Laboratory Reports and Chain of Custody Documents)

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 46571

Client:
Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Mitch Delaney

Sample log in details:

Your Reference:	**E24351K, Homebush**
No. of samples:	25 Soils
Date samples received:	01/10/10
Date completed instructions received:	01/10/10

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	11/10/10
Date of Preliminary Report:	Not Issued
Issue Date:	11/10/10

NATA accreditation number 2901. This document shall not be reproduced except in full.
This document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Rhian Morgan
Reporting Supervisor

Nancy Zhang
Chemist

Matt Mansfield
Approved Signatory

Envirolab Reference: 46571
Revision No: R 00

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

vTPH & BTEX in Soil						
Our Reference:	UNITS	46571-1	46571-3	46571-5	46571-10	46571-11
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0-0.3	1.0-1.3	0-0.2	0.45-0.65	0-0.2
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
Date analysed	-	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	72	84	83	90	89

vTPH & BTEX in Soil						
Our Reference:	UNITS	46571-15	46571-17	46571-19	46571-21	46571-22
Your Reference	----------	BH5	BH6	BH7	BH8	BH8
Depth	----------	0.1-0.35	0.1-0.27	0.05-0.3	0.2-0.45	0.6-1.0
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
Date analysed	-	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	85	82	86	82	88

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	46571-1	46571-3	46571-5	46571-10	46571-11
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0-0.3	1.0-1.3	0-0.2	0.45-0.65	0-0.2
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
Date analysed	-	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	180	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	270	<100
Surrogate o-Terphenyl	%	87	85	86	86	87

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	46571-15	46571-17	46571-19	46571-21	46571-22
Your Reference	----------	BH5	BH6	BH7	BH8	BH8
Depth	----------	0.1-0.35	0.1-0.27	0.05-0.3	0.2-0.45	0.6-1.0
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
Date analysed	-	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	86	88	89	87	86

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	46571-1 BH1 0-0.3 1/10/2010 Soil	46571-3 BH1 1.0-1.3 1/10/2010 Soil	46571-5 BH2 0-0.2 1/10/2010 Soil	46571-10 BH3 0.45-0.65 1/10/2010 Soil	46571-11 BH4 0-0.2 1/10/2010 Soil
Date extracted	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Date analysed	-	06/10/2010	06/10/2010	06/10/2010	06/10/2010	06/10/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.5	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	0.5	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.4	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.05	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	122	120	118	122	122

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	46571-15 BH5 0.1-0.35 1/10/2010 Soil	46571-17 BH6 0.1-0.27 1/10/2010 Soil	46571-19 BH7 0.05-0.3 1/10/2010 Soil	46571-21 BH8 0.2-0.45 1/10/2010 Soil	46571-22 BH8 0.6-1.0 1/10/2010 Soil
Date extracted	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Date analysed	-	06/10/2010	06/10/2010	06/10/2010	06/10/2010	06/10/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.3	0.3	<0.1
Anthracene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.7	1	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.8	1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.4	0.4	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.4	0.4	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	0.5	0.9	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.3	0.6	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.1	0.4	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.1	0.3	<0.1
Surrogate p-Terphenyl-d14	%	121	119	125	125	122

Organochlorine Pesticides in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	46571-1 BH1 0-0.3 1/10/2010 Soil	46571-3 BH1 1.0-1.3 1/10/2010 Soil	46571-5 BH2 0-0.2 1/10/2010 Soil	46571-10 BH3 0.45-0.65 1/10/2010 Soil	46571-11 BH4 0-0.2 1/10/2010 Soil
Date extracted	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Date analysed	-	06/10/2010	06/10/2010	06/10/2010	06/10/2010	06/10/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	82	102	82	79	80

Organochlorine Pesticides in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	46571-15 BH5 0.1-0.35 1/10/2010 Soil	46571-17 BH6 0.1-0.27 1/10/2010 Soil	46571-19 BH7 0.05-0.3 1/10/2010 Soil	46571-21 BH8 0.2-0.45 1/10/2010 Soil	46571-22 BH8 0.6-1.0 1/10/2010 Soil
Date extracted	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Date analysed	-	06/10/2010	06/10/2010	06/10/2010	06/10/2010	06/10/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	81	84	86	80	79

Organophosphorus Pesticides						
Our Reference:	UNITS	46571-1	46571-3	46571-5	46571-10	46571-11
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0-0.3	1.0-1.3	0-0.2	0.45-0.65	0-0.2
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Date analysed	-	06/10/2010	06/10/2010	06/10/2010	06/10/2010	06/10/2010
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	82	102	82	79	80

Organophosphorus Pesticides						
Our Reference:	UNITS	46571-15	46571-17	46571-19	46571-21	46571-22
Your Reference	----------	BH5	BH6	BH7	BH8	BH8
Depth	----------	0.1-0.35	0.1-0.27	0.05-0.3	0.2-0.45	0.6-1.0
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Date analysed	-	06/10/2010	06/10/2010	06/10/2010	06/10/2010	06/10/2010
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	81	84	86	80	79

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	46571-1 BH1 0-0.3 1/10/2010 Soil	46571-3 BH1 1.0-1.3 1/10/2010 Soil	46571-5 BH2 0-0.2 1/10/2010 Soil	46571-10 BH3 0.45-0.65 1/10/2010 Soil	46571-11 BH4 0-0.2 1/10/2010 Soil
Date extracted	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Date analysed	-	06/10/2010	06/10/2010	06/10/2010	06/10/2010	06/10/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	82	102	82	79	80

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	46571-15 BH5 0.1-0.35 1/10/2010 Soil	46571-17 BH6 0.1-0.27 1/10/2010 Soil	46571-19 BH7 0.05-0.3 1/10/2010 Soil	46571-21 BH8 0.2-0.45 1/10/2010 Soil	46571-22 BH8 0.6-1.0 1/10/2010 Soil
Date extracted	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Date analysed	-	06/10/2010	06/10/2010	06/10/2010	06/10/2010	06/10/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	81	84	86	80	79

Acid Extractable metals in soil						
Our Reference:	UNITS	46571-1	46571-3	46571-5	46571-10	46571-11
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0-0.3	1.0-1.3	0-0.2	0.45-0.65	0-0.2
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Date analysed	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Arsenic	mg/kg	5	7	6	120	<4
Cadmium	mg/kg	<0.5	<0.5	0.9	2.9	<0.5
Chromium	mg/kg	10	5	10	46	5
Copper	mg/kg	22	22	23	550	7
Lead	mg/kg	27	16	41	530	13
Mercury	mg/kg	<0.1	<0.1	<0.1	0.7	<0.1
Nickel	mg/kg	20	3	16	57	5
Zinc	mg/kg	52	16	63	3,200	24

Acid Extractable metals in soil						
Our Reference:	UNITS	46571-15	46571-17	46571-19	46571-21	46571-22
Your Reference	----------	BH5	BH6	BH7	BH8	BH8
Depth	----------	0.1-0.35	0.1-0.27	0.05-0.3	0.2-0.45	0.6-1.0
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Date analysed	-	05/10/2010	05/10/2010	05/10/2010	05/10/2010	05/10/2010
Arsenic	mg/kg	<4	<4	<4	7	9
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	7	7	20	13	13
Copper	mg/kg	11	18	69	24	11
Lead	mg/kg	9	10	7	16	18
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	14	170	18	2
Zinc	mg/kg	10	15	56	21	5

Acid Extractable metals in soil		
Our Reference:	UNITS	46571-24
Your Reference	----------	Dup1
Depth	----------	-
Date Sampled		1/10/2010
Type of sample		Soil
Date digested	-	05/10/2010
Date analysed	-	05/10/2010
Arsenic	mg/kg	9
Cadmium	mg/kg	<0.5
Chromium	mg/kg	15
Copper	mg/kg	11
Lead	mg/kg	18
Mercury	mg/kg	<0.1
Nickel	mg/kg	1
Zinc	mg/kg	3

Moisture						
Our Reference:	UNITS	46571-1	46571-3	46571-5	46571-10	46571-11
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0-0.3	1.0-1.3	0-0.2	0.45-0.65	0-0.2
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
Date analysed	-	6/10/2010	6/10/2010	6/10/2010	6/10/2010	6/10/2010
Moisture	%	7.4	12	8.4	19	8.2

Moisture						
Our Reference:	UNITS	46571-15	46571-17	46571-19	46571-21	46571-22
Your Reference	----------	BH5	BH6	BH7	BH8	BH8
Depth	----------	0.1-0.35	0.1-0.27	0.05-0.3	0.2-0.45	0.6-1.0
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
Date analysed	-	6/10/2010	6/10/2010	6/10/2010	6/10/2010	6/10/2010
Moisture	%	2.1	5.2	4.7	15	22

Moisture		
Our Reference:	UNITS	46571-24
Your Reference	----------	Dup1
Depth	----------	-
Date Sampled		1/10/2010
Type of sample		Soil
Date prepared	-	5/10/2010
Date analysed	-	6/10/2010
Moisture	%	21

Asbestos ID - soils						
Our Reference:	UNITS	46571-1	46571-3	46571-5	46571-10	46571-11
Your Reference	----------	BH1	BH1	BH2	BH3	BH4
Depth	----------	0-0.3	1.0-1.3	0-0.2	0.45-0.65	0-0.2
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	6/10/2010	6/10/2010	6/10/2010	6/10/2010	6/10/2010
Sample Description	-	Approx 25g Soil	Approx 40g Clay & Rocks	Approx 40g Clay & Rocks	Approx 35g Clay	Approx 40g Soil
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Asbestos ID - soils						
Our Reference:	UNITS	46571-15	46571-17	46571-19	46571-21	46571-22
Your Reference	----------	BH5	BH6	BH7	BH8	BH8
Depth	----------	0.1-0.35	0.1-0.27	0.05-0.3	0.2-0.45	0.6-1.0
Date Sampled		1/10/2010	1/10/2010	1/10/2010	1/10/2010	1/10/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	6/10/2010	6/10/2010	6/10/2010	6/10/2010	6/10/2010
Sample Description	-	Approx 25g Soil & Rocks	Approx 25g Soil	Approx 35g Soil & Rocks	Approx 30g Clay	Approx 30g Clay
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Method ID	Methodology Summary
GC.16	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
GC.3	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC-5	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC.8	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
AS4964-2004	Asbestos ID - Qualitative identification of asbestos type fibres in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques.

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			5/10/2010	46571-1	5/10/2010 || 5/10/2010	LCS-1	5/10/2010
Date analysed	-			5/10/2010	46571-1	5/10/2010 || 5/10/2010	LCS-1	5/10/2010
vTPH C_6 - C_9	mg/kg	25	GC.16	<25	46571-1	<25 || <25	LCS-1	94%
Benzene	mg/kg	0.5	GC.16	<0.5	46571-1	<0.5 || <0.5	LCS-1	96%
Toluene	mg/kg	0.5	GC.16	<0.5	46571-1	<0.5 || <0.5	LCS-1	92%
Ethylbenzene	mg/kg	1	GC.16	<1.0	46571-1	<1.0 || <1.0	LCS-1	94%
m+p-xylene	mg/kg	2	GC.16	<2.0	46571-1	<2.0 || <2.0	LCS-1	93%
o-Xylene	mg/kg	1	GC.16	<1.0	46571-1	<1.0 || <1.0	LCS-1	96%
Surrogate aaa-Trifluorotoluene	%		GC.16	88	46571-1	72 || 83 || RPD: 14	LCS-1	90%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			5/10/2010	46571-1	5/10/2010 || 5/10/2010	LCS-2	5/10/2010
Date analysed	-			5/10/2010	46571-1	5/10/2010 || 5/10/2010	LCS-2	5/10/2010
TRH C_{10} - C_{14}	mg/kg	50	GC.3	<50	46571-1	<50 || <50	LCS-2	73%
TRH C_{15} - C_{28}	mg/kg	100	GC.3	<100	46571-1	<100 || <100	LCS-2	88%
TRH C_{29} - C_{36}	mg/kg	100	GC.3	<100	46571-1	<100 || <100	LCS-2	105%
Surrogate o-Terphenyl	%		GC.3	83	46571-1	87 || 87 || RPD: 0	LCS-2	81%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/10/2010	46571-1	05/10/2010 || 05/10/2010	LCS-2	05/10/2010
Date analysed	-			06/10/2010	46571-1	06/10/2010 || 06/10/2010	LCS-2	06/10/2010
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || <0.1	LCS-2	96%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || <0.1	LCS-2	92%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || <0.1	LCS-2	93%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || 0.1	LCS-2	85%
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || 0.2	LCS-2	86%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(a)anthracene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || 0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || 0.1	LCS-2	100%
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	46571-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	46571-1	<0.05 || 0.09	LCS-2	113%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	117	46571-1	122 || 121 || RPD: 1	LCS-2	117%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/10/2010	46571-1	05/10/2010 || 05/10/2010	LCS-1	05/10/2010
Date analysed	-			06/10/2010	46571-1	06/10/2010 || 06/10/2010	LCS-1	06/10/2010
HCB	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	LCS-1	89%
gamma-BHC	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	LCS-1	96%
Heptachlor	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	LCS-1	80%
delta-BHC	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	LCS-1	77%
Heptachlor Epoxide	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	LCS-1	85%
gamma-Chlordane	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	LCS-1	97%
Dieldrin	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	LCS-1	89%
Endrin	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	LCS-1	88%
pp-DDD	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	LCS-1	102%
Endosulfan II	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	LCS-1	88%
Methoxychlor	mg/kg	0.1	GC-5	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-5	79	46571-1	82 || 84 || RPD: 2	LCS-1	78%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/10/2010	46571-1	05/10/2010 || 05/10/2010	LCS-1	05/10/2010
Date analysed	-			06/10/2010	46571-1	06/10/2010 || 06/10/2010	LCS-1	06/10/2010
Diazinon	mg/kg	0.1	GC.8	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	GC.8	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	GC.8	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	GC.8	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	GC.8	<0.1	46571-1	<0.1 || <0.1	LCS-1	96%
Fenitrothion	mg/kg	0.1	GC.8	<0.1	46571-1	<0.1 || <0.1	LCS-1	102%
Bromophos-ethyl	mg/kg	0.1	GC.8	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	GC.8	<0.1	46571-1	<0.1 || <0.1	LCS-1	96%
Surrogate TCLMX	%		GC.8	79	46571-1	82 || 84 || RPD: 2	LCS-1	91%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/10/2010	46571-1	05/10/2010 || 05/10/2010	LCS-1	05/10/2010
Date analysed	-			06/10/2010	46571-1	06/10/2010 || 06/10/2010	LCS-1	06/10/2010
Arochlor 1016	mg/kg	0.1	GC-6	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221*	mg/kg	0.1	GC-6	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	GC-6	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	GC-6	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	GC-6	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	GC-6	<0.1	46571-1	<0.1 || <0.1	LCS-1	103%
Arochlor 1260	mg/kg	0.1	GC-6	<0.1	46571-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-6	79	46571-1	82 || 84 || RPD: 2	LCS-1	76%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			05/10/2010	46571-1	05/10/2010 || 05/10/2010	LCS-2	05/10/2010
Date analysed	-			05/10/2010	46571-1	05/10/2010 || 05/10/2010	LCS-2	05/10/2010
Arsenic	mg/kg	4	Metals.20 ICP-AES	<4	46571-1	5 || 5 || RPD: 0	LCS-2	106%
Cadmium	mg/kg	0.5	Metals.20 ICP-AES	<0.5	46571-1	<0.5 || <0.5	LCS-2	104%
Chromium	mg/kg	1	Metals.20 ICP-AES	<1	46571-1	10 || 9 || RPD: 11	LCS-2	107%
Copper	mg/kg	1	Metals.20 ICP-AES	<1	46571-1	22 || 20 || RPD: 10	LCS-2	110%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Lead	mg/kg	1	Metals.20 ICP-AES	<1	46571-1	27 || 21 || RPD: 25	LCS-2	106%
Mercury	mg/kg	0.1	Metals.21 CV-AAS	<0.1	46571-1	<0.1 || <0.1	LCS-2	116%
Nickel	mg/kg	1	Metals.20 ICP-AES	<1	46571-1	20 || 26 || RPD: 26	LCS-2	107%
Zinc	mg/kg	1	Metals.20 ICP-AES	<1	46571-1	52 || 43 || RPD: 19	LCS-2	107%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			05/10/2010
Date analysed	-			06/10/2010
Moisture	%	0.1	LAB.8	<0.10

QUALITY CONTROL Asbestos ID - soils	UNITS	PQL	METHOD	Blank
Date analysed	-			[NT]

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	46571-3	5/10/2010
Date analysed	-	[NT]	[NT]	46571-3	5/10/2010
vTPH C_6 - C_9	mg/kg	[NT]	[NT]	46571-3	82%
Benzene	mg/kg	[NT]	[NT]	46571-3	76%
Toluene	mg/kg	[NT]	[NT]	46571-3	81%
Ethylbenzene	mg/kg	[NT]	[NT]	46571-3	83%
m+p-xylene	mg/kg	[NT]	[NT]	46571-3	84%
o-Xylene	mg/kg	[NT]	[NT]	46571-3	87%
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	46571-3	85%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	46571-3	5/10/2010
Date analysed	-	[NT]	[NT]	46571-3	5/10/2010
TRH C_{10} - C_{14}	mg/kg	[NT]	[NT]	46571-3	75%
TRH C_{15} - C_{28}	mg/kg	[NT]	[NT]	46571-3	91%
TRH C_{29} - C_{36}	mg/kg	[NT]	[NT]	46571-3	109%
Surrogate o-Terphenyl	%	[NT]	[NT]	46571-3	86%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	46571-3	05/10/2010
Date analysed	-	[NT]	[NT]	46571-3	06/10/2010
Naphthalene	mg/kg	[NT]	[NT]	46571-3	121%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	46571-3	95%
Phenanthrene	mg/kg	[NT]	[NT]	46571-3	95%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	46571-3	87%
Pyrene	mg/kg	[NT]	[NT]	46571-3	89%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	46571-3	100%
Benzo(b+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	46571-3	115%
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	[NT]	[NT]	46571-3	116%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	46571-3	05/10/2010
Date analysed	-	[NT]	[NT]	46571-3	06/10/2010
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	46571-3	101%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	46571-3	108%
Heptachlor	mg/kg	[NT]	[NT]	46571-3	91%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	46571-3	87%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	46571-3	96%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	46571-3	110%
Dieldrin	mg/kg	[NT]	[NT]	46571-3	100%
Endrin	mg/kg	[NT]	[NT]	46571-3	98%
pp-DDD	mg/kg	[NT]	[NT]	46571-3	113%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	46571-3	98%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	46571-3	86%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	46571-3	05/10/2010
Date analysed	-	[NT]	[NT]	46571-3	06/10/2010
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	[NT]	[NT]	46571-3	87%
Fenitrothion	mg/kg	[NT]	[NT]	46571-3	97%
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	46571-3	94%
Surrogate TCLMX	%	[NT]	[NT]	46571-3	79%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	46571-3	05/10/2010
Date analysed	-	[NT]	[NT]	46571-3	06/10/2010
Arochlor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1221*	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	[NT]	[NT]	46571-3	100%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	46571-3	66%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	46571-3	05/10/2010
Date analysed	-	[NT]	[NT]	46571-3	05/10/2010
Arsenic	mg/kg	[NT]	[NT]	46571-3	104%
Cadmium	mg/kg	[NT]	[NT]	46571-3	101%
Chromium	mg/kg	[NT]	[NT]	46571-3	111%
Copper	mg/kg	[NT]	[NT]	46571-3	118%
Lead	mg/kg	[NT]	[NT]	46571-3	109%
Mercury	mg/kg	[NT]	[NT]	46571-3	118%
Nickel	mg/kg	[NT]	[NT]	46571-3	109%
Zinc	mg/kg	[NT]	[NT]	46571-3	113%

Report Comments:
PAH's in soil:The RPD for duplicate results is accepted due to the non homogenous nature of the sample/s.

Asbestos ID was analysed by Approved Identifier:	Paul Ching
Asbestos ID was authorised by Approved Signatory:	Matt Mansfield
Asbestos counting was analysed by Approved Counter:	@ERROR
Asbestos counting was authorised by Approved Signatory:	@ERROR

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions
Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria
Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:
Envirolab Services Pty Ltd
12 Ashley Street
Chatswood NSW 2067
Phone: (02) 99106200
Fax: (02) 99106201

Attention: Aileen

EIS Job Number: E24351K

Date Results Required:

Sheet 1 / 1

FROM:
Environmental Investigation Services
Rear 115 Wicks Road
Macquarie Park NSW 2113

Phone: (02) 9888 5000
Fax: (02) 9888 5004
Contact: Mitch Delaney

Project: Proposed Comercial Development
Location: Homebush
Sampler: Mitch Delaney

Sample Preservation:
In esky on ice

Tests Required

Date Sampled	Lab Ref:	Borehole/ Sample Number	Depth (m)	Sample Container	PID	Sample Description	Heavy Metals (8)	TPH/BTEX	PAH	OC/OP/ PCB	Asbestos	TCLP Prep + M6, PAH	Phenols	VOC	sVOC	sPOCAS		
1/10/2010	1	BH1	0.3	Glass jar + Asb Bag	3.9	Fill	X	X	X	X	X							
	2	BH1	0.4-0.7	Glass jar + Asb Bag	0	Fill												
	3	BH1	1.0-1.3	Glass jar + Asb Bag	0	silty clay	X	X	X	X	X							
	4	BH1	1.7-2.0	Glass jar + Asb Bag	0	silty clay												
	5	BH2	0-0.2	Glass jar + Asb Bag	2.4	Fill	X	X	X	X	X							
	6	BH2	0.4-0.9	Glass jar + Asb Bag	0	Fill												
	7	BH2	1.0-1.2	Glass jar + Asb Bag	0	Fill												
	8	BH2	1.7-1.5	Glass jar + Asb Bag	0	shale												
	9	BH3	0.1-0.4	Glass jar + Asb Bag	0	Fill												
	10	BH3	0.45-0.65	Glass jar + Asb Bag	1.1	Fill	X	X	X	X	X							
	11	BH4	0-0.2	Glass jar + Asb Bag	1.4	Fill	X	X	X	X	X							
	12	BH4	0.3-0.5	Glass jar + Asb Bag	0	Fill												
	13	BH4	1.0-1.3	Glass jar + Asb Bag	0	Silty Sand												
	14	BH4	1.3-1.5	Glass jar + Asb Bag	0	silty clay												
	15	BH5	0.1-0.35	Glass jar + Asb Bag	0	Fill	X	X	X	X	X							
	16	BH5	0.4-0.7	Glass jar + Asb Bag	0	Silty clay												
	17	BH6	0.1-0.27	Glass jar + Asb Bag	0	Fill	X	X	X	X	X							
	18	BH6	0.3-0.6	Glass jar + Asb Bag	0	Silty clay												
	19	BH7	0.05-0.3	Glass jar + Asb Bag	0	Fill	X	X	X	X	X							
	20	BH7	0.3-0.5	Glass jar + Asb Bag	0	Silty clay												
	21	BH8	0.2-0.45	Glass jar + Asb Bag	0	Fill	X	X	X	X	X							
	22	BH8	0.6-1.0	Glass jar + Asb Bag	0	silty clay	X	X	X	X	X							
	23	BH8	1.0-1.4	Glass jar + Asb Bag	0	Silty clay												
	24	QA01		Glass jar + Asb Bag	-	-	X											
1/10/10	25	QA02		Glass jar + Asb Bag	-	-												

Remarks (comments/detection limits required): please email results to Mitch

Relinquished By:	Date: Time:	Received By:	Relinquished By:	Date: Time:	Received By:
MD	1/10/10 pm				

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200

Job No 46571
Date received: 1/10/10
Time received 5:30
Received by JMie
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 46571-A

Client:
Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Mitch Delaney

Sample log in details:

Your Reference:	**E24351K, Homebush**
No. of samples:	Additional Testing on 2 Soils
Date samples received:	01/10/10
Date completed instructions received:	12/10/10

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	19/10/10
Date of Preliminary Report:	Not Issued
Issue Date:	15/10/10

NATA accreditation number 2901. This document shall not be reproduced except in full.
This document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Rhian Morgan
Reporting Supervisor

Metals in TCLP USEPA1311 Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	46571-A-10 BH3 0.45-0.65 1/10/2010 Soil	46571-A-19 BH7 0.05-0.3 1/10/2010 Soil
Date extracted	-	14/10/2010	14/10/2010
Date analysed	-	14/10/2010	14/10/2010
pH of soil for fluid# determ.	pH units	8.40	9.60
pH of soil for fluid # determ. (acid)	pH units	1.90	2.30
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.10	5.50
Arsenic in TCLP	mg/L	<0.05	[NA]
Lead in TCLP	mg/L	0.04	[NA]
Nickel in TCLP	mg/L	0.04	0.1

Method ID	Methodology Summary
LAB.4	Toxicity Characteristic Leaching Procedure (TCLP).
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
LAB.1	pH - Measured using pH meter and electrode in accordance with APHA 20th ED, 4500-H+.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/10/2010	[NT]	[NT]	LCS-W1	14/10/2010
Date analysed	-			14/10/2010	[NT]	[NT]	LCS-W1	14/10/2010
Arsenic in TCLP	mg/L	0.05	Metals.20 ICP-AES	<0.05	[NT]	[NT]	LCS-W1	113%
Lead in TCLP	mg/L	0.03	Metals.20 ICP-AES	<0.03	[NT]	[NT]	LCS-W1	101%
Nickel in TCLP	mg/L	0.02	Metals.20 ICP-AES	<0.02	[NT]	[NT]	LCS-W1	105%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job
Asbestos counting was analysed by Approved Counter:	@ERROR
Asbestos counting was authorised by Approved Signatory:	@ERROR

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
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Quality Control Definitions

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Aileen Hie

From: Belinda Sinclair [bsinclair@jkgroup.net.au]
Sent: Tuesday, 12 October 2010 10:36 AM
To: Aileen Hie
Subject: TCLPs for E24351K Homebush 46571

Envirolab Ref: 46571A
Due: 19/10/10
Std TAT.

EIS

ENVIRONMENTAL INVESTIGATION SERVICES

A division of Jeffery & Katauskas Pty Ltd
ABN 17 003 550 801 ACN 003 550 801

Aileen, Can I please order (on behalf of Mitch) the following TCLPs on Standard Turn Around for E24351K Homebush 46571:

- BH3(0.45-0.65m) 46571-10 for arsenic, lead, and nickel; and
- BH7(0.05-0.3m) 46571-19 for nickel only

Please forward the results to Mitch Delaney email: mdelaney@jkgroup.net.au Thank you

For and on behalf of
ENVIRONMENTAL INVESTIGATION SERVICES
Belinda Sinclair
Environmental Engineer

115 Wicks Road, MACQUARIE PARK NSW 2113
PO BOX 976, NORTH RYDE BC NSW 1670

Tel: 02 9888 5000
Fax: 02 9888 5004

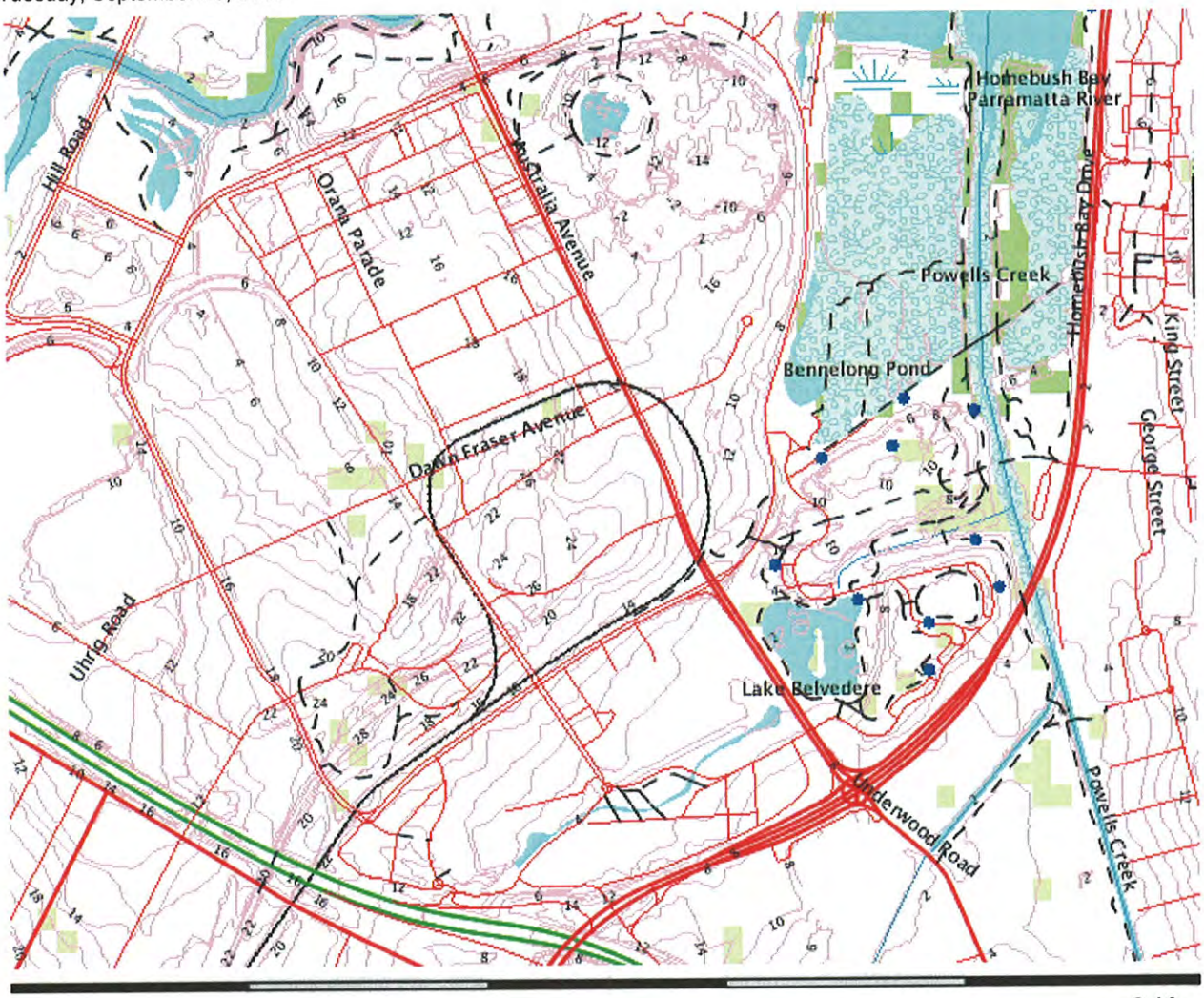
APPENDIX C

(Site History Documents – Groundwater Bore Records)

E24351K

Map created with NSW Natural Resource Atlas - http://nratlas.nsw.gov.au

Tuesday, September 28, 2010



0 2 Km

Legend

Symbol	Layer	Custodian
	Cities and large towns renderImage: Cannot build image from features	
Cowra	Populated places renderImage: Cannot build image from features	
	Towns	
	Groundwater Bores	
	Catchment Management Authority boundaries	
	Major rivers	
Primary/arterial road Motorway/freeway Railway Runway Contour Background	Topographic base map	

omissions. No representation is made as to its accuracy or suitability.

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, September 28, 2010

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102562

Works Details (top)

GROUNDWATER NUMBER	GW102562
LIC-NUM	10BL157703
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	1.83
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6252830.00
EASTING	321935.00
LATITUDE	33 50' 59"
LONGITUDE	151 4' 31"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CONCORD
PORTION-LOT-DP	LOTS 2,6&7 DP740600

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				
1	1	Casing	P.V.C.	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, September 28, 2010

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102561

Works Details (top)

GROUNDWATER NUMBER	GW102561
LIC-NUM	10BL157703
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	1.83
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6252741.00
EASTING	322117.00
LATITUDE	33 51' 2"
LONGITUDE	151 4' 38"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CONCORD
PORTION-LOT-DP	LOTS 2,6&7 DP740600

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				
1	1	Casing	P.V.C.	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, September 28, 2010

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102559

Works Details (top)

GROUNDWATER NUMBER	GW102559
LIC-NUM	10BL157703
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	1.83
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6252559.00
EASTING	322275.00
LATITUDE	33 51' 8"
LONGITUDE	151 4' 44"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CONCORD
PORTION-LOT-DP	LOTS 2,6&7 DP740600

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				
1	1	Casing	P.V.C.	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, September 28, 2010

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102558

Works Details (top)

GROUNDWATER NUMBER	GW102558
LIC-NUM	10BL157703
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	1.83
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6252682.00
EASTING	322272.00
LATITUDE	33 51' 4"
LONGITUDE	151 4' 44"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CONCORD
PORTION-LOT-DP	LOTS 2,6&7 DP740600

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				
1	1	Casing	P.V.C.	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, September 28, 2010

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102557

Works Details (top)

GROUNDWATER NUMBER	GW102557
LIC-NUM	10BL157703
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
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	6252778.00
EASTING	322425.00
LATITUDE	33 51' 1"
LONGITUDE	151 4' 50"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CONCORD
PORTION-LOT-DP	LOTS 2,6&7 DP740600

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				
1	1	Casing	P.V.C.	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, September 28, 2010

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102556

Works Details (top)

GROUNDWATER NUMBER	GW102556
LIC-NUM	10BL157703
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	1.83
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6252900.00
EASTING	322371.00
LATITUDE	33 50' 57"
LONGITUDE	151 4' 48"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CONCORD
PORTION-LOT-DP	LOTS 2,6&7 DP740600

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;O-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				
1	1	Casing	P.V.C.	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, September 28, 2010

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102555

Works Details (top)

GROUNDWATER NUMBER	GW102555
LIC-NUM	10BL157703
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	1.83
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6253143.00
EASTING	322187.00
LATITUDE	33 50' 49"
LONGITUDE	151 4' 41"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CONCORD
PORTION-LOT-DP	LOTS 2,6&7 DP740600

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				
1	1	Casing	P.V.C.	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, September 28, 2010

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102554

Works Details (top)

GROUNDWATER NUMBER	GW102554
LIC-NUM	10BL157703
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	1.83
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6253239.00
EASTING	322365.00
LATITUDE	33 50' 46"
LONGITUDE	151 4' 48"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CONCORD
PORTION-LOT-DP	LOTS 2,6&7 DP740600

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				
1	1	Casing	P.V.C.	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, September 28, 2010

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102553

Works Details (top)

GROUNDWATER NUMBER	GW102553
LIC-NUM	10BL157703
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	1.83
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6253267.00
EASTING	322210.00
LATITUDE	33 50' 45"
LONGITUDE	151 4' 42"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CONCORD
PORTION-LOT-DP	LOTS 2,6&7 DP740600

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				
1	1	Casing	P.V.C.	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, September 28, 2010

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102550

Works Details (top)

GROUNDWATER NUMBER	GW102550
LIC-NUM	10BL157703
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	4.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	1.80
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6253109.00
EASTING	322033.00
LATITUDE	33 50' 50"
LONGITUDE	151 4' 35"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CONCORD
PORTION-LOT-DP	LOTS 2,6&7 DP740600

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				
1	1	Casing	P.V.C.	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

(Site History Documents – Historical Land Title Records)

MD

7 OCT 2010

ADVANCE LEGAL SEARCH PTY LIMITED

(ACN 077 067 068)
ABN 49 077 067 068

PO Box 149
Yagoona NSW 2199

Telephone: +612 9754 1590
Mobile: 0412 169 809
Facsimile: +612 9754 1364
Email: alsearch@optusnet.com.au

05th October 2010

ENVIRONMENTAL INVESTIGATION SERVICE PTY LIMITED
PO Box 976,
NORTH RYDE BC NSW 1670

Attention: Mitch Delaney

RE: **2 Australia Ave, Sydney Olympic Park**
EIS Job Number: E24351K

Note 1: **Lot 56 DP 773763**
Note 2: **Lot 72 DP 1134933**

Note 1:

Current Search

Folio Identifier 56/773763 (title attached)
DP 773763 (plan attached)
Dated 28th September 2010
Registered Proprietor:
SYDNEY OLYMPIC PARK AUTHORITY

Title Tree
Lot 56 DP 773763

Folio Identifier 56/773763

Folio Identifier 51/747909

Folio Identifier 5/740790

Certificate of Title Volume 6129 Folio 216

Certificate of Title Volume 5326 Folio 143

Certificate of Title Volume 5056 Folio 217

Certificate of Title Volume 4553 Folio 104

Certificate of Title Volume 2106 Folio 53

****

Summary of Proprietor(s)
Lot 56 DP 773763

Year	Proprietor
	(Lot 56 DP 773763)
2002 – todate	Sydney Olympic Park Authority
(2009 – todate)	*(sublease to Silex Systems Limited of building 1, 2 Australia Ave, Sydney Olympic Park part)*
(2002 – todate)	*(sublease of part to Energyaustralia of sub-station No 7809)*
(2000 – todate)	*(lease to 2 Australia Avenue Custodian Pty Limited)*
(1989 – 2000)	*(lease to Akai Pty Limited)*
(1988 – 1989)	*(lease to Akai Audio/Video Australia Pty Limited)*
(1988 – todate)	*(various commercial sub leases see Historical Folio 56/773763)*
1993 – 2002	Olympic Co-Ordination Authority
1988 – 1993	Homebush Abattoir Corporation
	(Lot 51 DP 747909)
1987 – 1988	Homebush Abattoir Corporation
	(Lot 5 DP 740790)
1987 – 1987	Homebush Abattoir Corporation
	(Land in DP 977076 - CT Vol 6129 Fol 216)
1987 – 1987	Homebush Abattoir Corporation
1950 – 1987	The Metropolitan Meat Industry Board
(1950 – 1987)	*(various commercial leases shown in CTVol 6129 Fol 216)*
	(Part Portion 238 Parish Concord - Area 940 Acres 2 Roods 5 ½ Perches - CT Vol 5326 Fol 143)
1948 – 1950	The Metropolitan Meat Industry Board
1942 – 1948	The Metropolitan Meat Industry Commissioner
(1942 – 1950)	*(various commercial leases shown in CTVol 5326 Fol 143)*
	(Part Portion 238 Parish Concord - Area 939 acres 1 Rood 31 ¾ Perches - CT Vol 5056 Fol 217)
1939 – 1942	The Metropolitan Meat Industry Commissioner
(1939 – 1942)	*(various commercial leases shown in CTVol 5056 Fol 217)*
	(Part Portion 238 Parish Concord - Area 1031 Acres 1 Rood 10 ¼ perches - CT Vol 4553 Fol 104)
1933 – 1939	The Metropolitan Meat Industry Commissioner
1932 – 1933	Metropolitan Meat Industry Board
(1932 – 1939)	*(various commercial leases shown in CTVol 4553 Fol 104)*
	(Part Portion 238 Parish Concord - Area 1042 Acres - CT Vol 2106 Fol 53)
1929 – 1932	Metropolitan Meat Industry Board
1910 – 1929	The Minister for Public Works of the Shire of New South Wales

*****

Note 2:

Current Search

Folio Identifier 72/1134933 (title attached)
DP 1134933 (plan attached)
Dated 28th September 2010
Registered Proprietor:
SYDNEY OLYMPIC PARK AUTHORITY

Title Tree
Lot 72 DP 1134933

Folio Identifier 72/1134933

(a)		**(b)**
Folio Identifier 14/1110035		Folio Identifier 12/1125680
(ai)	**(aii)**	Folio identifier 15/1110035
F/I 79/875562	F/I 151/1108154	Folio Identifier 151/1110035
F/I 74/818981	Folio Identifier 50/1045522	
F/I 5/774130	/	
F/I 6/740790	/	
\	/	

Certificate of Title Volume 6129 Folio 216

Certificate of Title Volume 5326 Folio 143

Certificate of Title Volume 5056 Folio 217

Certificate of Title Volume 4553 Folio 104

Certificate of Title Volume 2106 Folio 53

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Summary of Proprietor(s)
Lot 72 DP 1134933

Year	Proprietor
	(Lot 72 DP 1134933)
2009 – todate	Sydney Olympic Park Authority

See Notes (a) & (b)

Note (a)

	(Lot 14 DP 1110035)
2007 – 2009	Sydney Olympic Park Authority

See Notes (ai) & (aii)

Note (ai)

	(Lot 79 DP 875562)
2002 – 2007	Sydney Olympic Park Authority
1998 – 2002	Olympic Co-Ordination Authority
	(Lot 74 DP 818981)
1993 – 1998	Olympic Co-Ordination Authority
1992 – 1993	Homebush Abattoir Corporation
	(Lot 5 DP 774130)
1988 – 1992	Homebush Abattoir Corporation
(1988 – 1992)	*(various commercial leases see Historical Folio 5/774130)*
	(Lot 6 DP 740790)
1987 – 1988	Homebush Abattoir Corporation
	(Land in DP 977076 - CT Vol 6129 Fol 216)
1987 – 1987	Homebush Abattoir Corporation
1950 – 1987	The Metropolitan Meat Industry Board
(1950 – 1987)	*(various commercial leases shown in CTVol 6129 Fol 216)*
	(Part Portion 238 Parish Concord - Area 940 Acres 2 Roods 5 ½ Perches - CT Vol 5326 Fol 143)
1948 – 1950	The Metropolitan Meat Industry Board
1942 – 1948	The Metropolitan Meat Industry Commissioner
(1942 – 1950)	*(various commercial leases shown in CTVol 5326 Fol 143)*
	(Part Portion 238 Parish Concord - Area 939 acres 1 Rood 31 ¾ Perches - CT Vol 5056 Fol 217)
1939 – 1942	The Metropolitan Meat Industry Commissioner
(1939 – 1942)	*(various commercial leases shown in CTVol 5056 Fol 217)*
	(Part Portion 238 Parish Concord - Area 1031 Acres 1 Rood 10 ¼ perches - CT Vol 4553 Fol 104)
1933 – 1939	The Metropolitan Meat Industry Commissioner
1932 – 1933	Metropolitan Meat Industry Board
(1932 – 1939)	*(various commercial leases shown in CTVol 4553 Fol 104)*
	(Part Portion 238 Parish Concord - Area 1042 Acres - CT Vol 2106 Fol 53)
1929 – 1932	Metropolitan Meat Industry Board
1910 – 1929	The Minister for Public Works of the Shire of New South Wales

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Note (aii)

	(Lot 151 DP 1108154)
2007 – 2007	Sydney Olympic Park Authority
	(Lot 50 DP 1045522)
2002 – 2007	Sydney Olympic Park Authority
2002 – 2002	Olympic Co-Ordination Authority
	(Land in DP 977076 - CT Vol 6129 Fol 216)
1993 – 2002	Olympic Co-Ordination Authority
1987 – 1993	Homebush Abattoir Corporation
1950 – 1987	The Metropolitan Meat Industry Board
(1950 – 1987)	*(various commercial leases shown in CTVol 6129 Fol 216)*
	(Part Portion 238 Parish Concord - Area 940 Acres 2 Roods 5 ½ Perches - CT Vol 5326 Fol 143)
1948 – 1950	The Metropolitan Meat Industry Board
1942 – 1948	The Metropolitan Meat Industry Commissioner
(1942 – 1950)	*(various commercial leases shown in CTVol 5326 Fol 143)*
	(Part Portion 238 Parish Concord - Area 939 acres 1 Rood 31 ¾ Perches - CT Vol 5056 Fol 217)
1939 – 1942	The Metropolitan Meat Industry Commissioner
(1939 – 1942)	*(various commercial leases shown in CTVol 5056 Fol 217)*
	(Part Portion 238 Parish Concord - Area 1031 Acres 1 Rood 10 ¼ perches - CT Vol 4553 Fol 104)
1933 – 1939	The Metropolitan Meat Industry Commissioner
1932 – 1933	Metropolitan Meat Industry Board
(1932 – 1939)	*(various commercial leases shown in CTVol 4553 Fol 104)*
	(Part Portion 238 Parish Concord - Area 1042 Acres - CT Vol 2106 Fol 53)
1929 – 1932	Metropolitan Meat Industry Board
1910 – 1929	The Minister for Public Works of the Shire of New South Wales

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Note (b)

	(Lot 12 DP 1125680)
2009 – 2009	Sydney Olympic Park Authority
	(Lot 15 DP 1110035)
2007 – 2009	Sydney Olympic Park Authority
	(Lot 151 DP 1108154)
2007 – 2007	Sydney Olympic Park Authority
	(Lot 50 DP 1045522)
2002 – 2007	Sydney Olympic Park Authority
2002 – 2002	Olympic Co-Ordination Authority
	(Land in DP 977076 - CT Vol 6129 Fol 216)
1993 – 2002	Olympic Co-Ordination Authority
1987 – 1993	Homebush Abattoir Corporation
1950 – 1987	The Metropolitan Meat Industry Board
(1950 – 1987)	*(various commercial leases shown in CTVol 6129 Fol 216)*
	(Part Portion 238 Parish Concord - Area 940 Acres 2 Roods 5 ½ Perches - CT Vol 5326 Fol 143)
1948 – 1950	The Metropolitan Meat Industry Board
1942 – 1948	The Metropolitan Meat Industry Commissioner
(1942 – 1950)	*(various commercial leases shown in CTVol 5326 Fol 143)*
	(Part Portion 238 Parish Concord - Area 939 acres 1 Rood 31 ¾ Perches - CT Vol 5056 Fol 217)
1939 – 1942	The Metropolitan Meat Industry Commissioner
(1939 – 1942)	*(various commercial leases shown in CTVol 5056 Fol 217)*
	(Part Portion 238 Parish Concord - Area 1031 Acres 1 Rood 10 ¼ perches - CT Vol 4553 Fol 104)
1933 – 1939	The Metropolitan Meat Industry Commissioner
1932 – 1933	Metropolitan Meat Industry Board
(1932 – 1939)	*(various commercial leases shown in CTVol 4553 Fol 104)*
	(Part Portion 238 Parish Concord - Area 1042 Acres - CT Vol 2106 Fol 53)
1929 – 1932	Metropolitan Meat Industry Board
1910 – 1929	The Minister for Public Works of the Shire of New South Wales

****

Land & Property Management Authority
Land & Property Information

Cadastral Records Enquiry Report

Ref : BOX 97 - HOMEBUSH

Requested Parcel : Lot 56 DP 773763

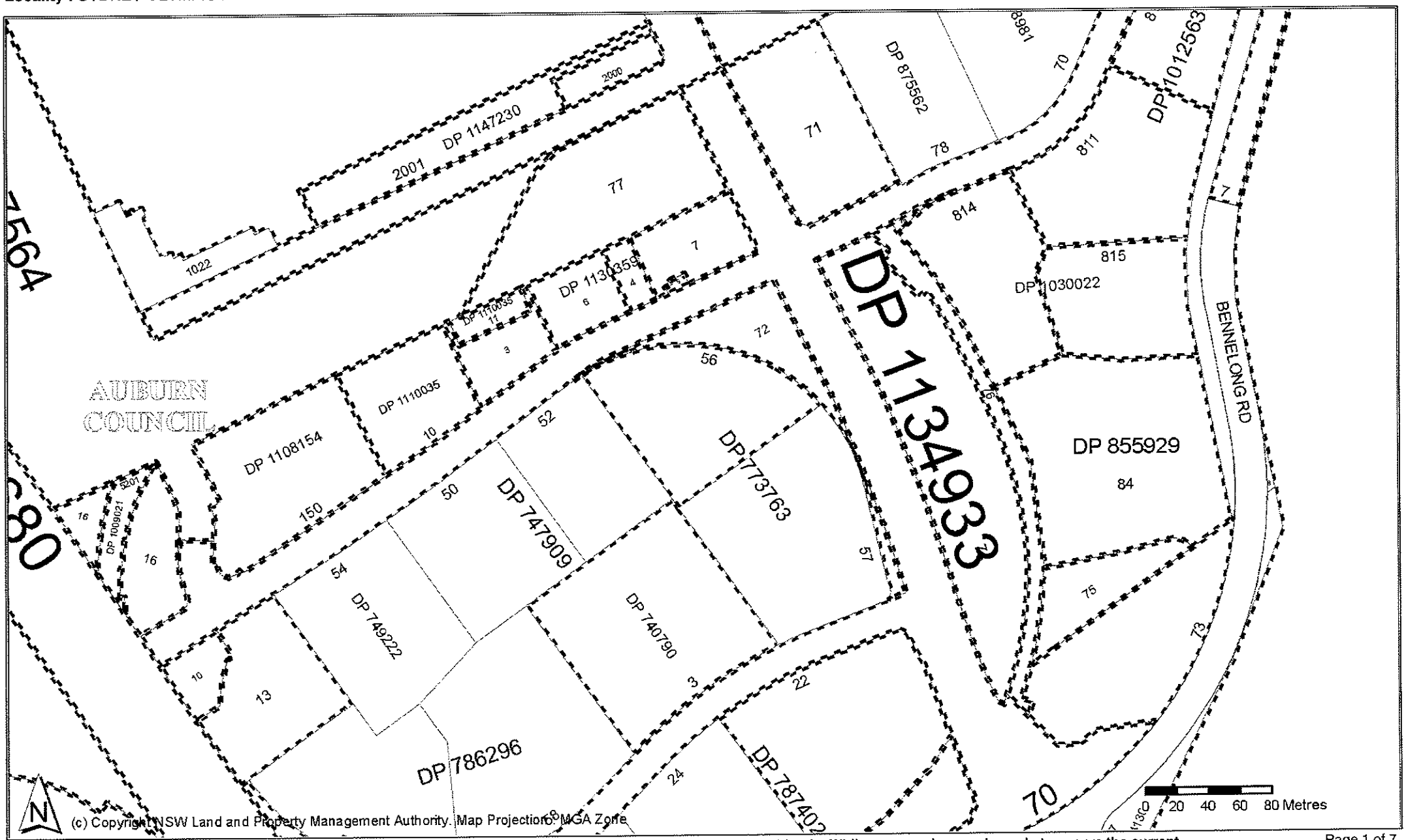
Identified Parcel : Lot 56 DP 773763

Locality : SYDNEY OLYMPIC PARK

LGA : CITY OF AUBURN

Parish : CONCORD

County : CUMBERLAND



Report Generated 2:40:27 PM, 29 September, 2010

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 56/773763

SEARCH DATE	TIME	EDITION NO	DATE
28/9/2010	12:38 PM	15	9/4/2002

LAND

LOT 56 IN DEPOSITED PLAN 773763
AT HOMEBUSH
LOCAL GOVERNMENT AREA AUBURN
PARISH OF CONCORD COUNTY OF CUMBERLAND
TITLE DIAGRAM DP773763

FIRST SCHEDULE

SYDNEY OLYMPIC PARK AUTHORITY (AP 8464203)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS-SEE SECTION 134 PUBLIC WORKS ACT, 1900
2 EASEMENT(S) APPURTENANT TO THE LAND ABOVE DESCRIBED CREATED BY:
DP235225 RIGHT OF WAY
3 X991919 LEASE TO AKAI AUDIO/VIDEO AUSTRALIA PTY. LIMITED.
EXPIRES 27.7.2087
Y465825 LESSEE NOW AKAI PTY. LIMITED
5670728 VARIATION OF LEASE X991919
7005402 TRANSFER OF LEASE X991919 LESSEE NOW 2 AUSTRALIA AVENUE CUSTODIAN PTY LIMITED
8209786 LEASE OF LEASE X991919 TO ENERGYAUSTRALIA OF SUB-STATION NO. 7809 TOGETHER WITH RIGHT OF WAY DESIGNATED (C) & (R) & EASEMENT FOR ELECTRICITY PURPOSES DESIGNATED (C) & (E) SHOWN IN DP1018017. EXPIRES: 30/11/2021.
* AE903618 LEASE OF LEASE X991919 TO SILEX SYSTEMS LIMITED OF BUILDING 1, 2 AUSTRALIA AVENUE, SYDNEY OLYMPIC PARK (EXCLUDING ENERGY AUSTRALIA SUB STATION). EXPIRES: 30/6/2017. OPTION OF RENEWAL: THREE YEARS.
* AE903618 CAVEATOR IN CAVEAT AE885037 CONSENTED.
* AF89688 VARIATION OF LEASE X991919
* AF89689 TRANSFER OF LEASE X991919 LESSEE NOW CAPITAL CORPORATION PROPERTIES PTY LIMITED
* AF89690 MORTGAGE OF LEASE X991919 TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED

END OF PAGE 1 - CONTINUED OVER

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 56/773763 PAGE 2

NOTATIONS (CONTINUED)

CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
28/9/2010 12:41PM

FOLIO: 56/773763

First Title(s): OLD SYSTEM
Prior Title(s): 51/747909

Recorded	Number	Type of Instrument	C.T. Issue
4/3/1988	DP773763	DEPOSITED PLAN	FOLIO CREATED EDITION 1
27/5/1988	X483077	REQUEST	EDITION 2
24/11/1988	X991919	LEASE	EDITION 3
21/7/1989	Y465825	REQUEST	EDITION 4
7/2/1990	Y823751	MORTGAGE OF LEASE	EDITION 5
22/9/1993	I378527	REQUEST	
22/9/1993	I356058	REQUEST	
22/9/1993	I378526	APPLICATION	EDITION 6
8/12/1995	O738097	REQUEST	EDITION 7
7/7/1997	3206026	DISCHARGE OF MORTGAGE	
11/3/1999	5670728	VARIATION OF LEASE	EDITION 8
6/7/1999	5959728	SUB-LEASE	EDITION 9
18/8/1999	6105350	MORTGAGE OF LEASE	EDITION 10
12/1/2000	6481817	SUB-LEASE	EDITION 11
17/2/2000	6571376	DISCHARGE OF MORTGAGE	
17/2/2000	6571377	TRANSFER OF LEASE	
17/2/2000	6571378	MORTGAGE OF LEASE	EDITION 12
4/9/2000	7005402	TRANSFER OF LEASE	
4/9/2000	7005403	MORTGAGE OF LEASE	
4/9/2000	7005404	REQUEST	
4/9/2000	7064055	DEPARTMENTAL DEALING	EDITION 13
28/9/2000	DP1018017	DEPOSITED PLAN	
22/1/2002	8209785	DETERMINATION OF LEASE	
22/1/2002	8209786	SUB-LEASE	EDITION 14

END OF PAGE 1 - CONTINUED OVER

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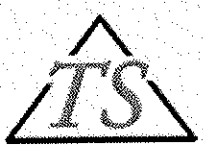

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
28/9/2010 12:41PM

FOLIO: 56/773763

PAGE 2

Recorded	Number	Type of Instrument	C.T. Issue
9/4/2002	8464203	APPLICATION	
9/4/2002	8490084	VARIATION OF LEASE	
9/4/2002	8490085	TRANSFER OF LEASE	EDITION 15
2/2/2004	AA22827	REQUEST	
29/7/2004	AA838613	DISCHARGE OF MORTGAGE	
29/7/2004	AA838614	MORTGAGE OF LEASE	
21/1/2005	AB42915	SUB-LEASE	
6/9/2007	AD399909	DEPARTMENTAL DEALING	
6/8/2009	AE885037	CAVEAT	
20/8/2009	AE903617	DETERMINATION OF LEASE	
20/8/2009	AE903618	SUB-LEASE	
4/11/2009	AF89686	WITHDRAWAL OF CAVEAT	
4/11/2009	AF89687	DISCHARGE OF MORTGAGE	
4/11/2009	AF89688	VARIATION OF LEASE	
4/11/2009	AF89689	TRANSFER OF LEASE	
4/11/2009	AF89690	MORTGAGE OF LEASE	

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
28/9/2010 12:44PM

FOLIO: 51/747909

First Title(s): OLD SYSTEM
Prior Title(s): 5/740790

Recorded	Number	Type of Instrument	C.T. Issue
24/7/1987	DP747909	DEPOSITED PLAN	FOLIO CREATED EDITION 1
1/3/1988	DP773763	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
28/9/2010 12:44PM

FOLIO: 5/740790

First Title(s): OLD SYSTEM
Prior Title(s): VOL 6129 FOL 216

Recorded	Number	Type of Instrument	C.T. Issue
13/3/1987	DP740790	DEPOSITED PLAN	FOLIO CREATED EDITION 1
24/7/1987	DP747909	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

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G WILL LEAD TO REJECTION

*OFFICE USE ONLY

SUBDIVISION OF LOT 51 IN D.P 747909

DP 773763

Registered: 23.2.1988

C.A.: N° 2/88 OF 20-1-1988

AUBURN Locality: HOMEBUSH

LONGFORD County: CUMBERLAND

Title System: TORRENS

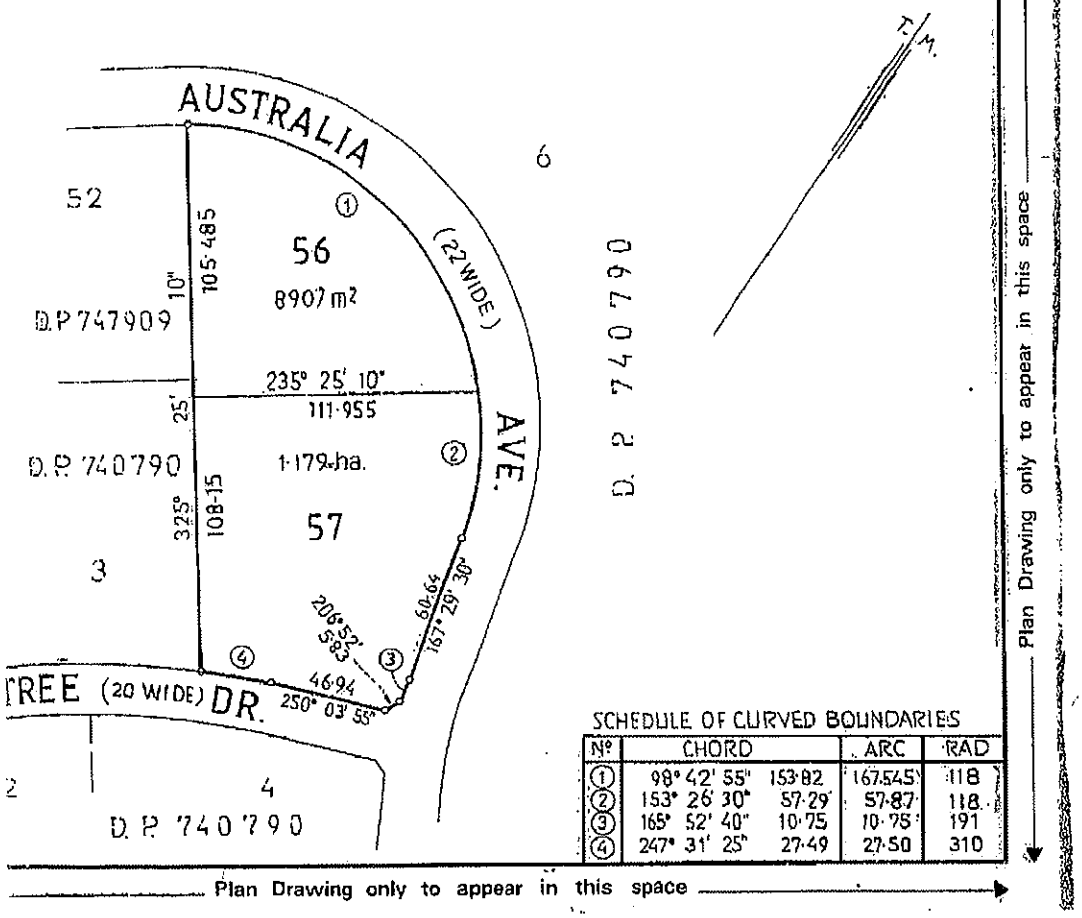
Purpose: SUBDIVISION

Scale 1: 2000 Lengths are in metres

Ref. Map: U0052-93

Last Plan: D.P. 747909

B I A 2 0 0 2 N



SCHEDULE OF CURVED BOUNDARIES

N°	CHORD		ARC	RAD
①	98° 42' 55"	153·82	167·545	118
②	153° 26' 30"	57·29	57·87	118
③	165° 52' 40"	10·75	10·75	191
④	247° 31' 25"	27·49	27·50	310

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day.

25th February, 1988

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 72/1134933

SEARCH DATE	TIME	EDITION NO	DATE
28/9/2010	12:39 PM	1	3/7/2009

LAND

LOT 72 IN DEPOSITED PLAN 1134933
AT HOMEBUSH
LOCAL GOVERNMENT AREA AUBURN
PARISH OF CONCORD COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1134933

FIRST SCHEDULE

SYDNEY OLYMPIC PARK AUTHORITY

SECOND SCHEDULE (4 NOTIFICATIONS)

1 RESERVATIONS & CONDITIONS IN THE CROWN GRANT(S) AND EXCEPTION OF MINERALS AS REGARDS PARTS. SEE VOL 6129 FOL 216 THE TITLE DIAGRAM AND SHEET 3 OF DP849975

* 2 AD821369 CAVEAT BY ENERGYAUSTRALIA AS REGARDS THE PARTS FORMERLY 15/1110035, 16/1110035 AND 60/786296

* AE236950 CAVEATOR CONSENTED

* 3 AD821406 CAVEAT BY ENERGYAUSTRALIA AS REGARDS THE PARTS FORMERLY 15/1110035, 16/1110035 & 60/786296

* AE236950 CAVEATOR CONSENTED

4 L827059 RIGHT OF WAY 20.115 METRE(S) WIDE APPURTENANT TO THE PART(S) OF THE LAND SHOWN SO BENEFITED IN THE TITLE DIAGRAM (AD) BEING THE RESIDUE OF VOL.6129 FOL.216 AS AT 28/04/1970 AFFECTING LOT 100 IN DP1042833 AND LOTS 10 & 15 IN DP778665

NOTATIONS

UNREGISTERED DEALINGS: WX AF692628 WX AF692860 WX AF692861.

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
28/9/2010 12:42PM

FOLIO: 72/1134933

First Title(s): OLD SYSTEM
Prior Title(s): 14/1110035 12/1125680

Recorded	Number	Type of Instrument	C.T. Issue
3/7/2009	DP1134933	DEPOSITED PLAN	FOLIO CREATED EDITION 1
18/8/2010	DP1114423	WITHDRAWN - PRE-EXAMINATION PLAN	

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
28/9/2010 12:56PM

FOLIO: 14/1110035

First Title(s): OLD SYSTEM
Prior Title(s): 79/875562 151/1108154

Recorded	Number	Type of Instrument	C.T. Issue
25/6/2007	DP1110035	DEPOSITED PLAN	FOLIO CREATED EDITION 1
26/6/2007	AD217596	DEPARTMENTAL DEALING	
2/6/2009	AE720968	DEPARTMENTAL DEALING	
9/6/2009	AE735159	DEPARTMENTAL DEALING	
3/7/2009	DP1134933	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
30/9/2010 8:20AM

FOLIO: 79/875562

First Title(s): OLD SYSTEM
Prior Title(s): 74/818981

Recorded	Number	Type of Instrument	C.T. Issue
3/3/1998	DP875562	DEPOSITED PLAN	FOLIO CREATED EDITION 1
25/1/2002	8208818	APPLICATION	EDITION 2
14/5/2002	DP1036982	DEPOSITED PLAN	
14/5/2002	8592808	DEPARTMENTAL DEALING	EDITION 3
2/2/2004	AA22827	REQUEST	
13/6/2006	DP1037124	WITHDRAWN - DEPOSITED PLAN	
25/6/2007	DP1110035	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
30/9/2010 8:13AM

FOLIO: 74/818981

First Title(s): OLD SYSTEM
Prior Title(s): 5/774130

Recorded	Number	Type of Instrument	C.T. Issue
3/8/1992	DP818981	DEPOSITED PLAN	FOLIO CREATED EDITION 1
1/10/1992	E799640	WITHDRAWAL OF CAVEAT	
1/10/1992	E799641	WITHDRAWAL OF CAVEAT	
22/9/1993	I378527	REQUEST	
22/9/1993	I356058	REQUEST	
22/9/1993	I378525	APPLICATION	EDITION 2
18/8/1995	O470143	DEPARTMENTAL DEALING	
8/12/1995	O738097	REQUEST	EDITION 3
25/8/1997	3350461	DEPARTMENTAL DEALING	
28/1/1998	3755286	DEPARTMENTAL DEALING	
3/3/1998	DP875562	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
30/9/2010 8:13AM

FOLIO: 5/774130

First Title(s): OLD SYSTEM
Prior Title(s): 6/740790

Recorded	Number	Type of Instrument	C.T. Issue
23/6/1988	DP774130	DEPOSITED PLAN	FOLIO CREATED EDITION 1
10/4/1989	Y27673	REQUEST	
10/4/1989	Y29791	GRANT OF EASEMENT	EDITION 2
3/7/1990	Z98397	DEPARTMENTAL DEALING	
3/7/1990	Z80438	REQUEST	
3/7/1990	Z80439	TRANSFER OF LEASE	
3/7/1990	Z80440	TRANSFER OF LEASE	EDITION 3
3/3/1992	E295488	CAVEAT	
8/4/1992	E377182	CAVEAT	
3/8/1992	E617299	APPLICATION	
3/8/1992	DP818981	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS
17/10/2002	DP1045522	DEPOSITED PLAN	
22/11/2002	9148874	DEPARTMENTAL DEALING	FOLIO RESTORED
22/11/2002	8971451	REQUEST	FOLIO CANCELLED RESIDUE REMAINS
6/2/2008	DP1122970	DEPOSITED PLAN	
26/8/2008	AE170873	DEPARTMENTAL DEALING	
28/10/2008	AE136428	REQUEST	FOLIO CANCELLED
28/10/2008	AE292555	DEPARTMENTAL DEALING	
28/10/2008	AE292760	DEPARTMENTAL DEALING	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
30/9/2010 8:14AM

FOLIO: 6/740790

First Title(s): OLD SYSTEM
Prior Title(s): VOL 6129 FOL 216

Recorded	Number	Type of Instrument	C.T. Issue
13/3/1987	DP740790	DEPOSITED PLAN	FOLIO CREATED EDITION 1
22/4/1988	X509870	DEPARTMENTAL DEALING	
27/5/1988	X483077	REQUEST	EDITION 2
22/6/1988	DP774130	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
30/9/2010 8:20AM

FOLIO: 151/1108154

First Title(s): OLD SYSTEM
Prior Title(s): 50/1045522 6002/1063407

Recorded	Number	Type of Instrument	C.T. Issue
28/3/2007	DP1108154	DEPOSITED PLAN	FOLIO CREATED EDITION 1
25/6/2007	AD215535	DEPARTMENTAL DEALING	
25/6/2007	DP1110035	DEPOSITED PLAN	FOLIO CANCELLED
26/7/2007	AD298351	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
30/9/2010 8:14AM

FOLIO: 50/1045522

First Title(s): VOL 333 FOL 155 OLD SYSTEM
Prior Title(s): 1/740600 5/774130
23/787402 VOL 6129 FOL 216

Recorded	Number	Type of Instrument	C.T. Issue
17/10/2002	DP1045522	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
25/11/2002	8971451	REQUEST	FOLIO CREATED EDITION 1
25/11/2002	9157839	DEPARTMENTAL DEALING	
13/12/2002	9213410	DEPARTMENTAL DEALING	EDITION 2
13/6/2006	DP1037124	WITHDRAWN - DEPOSITED PLAN	
14/2/2007	AC934841	DEPARTMENTAL DEALING	
28/3/2007	DP1108154	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
28/9/2010 12:57PM

FOLIO: 12/1125680

First Title(s): OLD SYSTEM
Prior Title(s): 15-16/1110035 1/1122971

Recorded	Number	Type of Instrument	C.T. Issue
18/5/2009	DP1125680	DEPOSITED PLAN	FOLIO CREATED EDITION 1
18/5/2009	AE684984	DEPARTMENTAL DEALING	
29/5/2009	AE715803	DEPARTMENTAL DEALING	
2/6/2009	AE720968	DEPARTMENTAL DEALING	
3/7/2009	DP1134933	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
28/9/2010 12:58PM

FOLIO: 15/1110035

First Title(s): OLD SYSTEM
Prior Title(s): 151/1108154

Recorded	Number	Type of Instrument	C.T. Issue
25/6/2007	DP1110035	DEPOSITED PLAN	FOLIO CREATED EDITION 1
26/6/2007	AD217596	DEPARTMENTAL DEALING	
26/7/2007	AD298351	DEPARTMENTAL DEALING	
11/3/2008	AD821369	CAVEAT	
11/3/2008	AD821406	CAVEAT	
10/6/2008	AE8667	DEPARTMENTAL DEALING	
18/5/2009	DP1125680	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
28/9/2010 12:59PM

FOLIO: 151/1108154

First Title(s): OLD SYSTEM
Prior Title(s): 50/1045522 6002/1063407

Recorded	Number	Type of Instrument	C.T. Issue
28/3/2007	DP1108154	DEPOSITED PLAN	FOLIO CREATED EDITION 1
25/6/2007	AD215535	DEPARTMENTAL DEALING	
25/6/2007	DP1110035	DEPOSITED PLAN	FOLIO CANCELLED
26/7/2007	AD298351	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

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PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

DP1134933

e-plan Sheet 1 of 10 sheets

SCHEDULE OF SHORT & CURVED LINES

LINE	BEARING	DISTANCE	ARC	RADIUS
1	59°44'35"	15.385	15.385	350.855
2	63°27'20"	18.225	18.25	105.215
3	148°16'10"	17 4	17 4	280.49
4	152°38'10"	27 51	27.515	427.435
5	153°56'45"	17.71		
6	154°53'30"	28 28		
7	158°00'10"	17 8	17.8	308.55
8	84°24'10"	0.365		
9	154°49'35"	7 45		
10	153°52'35"	3.01		
11	154°22'35"	8 95		
12	154°04'55"	3.01		
13	154°31'05"	9.02		
14	153°40'15"	6.03		
15	153°00'15"	6.075		
16	152°25'45"	6.095		
17	151°24'25"	6.08		
18	149°43'15"	6.1		
19	148°56'45"	6.095		
20	146°45'15"	6.155		
21	144°56'15"	7.0		
22	143°11'45"	5.29		
23	141°36'35"	6.115		
24	139°56'15"	6.11		
25	138°32'55"	6.155		
26	136°53'35"	6.475		
27	52°40'20"	41.99	42.56	75.0
28	68°56'	11.505		
29	46°25'25"	72.71	74.615	99.0
30	226°25'25"	57.405	58.905	75
31	343°11'45"	6.38		
32	224°26'20"	17.8		
33	112°33'10"	6.45		

(E) EASEMENT TO DRAIN WATER 7 & 3 WIDE VIDE DP 774130
(RW) BENEFITTED BY RIGHT OF WAY 20.115 WIDE VIDE L827059
(AA) RESERVATIONS & CONDITIONS IN CROWN GRANTS & EXCEPTION OF MINERALS – SEE VOL. 6129 FOL. 216 & DP 849975
(RU) RESTRICTION ON USER VIDE DP 740790
(EB) BENEFITTED BY RIGHT OF WAY VIDE C512626
(AB) NIL GRANT RESERVATIONS

SEE SHEET 5 FOR EASEMENT STRATUM DETAILS AND LOTS AFFECTED

SEE SHEET 2

SEE SHEET 2

SEE SHEET 2

SEE SHEET 2

SEE DIAGRAM A SHEET 3

SEE DIAGRAM B SHEET 3

SEE SHEET 9

SEE SHEET 8

SEE SHEET 6 FOR STRATUM DETAILS

ALL HEIGHTS ARE AHD

PARKVIEW DRIVE

HERB ELLIOTT AVE

FIGTREE DR

AUSTRALIA AVENUE

"HYUNDAI"

PUMPING STATION

DIAGRAM NOT TO SCALE

70 — DP 1010863

78 — 137.72m²

76 — 3615.3m² (SA)(SC) (SI)

75 — 3852.9m² by DEDⁿ

73 — 9371m² by DEDⁿ

71 — 7712.9m²

74 — 1.499ha

70 — 4.963ha by DEDⁿ

72 — 3767.5m² by DEDⁿ

79 ABOVE 70 BELOW — 2529.8m²

75 ABOVE 75 BELOW

73 ABOVE 73 BELOW

79 ABOVE 79 BELOW

* BOUNDARY IS OUTSIDE FACE OF WALL (CONC)

Surveyor: Pierre Hertzenberg
Date of Survey: 05.03.2009
Surveyors Reference: 113014001 rev 01

PLAN OF SUBDIVISION OF LOTS 4 & 6 IN DP 774130, LOT 813 IN DP 1030022, LOT 14 IN DP 1110035 AND LOT 12 IN DP 1125680

L.G.A.: AUBURN
Locality: HOMEBUSH BAY
Subdivision No:

Lengths are in metres. Reduction Ratio 1: 750

Registered 03-07-2009

D.P. 1134933 (E)

THIS SHEET REPLACED BY SHEET 9 VIDE 2009/1163 7.9.2009

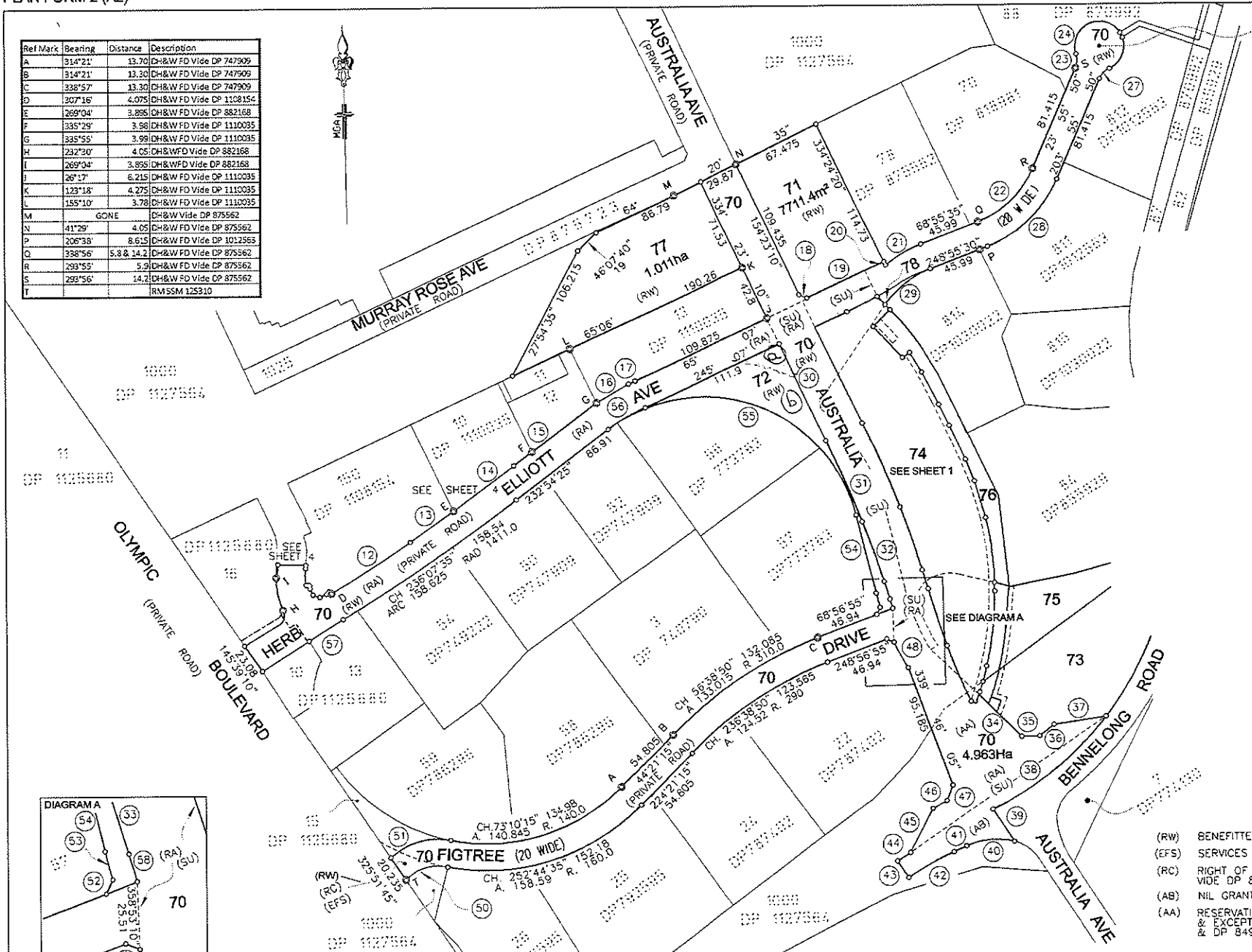
Req:R194526 /Doc:DP 1134933 P /Rev:09-Sep-2009 /Sts:SC.OK /Prt:28-Sep-2010 12:41 /Pgs:ALL /Seq:1 of 12
Ref:p /Src:T

PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

e-plan DP1134933

Sheet 2 of 10 sheets



Ref Mark	Bearing	Distance	Description
A	314°21'	13.70	DH&W FD Vide DP 747909
B	314°21'	13.30	DH&W FD Vide DP 747909
C	338°57'	13.30	DH&W FD Vide DP 747909
D	207°16'	4.075	DH&W FD Vide DP 1108154
E	269°04'	3.895	DH&W FD Vide DP 882168
F	335°29'	3.98	DH&W FD Vide DP 1110035
G	335°55'	3.98	DH&W FD Vide DP 1110035
H	232°30'	4.05	DH&WFD Vide DP 882168
I	269°04'	3.895	DH&WFD Vide DP 882168
J	26°17'	6.215	DH&W FD Vide DP 1110035
K	123°18'	4.275	DH&W FD Vide DP 1110035
L	155°10'	3.78	DH&W FD Vide DP 1110035
M	GONE		DH&W Vide DP 875562
N	41°29'	4.05	DH&W FD Vide DP 875562
P	206°38'	8.615	DH&W FD Vide DP 1012563
Q	338°56'	5.8 & 14.2	DH&W FD Vide DP 875562
R	293°55'	5.9	DH&W FD Vide DP 875562
S	293°56'	14.2	DH&W FD Vide DP 875562
T			RM SSM 125310

Schedule of Short & Curved Lines

Line	Bearing	Distance	Arc	Radius
12	57°37'35"	70.635	70.64	1325.64
13	55°03'10"	40.19		
14	53°37'20"	56.885	56.885	2021.80
15	53°12'40"	77.995		
16	59"22'	27.6	27.645	140.35
17	65°07'	5.33		
18	112°33'10"	6.45		
19	64°47'05"	63.135		
20	154°24'20"	2.855		
21	59°34'20"	30.885	31.025	95.0
22	46°25'55"	57.405	58.905	75.0
23	3°03'40"	10.685	10.925	15.0
24	113°56'	27.61	85.07	18.50
27	224°47'35"	10.685	10.925	15.0
28	226°25'35"	72.710	74.615	95.0
29	231°25'35"	45.105	45.815	75.0
30	334°23'15"	81.070		
31	336°30'10"	66.635	66.655	831.21
32	340°46'25"	48.160	48.19	808.5
33	342°35'20"	14.595		
34	135°06'10"	45.495		
35	88°33'20"	13.500		
36	51°33'20"	14.000		
37	81°38'10"	39.760		
38	230°59'25"	110.960	111.99	240.0
39	146°37'	29.200		
40	265°12'15"	36.085	36.8	53.75
41	245°35'30"	10.87		
42	240°50'20"	38.715	38.755	233.65
43	326°05'15"	15.0		
44	57°35'55"	11.64	11.645	248.65
45	27°43'10"	37.14		
46	60°23'10"	12.0		
47	21°33'10"	12.7		
48	331°24'55"	22.22	22.23	191.0
49	292°09'	5.83		
50	254°33'10"	33.185	34.885	32.025
51	74°57'45"	46.77	48.505	52.025
52	25°45'	5.81		
53	344°46'45"	10.765	10.77	191.0
54	346°21'25"	60.655		
55	109°38'45"	197.33	233.695	118.0
56	239°00'45"	31.86	31.92	149.8
57	238°35'10"	30.4		
58	343°13'45"	6.38		

(RW) BENEFITTED BY RIGHT OF WAY 20.115 WIDE VIDE L827059
(EFS) SERVICES 17 WIDE VIDE DP 831539
(RC) RIGHT OF CARRIAGEWAY VARIABLE WIDTH VIDE DP 875723
(AB) NIL GRANT RESERVATIONS
(AA) RESERVATIONS & CONDITIONS IN CROWN GRANTS & EXCEPTION OF MINERALS – SEE VOL. 6129 FOL. 216 & DP 849975

(RA) RIGHT OF CARRIAGEWAY 21 WIDE & VARIABLE WIDTH LIMITED IN STRATUM
(SU) RIGHT OF CARRIAGEWAY 21 WIDE & VARIABLE WIDTH LIMITED IN STRATUM

Surveyor: Pierre Hanzenberg
Date of Survey: 05.03.2009
Surveyors Reference: 113014001 rev 01

PLAN OF SUBDIVISION OF LOTS 4 & 6 IN DP 774130, LOT 813 IN DP 1030022, LOT 14 IN DP 1110035 AND LOT 12 IN DP 1125680

L.G.A.: AUBURN
Locality: HOMEBUSH BAY
Subdivision No:

Lengths are in metres. Reduction Ratio 1: 2000

Registered 03-07-2009

D.P. 1134933

Req:R194526 /Doc:DP 1134933 P /Rev:09-Sep-2009 /Sts:SC.OK /Prt:28-Sep-2010 12:41 /Pgs:ALL /Seq:2 of 12
Ref:p /Src:T

(Site History Documents – WorkCover Records)

WORKCOVER
NEW SOUTH WALES

MD

14 OCT 2010

Our Ref: D10/133945
Your Ref: Mitch Delaney

13 October 2010

Attention: Mitch Delaney
Environmental Investigation Services
PO Box 976
NORTH RYDE BC 1670

Dear Mr Delaney,

RE SITE: 2 Australia Avenue Homebush

I refer to your site search request received by WorkCover NSW on 28 September 2010 requesting information on licences to keep dangerous goods for the above site.

Enclosed are copies of the documents that WorkCover NSW holds on various Dangerous Goods Licence 35/035634 relating to the storage of dangerous goods at the above-mentioned premises, as listed on the Stored Chemical Information Database (SCID).

If you have any further queries please contact the Dangerous Goods Licensing Team on (02) 4321 5500.

Yours Sincerely

Diana Hayes
Senior Licensing Officer
Dangerous Goods Notification Team

CONTACT FOR NOTIFICATION INQUIRIES

Title: ~~Mr / Miss /~~ Ms / ~~Mrs / Other~~ (please specify) _____ **Family name** Vaughan

Given name Catherine **Other names** Anne

Business phone 02 9704 8899 **Business fax number** 02 9704 8800

Business email address catherine.vaughan@silexsolar.com

Previous Licence Number or Acknowledgement Number (if known)

35/ 035634

Previous Occupier (if known)

BP Solar Australia Pty Ltd

Site on which dangerous goods are to be kept

Number: 2 Street: Australia Avenue

Suburb/Town/Locality: Sydney Olympic Park Postcode: 2127

Nearest cross Street

Herb Elliot Avenue

Lot and DP if no street number

Is the site staffed? If yes state number of employees 15

Site staffing: Hours per day 8 Days per week 5

Site Emergency Contact

Phone number 0412 574 981 **Name** Catherine Vaughan

Nature of site (eg petrol station, warehouse etc)

Other Manufacturing

Nature of primary business activity

Photovoltaic Cells and Modules

ABN Number (if any) 91 124 926 085 Website details (if any) www.silexsolar.com

What is the ANSZIC code most applicable to your business? (see guide for list of codes and further information)

Code 294 Description Other Manufacturing - Photovoltaic Cells and Modules

Attach a site sketch(s) of the premises. Refer to the Guide GDG01 for information on the requirements for the site sketch.

Attach a legible photocopy page from a local Street Directory or other map showing the locality of the premises. Mark the location of the premises with an X.

List the dangerous goods that will be stored and/or processed on these premises (refer to Guide GDG01). Copy this page and attach additional sheets if there is insufficient space.

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.1	Cylinders in use	2.3	150 L *(water capacity of cylinders)*

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1005	Ammonia, Anhydrous	2.3	-	Ammonia	2RE	75	L
1977	Nitrogen, compressed gas	2.2	-	Nitrogen	2RE	50	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.2	Roofed Store	8	3000L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1789	Hydrochloric Acid	8	II	Hydrochloric Acid	2R	200	L
1790	Hydrofluoric Acid	8	II	Hydrofluoric Acid	2XE	200	L
1824	Sodium Hydroxide	8	III	Caustic	2R	2000	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.3	Roofed Store	3	410 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1219	Isopropanol - Isopropyl Alcohol	3	II	Isopropanol	2[Y]E	300	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.4	DG Process Storage	3	120 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1046	Helium, compressed gas	2.2	-	Helium	2[T]	25	L
1977	Nitrogen, compressed gas	2.2	-	Nitrogen	2RE	50	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.5	Flammable Liquids Cabinet	3	250 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1219	Isopropanol - Isopropyl Alcohol	3	II	Isopropanol	2[Y]E	25	L

List the dangerous goods that will be stored and/or processed on these premises (refer to Guide GDG01). Copy this page and attach additional sheets if there is insufficient space.

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.7	Tank IBC	8	1000L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1789	Hydrochloric Acid	8	II	Hydrochloric Acid	2R	1000	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.8	Tank IBC	8	1000L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1789	Hydrochloric Acid	8	II	Hydrochloric Acid	2R	500	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.10	Flammable Liquids Cabinet	3	2200 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1219	Isopropanol - Isopropyl Alcohol	3	II	Isopropanol	2[Y]E	400	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.12	Above Ground Tank	2.2	41800 L - *(Water capacity of cylinder)*

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1066	Nitrogen - Refrigerated Liquid	2.2	-	Nitrogen	2[T]	30000	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.14	Process Vessel/Area	8	300 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1219	Isopropanol - Isopropyl Alcohol	3	II	Isopropanol	2[Y]E	100	L
1789	Hydrochloric Acid	8	II	Hydrochloric Acid	2R	50	L
1790	Hydrofluoric Acid	8	II	Hydrofluoric Acid	2XE	40	L
1824	Sodium Hydroxide	8	III	Caustic	2R	100	L

List the dangerous goods that will be stored and/or processed on these premises (refer to Guide GDG01). Copy this page and attach additional sheets if there is insufficient space.

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.15	Process Vessel/Area	8	400 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1219	Isopropanol - Isopropyl Alcohol	3	II	Isopropanol	2[Y]E	120	L
1789	Hydrochloric Acid	8	II	Hydrochloric Acid	2R	50	L
1790	Hydrofluoric Acid	8	II	Hydrofluoric Acid	2XE	40	L
1824	Sodium Hydroxide	8	III	Caustic	2R	100	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.16	Process Vessel/Area	8	200 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1789	Hydrochloric Acid	8	II	Hydrochloric Acid	2R	50	L
1824	Sodium Hydroxide	8	III	Caustic	2R	90	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.18	Tank IBC	8	1000 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1824	Sodium Hydroxide	8	III	Caustic	2R	600	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.19	Tank IBC	8	3000 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1824	Sodium Hydroxide	8	III	Caustic	2R	2000	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.26	Roofed Store	8	4900 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1789	Hydrochloric Acid	8	II	Hydrochloric Acid	2R	200	L
1790	Hydrofluoric Acid	8	II	Hydrofluoric Acid	2XE	200	L
1805	Phosphoric Acid	8	III	Phosphoric Acid	2R	100	L

List the dangerous goods that will be stored and/or processed on these premises (refer to Guide GDG01). Copy this page and attach additional sheets if there is insufficient space.

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
Depot No.28	Cylinder Store	2	2000 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1001	Acetylene, Dissolved	2.1	-	Acetylene	2[S]E	100	L
1005	Ammonia, Dissolved	2.3	-	Ammonia	2RE	100	L
1006	Argon, compressed	2.2	-	Argon	2T	300	L
1977	Nitrogen, compressed Gas	2.2	-	Nitrogen	2RE	150	L
1972	Oxygen, compressed	2.2	-	Oxygen	2[S]	300	L
1075	Petroleum Gases, Liquefied - LPG	2.1	-	LPG	2YE	440	L
2203	Silane, compressed	2.1	-	Silane	2SE	300	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)

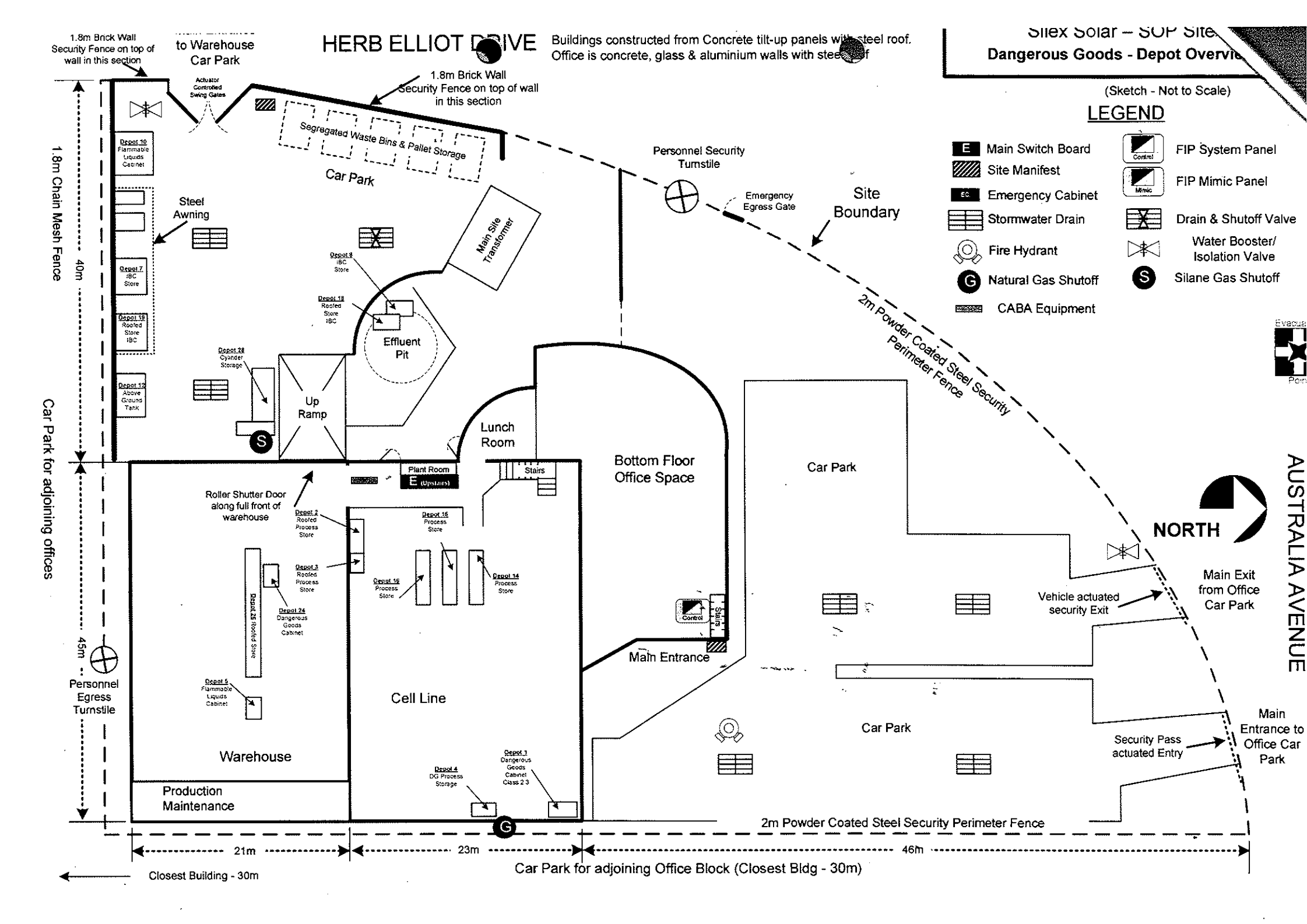
UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg


Silex Solar – SOP Site
Dangerous Goods - Depot Overvie
(Sketch - Not to Scale)
HERB ELLIOT DRIVE
Buildings constructed from Concrete tilt-up panels with steel roof.
Office is concrete, glass & aluminium walls with steel roof
1.8m Brick Wall Security Fence on top of wall in this section
to Warehouse Car Park
Actuator Controlled Swing Gates
1.8m Brick Wall Security Fence on top of wall in this section
Segregated Waste Bins & Pallet Storage
Car Park
Personnel Security Turnstile
Emergency Egress Gate
Site Boundary
Steel Awning
Main Site Transformer
Effluent Pit
Up Ramp
Lunch Room
Plant Room
E (Upstairs)
Stairs
Bottom Floor Office Space
Car Park
Roller Shutter Door along full front of warehouse
Cell Line
Warehouse
Production Maintenance
Main Entrance
Control
Stairs
Car Park
Car Park
NORTH
Main Exit from Office Car Park
Vehicle actuated security Exit
Security Pass actuated Entry
Main Entrance to Office Car Park
AUSTRALIA AVENUE
2m Powder Coated Steel Security Perimeter Fence
1.8m Chain Mesh Fence
40m
45m
Car Park for adjoining offices
Personnel Egress Turnstile
2m Powder Coated Steel Security Perimeter Fence
21m
23m
46m
Closest Building - 30m
Car Park for adjoining Office Block (Closest Bldg - 30m)
LEGEND
Main Switch Board
Site Manifest
Emergency Cabinet
Stormwater Drain
Fire Hydrant
Natural Gas Shutoff
CABA Equipment
FIP System Panel
FIP Mimic Panel
Drain & Shutoff Valve
Water Booster/ Isolation Valve
Silane Gas Shutoff
Depot 10 Flammable Liquids Cabinet
Depot 7 IBC Store
Depot 19 Roofed Store IBC
Depot 12 Above Ground Tank
Depot 9 IBC Store
Depot 18 Roofed Store IBC
Depot 28 Cylinder Storage
Depot 2 Roofed Process Store
Depot 3 Roofed Process Store
Depot 24 Dangerous Goods Cabinet
Depot 25 Roofed Store
Depot 5 Flammable Liquids Cabinet
Depot 16 Process Store
Depot 16 Process Store
Depot 14 Process Store
Depot 4 DG Process Storage
Depot 1 Dangerous Goods Cabinet Class 2 3

1 2 3 4 5 6

A B C D

DEPOT 10

1.8m CONCRETE BLOCK WALL

DEPOT 7

VAPOUR BARRIER

DEPOT 19

VAPOUR BARRIER

DEPOT 13

DEPOT 12

DEPOT 28

VAPOUR BARRIER

DEPOT 8
DEPOT 18

RAMP UP TO WAREHOUSE

MAIN SWITCHBOARD (MEZZANINE)

ROLLER SHUTTER DOOR

ROLLER SHUTTER DOOR

ROLLER SHUTTER DOOR

EST BUILDING - 30m

E

F

G

H

CARPARK ADJOINING PROPERTY CLOSEST BUILDING - 30m

DEPOT 5

DEPOT 26

DEPOT 24

DEPOT 27

DEPOT 4

DEPOT 1

1.8m CHAINWIRE FENCE

CONCRETE TILTUP PANELS ALL ROUND (FRL 240/ 240 /240)

A						PRELIMINARY
		DRAFTING	DESIGN	REV'D	APP'D	

CARPARK ADJOINING PR

DEPOT 24

DEPOT 27

DEPOT 4

1.8m CHAINWIRE FENCE

CONCRETE TILTUP PANELS ALL ROUND (FRL 240/ 240 /240)

DEPOT 1

CARPARK ADJOINING PROPERTY CLOSEST BUILDING - 30r

No	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
A						PRELIMINARY

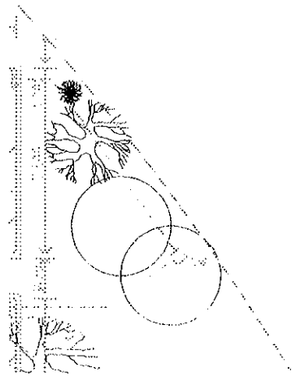
No	DRAWING NUMBER	REFERENCE DRAWING TITLE

E F G H

1 2 3 4 5 6

7	8	9	10	11	12

DEPOT N°	TYPE OF DEPOT	DEPOT CLASS & PACKAGING GROUP	STORED MATERIAL	MAXIMUM QUANTITY	BUND TYPE & CAPACITY
1	ROOFED STORE - VENTILATED CABINET FOR CYLINDERS	2.3	ANHYDROUS AMMONIA	44kg	N/A
4	ROOFED STORE - DG CABINET	8 - II	CORROSIVE LIQUID, NOS	55L	CABINET BUND- 20L
5	ROOFED STORE - DG CABINET	3 - II	ISOPROPANOL	250L	CABINET BUND- 65L
7	IBC STORE	8 - II	HYDROCHLORIC ACID	1000L	CONCRETE BUND - 1000L
8	ROOFED STORE - IBC	8 - II	HYDROCHLORIC ACID	1000L	GRP BUND - 250L
10	ROOFED STORE - DG CABINET	3 - II	ISOPROPANOL	2200L	CABINET BUND- 600L
12	ABOVE GROUND TANK	2.2	NITROGEN, COMPRESSED	15000L	N/A
13	ABOVE GROUND TANK	2.2	OXYGEN, REFRIDGERATED LIQUID	2500L	N/A
18	ROOFED STORE - IBC	8 - II	SODIUM HYDROXIDE	1000L	CONCRETE BUND - 1000L
19	IBC STORE	8 - II	SODIUM HYDROXIDE	3000L	CONCRETE BUND - 1000L
24	ROOFED STORE AEROSOLS (MINOR STORAGE)	2.1	SPRAY CANS - PAINT	20kg	N/A
26	ROOFED STORE - DRUMS & PACKAGES	8- II & III	HYDROCHLORIC ACID HYDROFLUORIC ACID PHOSPHORIC ACID PHOSPHORUS OXYCHLORIDE	2800L 1600L 500L 40kg	CONCRETE BUND - 1750L
27	ROOFED STORE - DRUMS	8 - II	SODIUM HYDROXIDE	1300 L	CONCRETE BUND - 400L
28	CYLINDER STORE (MINOR STORAGE)	2.1, 2.2 & 2.3	ARGON - COMPRESSED GAS TETRAFLUORO METHANE OXYGEN - COMPRESSED GAS LPG AMMONIA SILANE ACETYLENE TETRAFLUOROMETHANE/OXYGEN	34m³ 30m³ 60m³ 180kg 23kg 30kg 14m³ 50m³	NOTE: STORAGE QUANTITY OF LPG IS LESS THAN 500L WATER CAPACITY OF CYLINDERS, AMMONIA IS LESS THAN 50L WATER CAPACITY OF CYLINDERS AND TOTAL STORAGE CAPACITY IS LESS THAN 2000L, DEPOT IS THEREFORE MINOR STORE

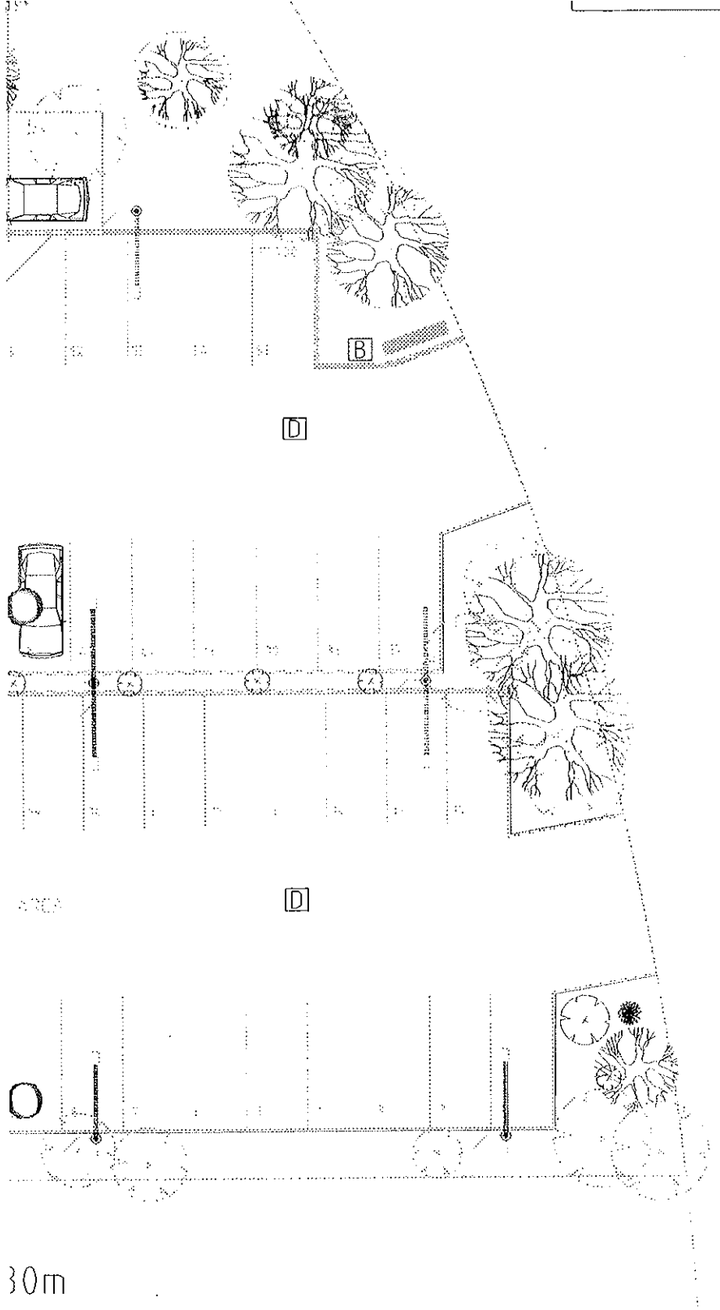


A

B

C

D



LEGEND

- FIRE HYDRANT
- ELECTRICAL / ISOLATION POINT
- DG DEPOT
- EXTINGUISHER (DRY POWDER)
- [B] BOOSTER CONNECTION
- [D] DRAIN
- MAIN SWITCHBOARD
- HOSE REEL
- SITE REGISTER
- FIRE INDICATOR PANEL

SKM

THIS PLAN CONFORMS WITH THE NSW DANGEROUS GOODS ACT - 1978 AND THE FOLLOWING AUSTRALIAN STANDARDS

AS1940 - 1993: THE STORAGE AND HANDLING OF FLAMMABLE AND COMBUSTIBLE LIQUIDS, FOR DEPOTS 5 & 10

AS3780 - 1994: THE STORAGE AND HANDLING OF CORROSIVE SUBSTANCES, FOR DEPOTS 4, 7, 8, 18, 19, 26, & 27

AS4332 - 1995: THE STORAGE AND HANDLING OF GASES IN CYLINDERS, FOR DEPOT 28

AS1894 - 1997: THE STORAGE AND HANDLING OF NON FLAMMABLE CRYOGENIC AND REFRIGERATED LIQUIDS, FOR DEPOTS 13

AS4452 - 1997: THE STORAGE AND HANDLING OF TOXIC SUBSTANCES, FOR DEPOTS 1 & 28

S.SYLVESTER, MAIDGC

1:250 0 5 10 15 20 25 m

5 4 3 2 1

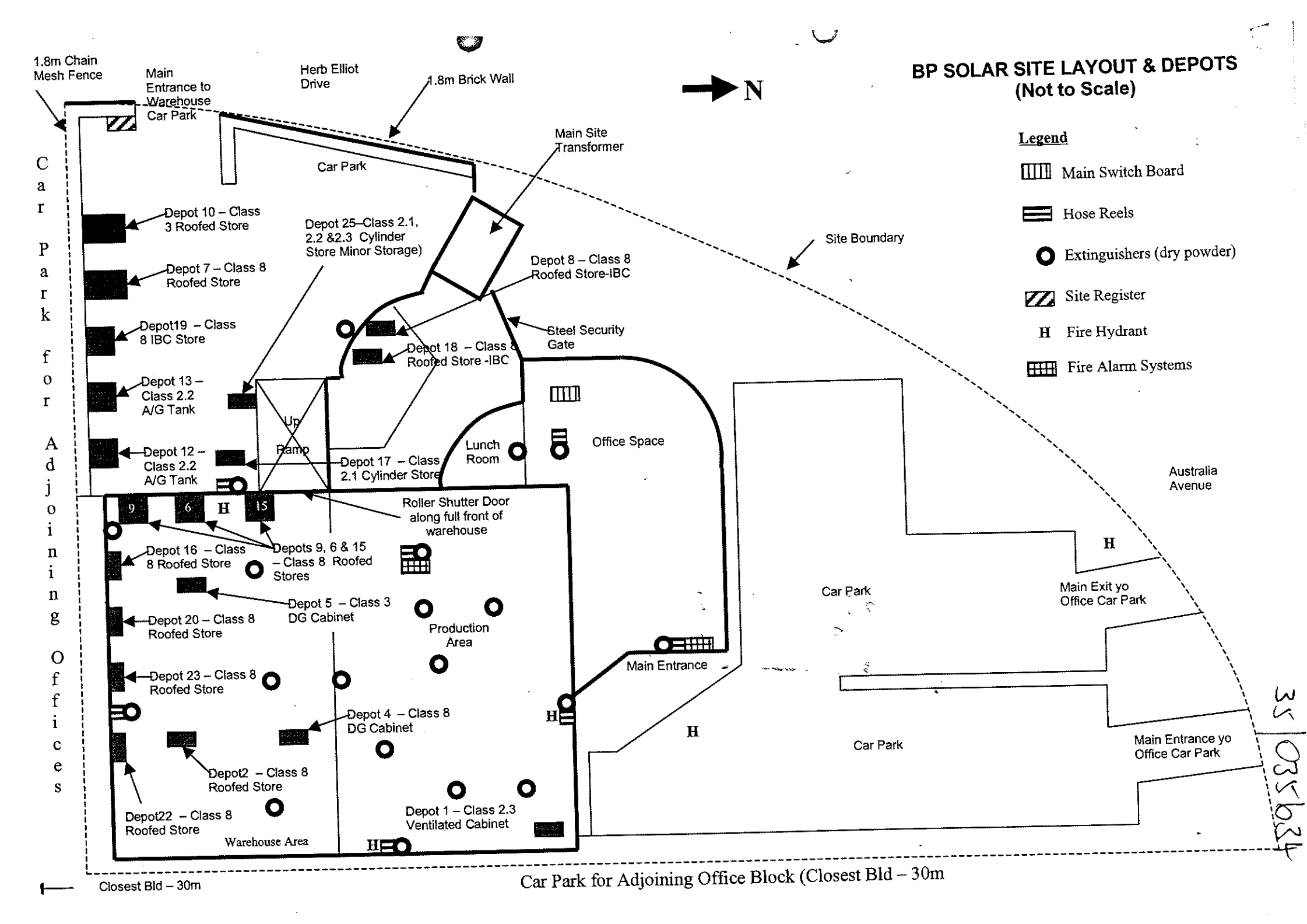
SKM

Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
100 Christie Street
St Leonards NSW 2065 Australia
Telephone (02) 9928 2100
Facsimile (02) 9928 2500

CLIENT			
BP SOLAR PTY LTD			
PROJECT			
DANGEROUS GOODS LICENSE			
DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
P.VAUGHAN		S.SYLVESTER	M.ELLACOTT
DESIGNED	DESIGN REVIEW		

TITLE			
DANGEROUS GOOD DEPOT LOCATIONS			
SCALE	SKM PROJECT No	DRAWING No	AMDT
AS SHOWN	PR00113	FIGURE 1	A

E F G H


BP SOLAR SITE LAYOUT & DEPOTS
(Not to Scale)
N
Legend
Main Switch Board
Hose Reels
Extinguishers (dry powder)
Site Register
H Fire Hydrant
Fire Alarm Systems
1.8m Chain Mesh Fence
Main Entrance to Warehouse Car Park
Herb Elliot Drive
1.8m Brick Wall
Main Site Transformer
Car Park
Site Boundary
Car Park for Adjoining Offices
Depot 10 – Class 3 Roofed Store
Depot 25–Class 2.1, 2.2 &2.3 Cylinder Store Minor Storage)
Depot 7 – Class 8 Roofed Store
Depot 8 – Class 8 Roofed Store-IBC
Depot19 – Class 8 IBC Store
Steel Security Gate
Depot 18 – Class 8 Roofed Store -IBC
Depot 13 – Class 2.2 A/G Tank
Up Ramp
Office Space
Lunch Room
Depot 12 – Class 2.2 A/G Tank
Depot 17 – Class 2.1 Cylinder Store
Australia Avenue
9
6
H
15
Roller Shutter Door along full front of warehouse
Depot 16 – Class 8 Roofed Store
Depots 9, 6 & 15 – Class 8 Roofed Stores
Depot 5 – Class 3 DG Cabinet
Production Area
Car Park
Main Exit yo Office Car Park
Depot 20 – Class 8 Roofed Store
Main Entrance
Depot 23 – Class 8 Roofed Store
Depot 4 – Class 8 DG Cabinet
Car Park
Main Entrance yo Office Car Park
Depot2 – Class 8 Roofed Store
Depot22 – Class 8 Roofed Store
Depot 1 – Class 2.3 Ventilated Cabinet
Warehouse Area
Closest Bld – 30m
Car Park for Adjoining Office Block (Closest Bld – 30m

Application for Licence to Keep Dangerous Goods

WorkCover NEW SOUTH WALES

Application for ☐ new licence ☑ amendment ☐ transfer ☐ renewal of expired licence

PART A – Applicant and site information

1 Name of applicant: BP SOLAR — ACN: 80 005 548 603

2 Postal address of applicant: PO BOX 114 — Suburb/Town: HOMEBUSH BAY — Postcode: 1821

3 Trading name or site occupier's name: AS ABOVE

4 Contact for licence inquiries
Phone: 8762 5727 — Fax: 8762 5889 — Name: ROD. SEARES

5 Previous licence number (if known): 35/ 035634

6 Previous occupier (if known):

7 Site to be licensed
No: 2 — Street: AUSTRALIA AVENUE
Suburb / Town: HOMEBUSH BAY — NSW — Postcode: 2127

8 Main business of site: MANUFACTURING

9 Site staffing: Hours per day: 24 — Days per week: 7

10 Emergency contact
Phone: 0419 300 257 — Name: ROD SEARES

11 Major supplier of dangerous goods: VARIOUS.

12 If a new site or for amendments to depots:
Plan stamped by: Name of Accredited Consultant: STEVE SYLVESTER — Date stamped: 9 JAN 2003

I certify that the details in this application (including any accompanying computer disk) are correct and cover all licensable quantities of dangerous goods kept on the premises.

13 Signature of applicant: [signature] — Date: 17/1/03

Please send your application, marked *CONFIDENTIAL*, to:
Dangerous Goods Licensing, Level 3, Locked Bag 10, Clarence Street, SYDNEY NSW 2000

PART C – Dangerous Goods Storage *Complete one section per depot.*

If you have more depots than the space provided, photocopy sufficient sheets first.

Depot Number	Type of depot	Depot Class	Maximum storage capacity
1 ✓	ROOFED STORE - VENTILATED CABINET FOR CYLINDERS	2.3	44 kg

UN Number	Correct Shipping Name	PG Class (I, II, III)		Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1005	ANHYDROUS AMMONIA	2.3	–	ANHYDROUS AMMONIA	22	kg

Depot Number	Type of depot	Depot Class	Maximum storage capacity
2 ✓	ROOFED STORE - DRUMS	8	100 LITRES

UN Number	Correct Shipping Name	PG Class (I, II, III)		Product or common name	Typical quantity	Unit, e.g. L, kg, m³
2672	AMMONIA SOLUTION	8	III	AMMONIA SOLUTION	80	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
4	ROOFED STORE - DG CABINET	8	30 55 LITRES

UN Number	Correct Shipping Name	PG Class (I, II, III)		Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1760	CORROSIVE LIQUID, N.O.S.	8	III	DAYSTAR EPOXY HARDENER EH 400	20	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
5	FLC ROOFED STORE - DG CABINET	3	250 130 LITRES

UN Number	Correct Shipping Name	PG Class (I, II, III)		Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1219	ISOPROPANOL (ISOPROPYL ALCOHOL)	3	II	EVAPORATIVE FLUX X-32-10i	100	L

PART C – Dangerous Goods Storage *Complete one section per depot.*

If you have more depots than the space provided, photocopy sufficient sheets first.

Depot Number	Type of depot	Depot Class	Maximum storage capacity
6	ROOFED STORE - DRUMS	8	1500 ~~400~~ LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1789	HYDROCHLORIC ACID	8	II	HYDROCHLORIC ACID	300	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
7	IBC STORE	8	1000 LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1789	HYDROCHLORIC ACID	8	II	HYDROCHLORIC ACID	1000	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
8	ROOFED STORE - DRUMS	8	1000 LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1789	HYDROCHLORIC ACID	8	II	HYDROCHLORIC ACID	500	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
9	ROOFED STORE - DRUMS	8 (6.1a)	1000 LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1790	HYDROFLUORIC ACID	8 (6.1a)	II	HYDROFLUORIC ACID	800	L

PART C – Dangerous Goods Storage *Complete one section per depot.*

If you have more depots than the space provided, photocopy sufficient sheets first.

Depot Number	Type of depot	Depot Class	Maximum storage capacity
10	ROOFED STORE -	3	2200 2000 LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1219	ISOPROPANOL	3	II	PROPAN-2-OL	1600	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
11	CYLINDER STORE	2.1	120 Kg

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1978	PROPANE	2.1	—	LP GAS CYLINDERS	100	Kg

Depot Number	Type of depot	Depot Class	Maximum storage capacity
12	ABOVE GROUND TANK.	2.2	15,000 LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1066	NITROGEN, COMPRESSED	2.2	-	NITROGEN BULK GAS	10,000	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
13	ABOVE GROUND TANK	2.2	2,500 L

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1073	OXYGEN, REFRIGERATED LIQUID	2.2	-	OXYGEN - BULK GAS	2,000	L

PART C – Dangerous Goods Storage *Complete one section per depot.*

If you have more depots than the space provided, photocopy sufficient sheets first.

Depot Number	Type of depot	Depot Class	Maximum storage capacity
14	CYLINDER STORE	2.2	40 m^3

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m^3
1072	OXYGEN, COMPRESSED	2.2	-	OXYGEN BOTTLES	30	m^3

Depot Number	Type of depot	Depot Class	Maximum storage capacity
15	ROOFED STORE - DRUMS	8	500 LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m^3
1805	PHOSPHORIC ACID	8	III	PHOSPHORIC ACID	400	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
16	ROOFED STORE - DRUMS	8	40 kg

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m^3
1810	PHOSPHORUS OXYCHLORIDE	8	II	PHOSPHORUS OXYCHLORIDE	20	kg

Depot Number	Type of depot	Depot Class	Maximum storage capacity
17	CYLINDER STORE	2.1	24 kg

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m^3
2203	SILANE, COMPRESSED	2.1	-	SILANE GAS	11	kg

PART C – Dangerous Goods Storage *Complete one section per depot.*

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Depot Number	Type of depot	Depot Class	Maximum storage capacity
18	ROOFED STORE - IBC	8	~~2000~~ 1000. LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1824	SODIUM HYDROXIDE	8	II	CAUSTIC	1000	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
19	IBC STORE	8	~~2000~~ 3000 LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1824	SODIUM HYDROXIDE	8	II	SODIUM HYDROXIDE	1000	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
20	ROOFED STORE - DRUMS	8	1300 3,300 LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
1824	SODIUM HYDROXIDE	8	II	SODIUM HYDROXIDE	~~2000~~ 1300	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
21	ROOFED STORE - DG CABINET	3	150 kg

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit, e.g. L, kg, m³
2413	TETRA PROPYL ORTHO TITANATE	3	III	TETRA PROPYL ORTHO TITANATE	120	kg

PART C – Dangerous Goods Storage *Complete one section per depot.*

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Depot Number	Type of depot	Depot Class	Maximum storage capacity
3	CYLINDER STORE	2.2	180 Kg

UN Number	Correct Shipping Name	PG Class (I, II, III)		Product or common name	Typical quantity	Unit e.g. L, kg, m³
1006	ARGON GAS	2.2	-	ARGON.	30	kg
1956	COMPRESSED GAS, N.O.S.	2.2	-	TETRA FLUORO METHANE/ OXYGEN	90	Kg
1982	TETRAFLUORO METHANE, COMPRESSED (REFRIGERANT GAS)	2.2	-	R14 COMPRESSED	60	Kg

Depot Number	Type of depot	Depot Class	Maximum storage capacity
22	ROOFED STORE - DRUMS	8	800 400 LITRES

UN Number	Correct Shipping Name	PG Class (I, II, III)		Product or common name	Typical quantity	Unit e.g. L, kg, m³
1789	HYDROCHLORIC ACID	8	II	HYDROCHLORIC ACID	300	L

PART C – Dangerous Goods Storage *Complete one section per depot.*

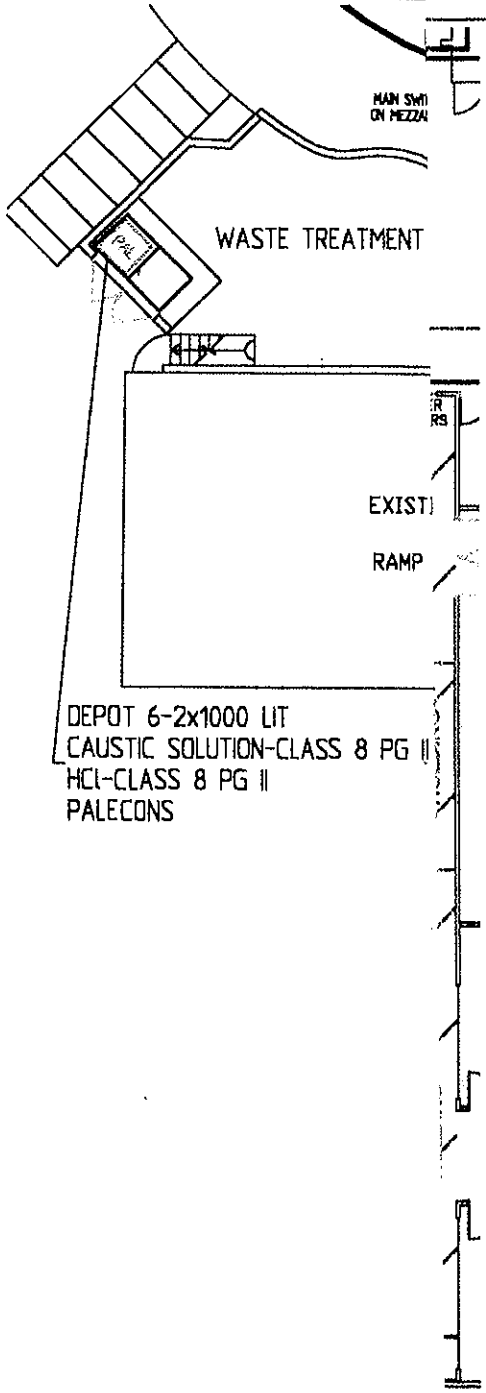
If you have more depots than the space provided, photocopy sufficient sheets first.

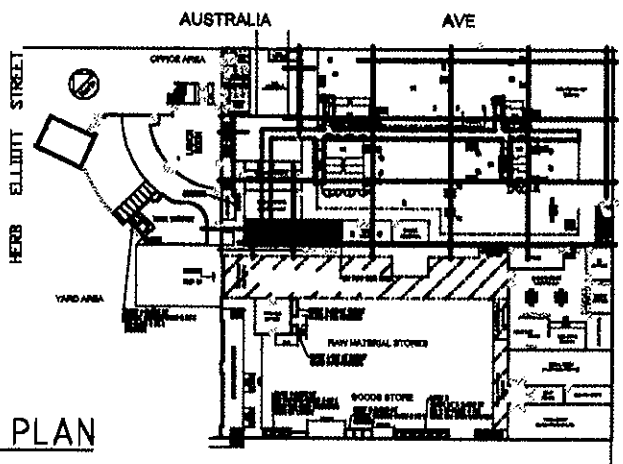
Depot Number	Type of depot	Depot Class	Maximum storage capacity
23	ROOFED STORE - DRUMS	8	600 LITRES

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit: e.g. L, kg, m³
1790	HYDROFLUORIC ACID	8	II	HYDROFLUORIC ACID	400	L

Depot Number	Type of depot	Depot Class	Maximum storage capacity
24	DG CABINET - MINOR STORAGE ROOFED STORE - AEROSOLS	2.1	20kg.

UN Number	Correct Shipping Name	Class	PG (I, II, III)	Product or common name	Typical quantity	Unit: e.g. L, kg, m³
1950	AEROSOLS	2.1	-	SPRAY CANS	20	kg





SITE PLAN

LEGEND

NGUISHER
RE EXTINGUISHER
UISHER

- FIRST AID
- EMERGENCY STOP
- ELECTRICAL SWITCH BOARD/ CONTROL PANEL
- TELEPHONE

DEPOT PLAN

A	FOR ISSUE	S.T.	31.8.00
2	FOR DISCUSSION	S.T.	29.8.00
1	PRELIMINARY	S.T.	27.7.00

TITLE DANGEROUS GOODS LAYOUT
SOLAREX P/L
2 AUSTRALIA AVE
HOMEBUSH BAY NSW 2127

REV.

APPENDIX D

(Sampling Protocols and QA/QC Definitions)

SOIL AND GROUNDWATER SAMPLING PROTOCOLS

These protocols specify the basic procedures to be used when sampling soils or groundwater for environmental site assessments undertaken by EIS. The purpose of these protocols is to provide standard methods for: sampling, decontamination procedures for sampling equipment, sample preservation, sample storage and sample handling. Deviations from these procedures must be recorded.

Soil Sampling

a) Prepare a test pit/borehole log.

b) Layout sampling equipment on clean plastic sheeting to prevent direct contact with ground surface. The work area should be at a distance from the drill/rig excavator such that the drill rig/excavator can operate in a safe manner.

c) Ensure all sampling equipment has been decontaminated prior to use.

d) Remove any surface debris from the immediate area of the sampling location.

e) Collect samples and place in glass jar with a Teflon seal. This should be undertaken as quickly as possibly to prevent the loss of volatiles. If possible, fill the glass jars completely.

f) Collect samples for asbestos analysis and place in a zip-lock plastic bag.

g) Label the jar and/or bag with the EIS job number, sample location (eg. BH1), sampling depth interval and date. If more than one sample container is used, this should also be indicated (eg. 2 = Sample jar 1 of 2 jars).

h) Photoionisation detector (PID) screening of volatile organic compounds (VOCs) should be undertaken on samples using the soil sample headspace method. Headspace measurements are taken following equilibration of the headspace gasses in partly filled zip-lock plastic bags. PID headspace data is recorded on the borehole/test pit log and the chain of custody forms.

i) Record the lithology of the sample and sample depth on the borehole/test pit log in accordance with AS1726-1993[25].

j) Store the sample in a sample container cooled with ice or chill packs. On completion of the sampling the sample container should be delivered to the lab immediately or stored in the refrigerator prior to delivery to the lab. All samples are preserved in accordance with AS 4482.1:2005, AS 4482.2:1999 and AS/NZS 5667.1:1998.

k) Check for the presence of groundwater after completion of each borehole using an electronic dip metre or water whistle. Boreholes should be left open until the end of fieldwork. All groundwater levels in the boreholes should be rechecked on the completion of the fieldwork.

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[25] *Geotechnical Site Investigations*, Standards Australia 1993 (AS1726-1993)

l) Backfill the boreholes/test pits with the excavation cuttings or clean sand prior to leaving the site.

Decontamination Procedures for Soil Sampling Equipment

a) All of the equipment associated with the soil sampling procedure should be decontaminated between every sampling location.

b) The following equipment and materials are required for the decontamination procedure:
   - Phosphate free detergent (Decon 90)
   - Potable water
   - Stiff brushes
   - Plastic sheets

c) Ensure the decontamination materials are clean prior to proceeding with the decontamination.

d) Fill both buckets with clean potable water and add phosphate free detergent to one bucket.

e) In the bucket containing the detergent scrub the sampling equipment until all the material attached to the equipment has been removed.

f) Rinse sampling equipment in the bucket containing potable water.

g) Place cleaned equipment on clean plastic sheets.

If all materials are not removed by this procedure, high-pressure water cleaning is recommended. If any equipment is not completely decontaminated by both these processes that equipment should not be used until it has been thoroughly cleaned.

Groundwater Sampling

Groundwater samples are more sensitive to contamination than soil samples and therefore adhesion to this protocol is particularly important to obtain reliable, reproducible results. The recommendations detailed in AS/NZS 5667.1:1998 are considered to form a minimum standard.

The basis of this protocol is to maintain the security of the borehole and obtain accurate and representative groundwater samples. The following procedure should be used for collection of groundwater samples from previously installed groundwater monitoring wells.

a) After monitoring well installation, at least three bore volumes should be pumped from the monitoring wells (well development) to remove any water introduced during the drilling process and/or the water that is disturbed during installation of the monitoring well. This should be completed prior to purging and sampling.

b) Groundwater monitoring wells should then be left to recharge for at least three days before purging and sampling. Prior to purging or sampling the condition of each

well should observed and any anomalies recorded on the field data sheets. The following information should be noted: the condition of the well, noting any signs of damage, tampering or complete destruction; the condition and operation of the well lock; the condition of the protective casing and the cement footing (raised or cracked); and, the presence of water between protective casing and well.

c) Take the groundwater level from the collar of the piezometer/monitoring well using an electronic dip meter. The collar level should be taken (if required) during the site visit using a dumpy level and staff.

d) Purging and sampling of piezometers/monitoring wells is done on the same site visit when using micro-purge (or low flow) techniques. Layout and organize all equipment associated with groundwater sampling in a location where they will not interfere with the sampling procedure and will not pose a risk of contaminating samples. Equipment generally required includes:
   - Micropore filtration system or Stericup single-use filters (for heavy metals samples).
   - Filter paper for Micropore filtration system.
   - Bucket with volume increments.
   - Sample containers: teflon bottles with 1 ml nitric acid, 75mL glass vials with 1 mL hydrochloric acid, 1 L amber glass bottles.
   - Bucket with volume increments.
   - Flow cell.
   - pH/EC/Eh/T meters.
   - Plastic drums used for transportation of purged water.
   - Esky and ice.
   - Nitrile gloves.
   - Distilled water (for cleaning).
   - Electronic dip meter.
   - Micro-purge pump pack and pump head.
   - Air and water tubing for Micro-purge.
   - Groundwater sampling forms.

e) If single-use stericup filtration is not being used, clean the Micropore filtration system thoroughly with distilled water prior to use and between each sample. Filter paper should be changed between samples. 0.45um filter paper should be placed below the glass fibre filter paper in the filtration system.

f) Ensure all non-disposable sampling equipment is decontaminated or that new disposable equipment is available prior to any work commencing at a new location. The procedure for decontamination of groundwater equipment is outlined at the end of this section.

g) Disposable gloves should be used whenever samples are taken to protect the sampler and to assist in avoidance of contamination.

h) Groundwater samples are obtained from the monitoring wells using low flow/micro-purge sampling equipment to reduce the disturbance of the water column and loss of volatiles.

i) During pumping to purge the well, the pH, temperature, conductivity, dissolved oxygen, redox potential and groundwater levels are monitored (where possible) using calibrated field instruments to assess the development of steady state conditions. Steady state conditions are generally considered to have been achieved when the difference in the pH measurements was less than 0.2 units and the difference in conductivity was less than 10%.

j) All measurements are recorded on specific data sheets.

k) Once steady state conditions are considered to have been achieved, groundwater samples are obtained directly from the pump tubing and placed in appropriate glass bottles, BTEX vials or plastic bottles.

l) All samples are preserved in accordance with water sampling requirements detailed in the NEPM 1999 and placed in an insulated container with ice. Groundwater samples are preserved by immediate storage in an insulated sample container with ice in accordance with AS/NZS 5667.1:1998.

m) Record the sample on the appropriate log in accordance with AS1726:1993. At the end of each water sampling complete a chain of custody form.

Decontamination Procedures for Groundwater Sampling Equipment

a) All of the equipment associated with the groundwater sampling procedure (other than single-use items) should be decontaminated between every sampling location.

b) The following equipment and materials are required for the decontamination procedure:
   - Phosphate free detergent.
   - Potable water.
   - Distilled water
   - Plastic Sheets or bulk bags (plastic bags)

c) Fill one bucket with clean potable water and phosphate free detergent, and one bucket with distilled water.

d) Flush potable water and detergent through pump head. Wash sampling equipment and pump head using brushes in the bucket containing detergent until all materials attached to the equipment are removed.

e) Flush pump head with distilled water.

f) Change water and detergent solution after each sampling location.

g) Rinse sampling equipment in the bucket containing distilled water.

h) Place cleaned equipment on clean plastic sheets.

i) If all materials are not removed by this procedure that equipment should not be used until it has been thoroughly cleaned


EIS

QA/QC DEFINITIONS

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994[26]) methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (H. Keith 1991[27]).

Practical Quantitation Limit (PQL), Limit of Reporting (LOR) and Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection limit (MDL) for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations. *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit"* Keith 1991.

Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD). Acceptable targets for precision in this report will be less than 50% RPD for concentrations greater than ten times the PQL, less than 75% RPD for concentrations between five and ten times the PQL and less than 100% RPD for concentrations that are less than five times the PQL.

Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured. The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes.

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[26] *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* US EPA, 1994 (US EPA SW-846)

[27] *Environmental Sampling and Analysis, A Practical Guide*, Keith, H, 1991 (Keith 1991)

The proximity of an averaged result to the true value, where all random errors have been statistically removed. Accuracy is measured by percent recovery. Acceptable limits for accuracy generally lie between 70% to 130% recoveries. Certain laboratory methods may allow for values that lie outside these limits.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;
- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

Comparability

Comparability is the evaluation of the similarity of conditions (eg. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel;
- Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

Blanks

The purpose of laboratory and field blanks is to check for artifacts and interferences that may arise during sampling and analysis.

Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula;

$$\frac{\text{(Spike Sample Result – Sample Result)}}{\text{Concentration of Spike Added}} \times 100$$

Acceptable recovery limits are 70% to 130%.

Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2)}{\{(D1 + D2)/2\}} \times 100$$