FINAL

Environmental Site Assessment
Report
NSW Health Infrastructure
12 March 2010

AECOM

Environmental Site Assessment Report

Westmead Hospital, Westmead, NSW

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Westmead Hospital, Westmead, NSW

Prepared for

NSW Health Infrastructure

Prepared by

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Glossary of Terms

General Terms	
ANZECC	Australian and New Zealand Environment and Conservation Council
AHD	Australian Height Datum
AST	Above ground Storage Tank
BH	Borehole
BTEX	Benzene, toluene, ethylbenzene and xylenes
COC	Chain of Custody
CoPC	Contaminants of Potential Concern
DEC	Department of Environment and Conservation NSW
DECC	Department of Environment and Climate Change NSW
DECCW	Department of Environment, Climate Change and Water NSW
DO	Dissolved Oxygen
DQI	Data Quality Indicators
DQO	Data Quality Objectives
EC	Electrical Conductivity
EIL	Ecological Investigation Levels
EPA	Environment Protection Authority
GAC	Groundwater Assessment Criteria
GME	Groundwater Monitoring Event
GMW	Groundwater Monitoring Well
LOR	Limit of Reporting
MW	Monitoring Well
m bgs	Metres below ground surface
m btoc	Metres Below Top of Casing
NATA	National Association of Testing Authorities
NEHF	National Environmental Health Forum
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
PID	Photoionisation detector
PIL	Phytotoxicity-Based Investigation Levels
PQL	Practical quantitation level (or limit)
PSH	Phase Separated Hydrocarbon
QA/QC	Quality Assurance and Quality Control
RPD	Relative Percent Difference
SAC	Soil Assessment Criteria
SIL	Soil Investigation Levels
SWL	Standing Water level

General Terms			
TOC	Top of Casing		
TPH	Total Petroleum Hydrocarbons		
USCS	Unified Soil Classification System		
UST	Underground Storage Tank		
VOC	Volatile Organic Compound		
Units			
km	kilometre	µg/kg	micrograms/kilogram
m	metre	µg/L	micrograms/litre
mg/kg	milligrams/kilogram	ppm	parts per million
mg/L	milligrams/litre	t	Tonne

Executive Summary

Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by NSW Health Infrastructure (NSW HI), to undertake an Environmental Site Assessment (ESA) of the property located on the Hawkesbury Road side of the Westmead Hospital Campus next to the Children's Medical Research Institute (the Site). The location of the Site is shown on **Figure 1** and the Site layout is shown on **Figure 2**.

The Site comprises an area of approximately 1 hectare (ha) which is currently identified as Lot 100 in Deposited Plan (DP) 1119583. The Site is zoned 'Special Uses 5' and is located within the Parramatta City Council area. The Site comprises the following:

- Bitumen sealed car park area;
- Grevillea Cottage buildings and associated car park area;
- S.T.I Research Centre (Marian Villa); and
- Geriatric Medicine Domiciliary Care Unit (G.M.D.C.U) and Childflight building.

Objectives

The objectives of the ESA were to:

- Document the Site history;
- Assess potential on and off-site sources of contamination;
- Develop a conceptual site model;
- Assess the risk that contamination sources, if identified, may pose to soil and groundwater conditions on- and off-site, bearing in mind that the Site will be used for research, education and training (categorised as commercial/industrial for soil and groundwater assessment criteria); and
- Provide recommendations for future management of the Site, if required.

Scope of Works

In order to address the objectives AECOM undertook the following works:

- A desk top (Phase 1 ESA) review of site history and background information including Council records, historical aerial photographs, land title office document and NSW WorkCover Dangerous Goods licence database;
- An inspection of the Site;
- An intrusive investigation (Phase 2 ESA) which included collection of environmental soil and groundwater samples from three boreholes (BH03 to BH05), fifteen auger holes (AH01- AH15) and three groundwater monitoring wells (MW02, MW03 and MW05);
- Analysis of soil and groundwater samples for a range of potential contaminants of concern (PCoC) identified from the site history review; and
- Preparation of this report detailing the findings of the ESA.

The environmental investigation was undertaken concurrently with a geotechnical investigation undertaken by AECOM.

Findings

The results of the Phase 1 and Phase 2 indicated the following key findings:

- The Site had been utilised as Westmead Hospital since 1978, before which it was owned by various trustees of show and athletic sports ground;
- Previous investigations identified the potential presence of unknown fill materials and potential asbestos containing material (PACM);

- The soil profile at the Site included a layer of fill material comprising sand / sandy clay which was encountered to a maximum depth of 0.9 m below ground surface (bgs). The fill was underlain by natural clay, soil and shale bedrock encountered to a maximum depth of 12.0 m bgs.
- Visual and / or olfactory evidence of contamination was not observed in the soil samples, with the exception of PACM observed in AH03 at 0 to 0.1 m bgs. .
- Concentrations of metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury and zinc), benzene, toluene, ethylbenzene and xylene (BTEX), total petroleum hydrocarbons (TPH), organochlorine and organophosphorous pesticides (OCP and OPP) and polychlorinated biphenyls (PCBs) were either below the laboratory limit of reporting or below the adopted soil assessment criteria (SAC) in soil samples analysed;
- A fragment of fibro cement containing chrysotile asbestos was identified in AH03 at 0 to 0.1 m bg;
- Asbestos fibres were not detected in the soil samples analysed;
- Groundwater was encountered within the shale bedrock, and SWLs in the groundwater monitoring wells ranged from 8.54 m below top of casing (m btoc) (MW05) to 9.810 (MW03) m btoc;
- Groundwater elevation ranged from 1.155 m AHD (MW01) to 1.435 m AHD (MW02) within shale bedrock;
- Visual and / or olfactory evidence of contamination was not observed in groundwater; and
- Concentrations of metals, BTEX, TPH, PAH, OCP, OPP and PCBs were either below the laboratory LOR or below the groundwater assessment criteria (GAC) in the groundwater samples analysed.

Conclusions and Recommendations

The soil and groundwater analytical results indicate that the concentrations of the CoPC identified for the Site were below the adopted assessment criteria (based on the proposed future land use of research, education and training, the commercial/industrial assessment criteria were selected) and are not considered to present a risk to human health or the environment given the current use and proposed development of the Site. On the basis of the soil and groundwater analytical results for the potential contaminants of concern identified for the Site, AECOM considers that the Site is suitable for the proposed land use.

The result of the investigation did not indicate the presence of asbestos fill. However one fragment of asbestos containing material as encountered during the investigation, and there is the potential for other asbestos containing materials to be encountered during excavations at the Site.

AECOM notes that the proposed development will include underground car parking which will require excavation of fill and soil material. It is understood that the final development will cover approximately 0.7 ha of the site.

AECOM recommends the following during the development:

- All fill and soil excavated during the development should be assessed an classified in accordance with the NSW DECC[1] Waste Classification Guideline (DECC, 2008) prior to for off-site disposal purposes at an appropriately licensed landfill;
- Implementation of an Unexpected Finds protocol provide protocols and appropriate mechanisms for the identification and management of asbestos containing materials should they be encountered during the during excavation works for the development.

[1] Now known as the Department of Environment, Climate Change and Water (DECCW)

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by NSW Health Infrastrcture (NSW HI), to undertake an Environmental Site Assessment (ESA) of the property located on the Hawkesbury Road side of the Westmead Hospital Campus next to the Children's Medical Research Institute (the Site). The location of the Site is shown on **Figure 1** and the Site layout is shown on **Figure 2**.

The Site comprises an area of approximately 1 hectare (ha). The Site forms part of a larger block of land currently identified as Lot 100 in Deposited Plan (DP) 1119583. The Site is zoned 'Special Uses 5' and is located within the Parramatta City Council area.

The Site includes the following locations:

- Bitumen sealed carpark area;
- Grevillea Cottage buildings and associated carpark area;
- S.T.I Research Centre (Marian Villa); and
- Geriatric Medicine Domiciliary Care Unit (G.M.D.C.U) and Childflight building.

It is the understanding of AECOM that the site is to be developed as a multi storey building, including areas of underground car parking, for research, education and training purposes. It is understood that the footprint of the proposed building will cover approximately 0.7 ha of the Site..

1.1 Objectives

The objectives of the ESA were to:

- Review the Site history and environmental setting;
- Assess potential on and off site sources of contamination ;
- Develop a conceptual site model;
- Assess the risk that contamination sources, if identified, may pose to soil and groundwater conditions on- and off-site, bearing in mind that the Site will be categorised as commercial/industrial land use for screening purposes; and
- Provide recommendations for future management of the Site, if required.

1.2 Scope of Work

The following scope of works was undertaken to achieve the objectives detailed in **Section 1.1**:

- Desktop study of background information, including review of:
  - Historical Site ownership (Lands Title Office documents);
  - Parramatta City Council records including the Section 149 Certificate;
  - Historical aerial photographs of the Site;
  - Regional geological and hydrogeological information;
  - NSW WorkCover Dangerous Goods Licences database; and
  - Regional groundwater usage.
- An inspection of the Site;
- Collection of environmental soil and groundwater samples from three boreholes (BH03 to BH05), fifteen auger holes (AH01-AH15) and three groundwater monitoring wells (MW02, MW03 and MW05);
- Analysis of soil and groundwater samples for a range of potential contaminants identified for the Site based on the site history review; and
- Preparation of this ESA report.

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2.0 Site Identification

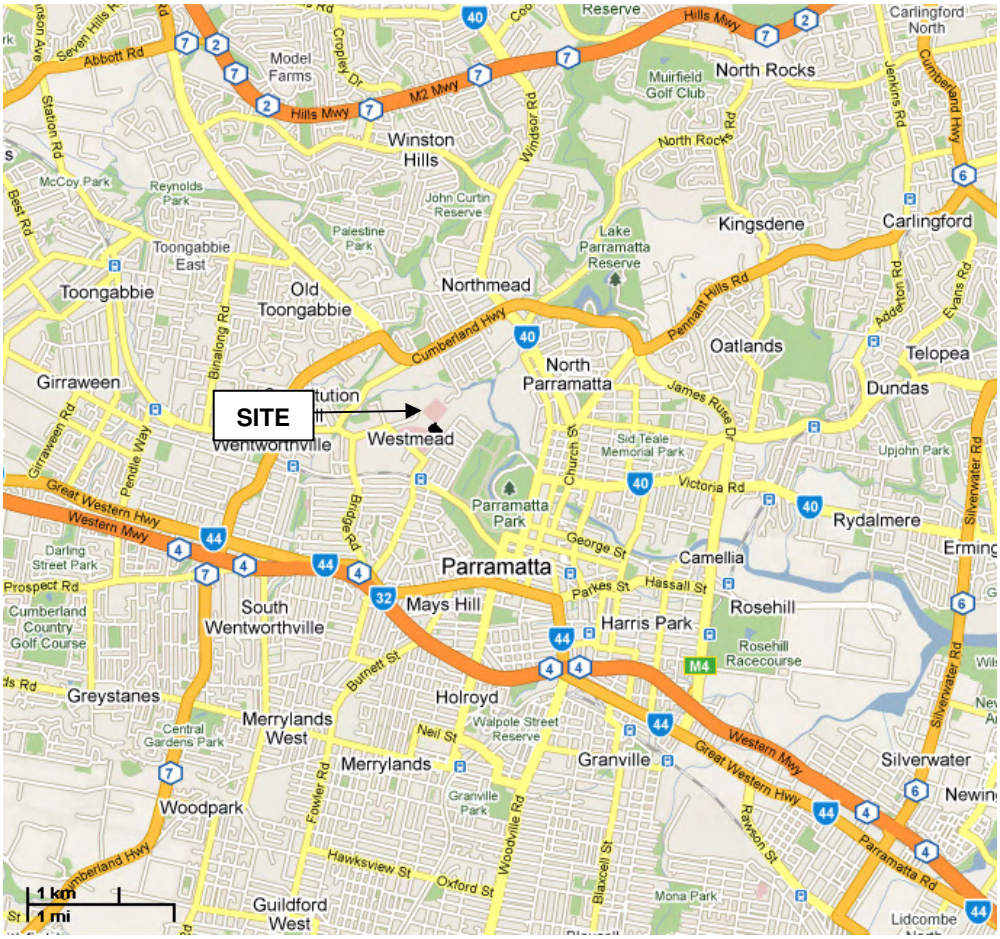
The Site details are provided in **Table 1**. The Site location and layout are shown on **Figure 1** and **Figure 2**.

Table 1: Site Description

Item	Description
Site Owner[1]	Health Administration Corporation
Site Address	Westmead Hospital, Hawkesbury Road, Westmead NSW
Legal Description[1]	Lot 100 DP 1119583
Local Government Authority[2]	Parramatta City Council
Current Zoning[2]	Special Uses 5
Current Land Use[1]	Car park area and hospital associated buildings
Proposed Land Use	Research, education and training facility.
Site Elevation (m AHD) [1]	Approximately 22 m AHD
Site Area[3]	1.0 ha
Site Location	**Figure 1**
Site Layout	**Figure 2**

Notes: 1) Client Provided Information
2) Section 149 Certificate

Figure 1: Site Location Plan



3.0 Site Background and History

The following sections summarise the information obtained during the desktop review.

3.1 Section 149 Certificate

A copy of the Planning Certificate from the Parramatta City Council, issued under Section 149 of the Environmental Planning and Assessment Act 1979 and dated 22 December 2009, was obtained (refer to **Appendix A)**. A summary of the 149 certificate is provided below:

- No matters arising under the *Contaminated Land Management Act, 19*97 were specified for the Site;
- The Site is zoned 'Special Uses 5';
- The land is not in a conservation area;
- An item of environmental heritage is not situated on the land;
- The land is not affected by Sections 38 or 39 of the Coastal Protection Act, 1979*;*
- The land is not affected by Section 15 of the Mine Subsidence Compensation Act, 1961, proclaiming land to be a Mine Subsidence District;
- The Site is affected by a 100 year Average Recurrence Interval flood;
- The Site is designated as Class 5 relating to Acid Sulfate Soils;
- The Site is not bushfire prone land;
- The land is not affected by road widening or re-alignment;
- The land is affected by a tree preservation order; and
- The land is not affected by a policy that restricts development because of the likelihood of land slip, tidal inundation, subsidence, or any other risk.

3.2 Certificates of Title

A review of historical Certificates of Title through the Land Titles Office (LTO) was undertaken to provide details of historical ownership and possible former uses of the Site and is provided in **Table 2**.

Table 2: Summary of Certificates of Title

Year	Proprietor
Lot 100 DP 1119583	
2008 – to date	Health Administration Corporation
Note (a)	
(Lot 411 DP 1016834)	
2000 – 2008	Health Administration Corporation
(Lot 2 DP 847561)	
1995 - 2000	Health Commission of New South Wales
1995 – 2000	*various commercial leases see Historical Folio 2/847561*
(Lot 2 DP 591088)	
1988-1995	Health Commission of New South Wales
(Lot 2 DP591088 – CTVol 13618 Fol 128	
1977 – 1988	Health Commission of New South Wales
1980 – 1988	Lease to the Prospect County council of substation no 7793

Year	Proprietor
	(Part Parramatta Mental Hospital site and Crown Roads – Parish St John)
Prior - 1978	Crown Land
Note (b)	
(Lot 5 DP 1077852)	
2005 – 2008	Health Administration Corporation
2005 – 2008	Various commercial leases see Historical Folio 5/1077852
(Lot 410 DP 1016834)	
2000 – 2005	Health Administration Corporation
2000 – 2005	Various commercial leases see Historical Folio 410/1016834
(Lot 41 DP 876232)	
1998 – 2000	Health Administration Corporation
	Various commercial leases see Historical Folio 41/876232
(Lot 4 DP 839109)	
1994 – 1998	Health Administration Corporation
1994 – 1994	Health Commission of New South Wales
	Various commercial leases see Historical Folio 4/839109
(Lot 1 DP 591088)	
1988 – 1994	Health Commission of New South Wales
	Lot 1 DP 591088 – CTVol 13618 Fol 127
1978 – 1988	Health Commission of New South Wales
Note (bi)	
Portion 105 Parish St John – Area 14 Acres 3 Roods – Ctvol 1261 Fol 79	
1969 – 1978	Crown Land
1901 – 1969	The Minister for Public Works
1899-1901	Alexander Kinghorne, grazier
1898-1899	Issac Platt Slack, auctioneer
1898 - 1898	William Joseph Moulder, orchardist Humphrey Moulder, fruit grower
Note (bii)	
	(Part Parramatta Mental Hospital site and Crown Roads – Parish St John)
Prior -1978	Crown Land
Note (biii)	
Portion 262 Parish St John – Area 34 Acres 2 Roods 30 Perches – Ctvol 4521 Fol 72	
1974 - 1978	Crown Land
(1978 – 1978)	Acquired for Westmead Hospital
1959-1933	Various trustees of show and athletic sports ground Parramatta

Year	Proprietor
Portion 262 Parish St John – Area 34 Acres 2 Roods 30 Perches	
Prior to 1932	Crown Land

Notes: Refer to **Appendix B** for Notes (a), (b), (bi), (bii) and (biii,)

The titles information indicated that:

- The Site has been utilised as Westmead Hospital since 1978;
- Between 1932 to 1978, the Site was owned by various trustees of show and athletic sports grounds; and
- Prior to 1900 the Site was owned by graziers / fruit grower and was possibly used for these purposes.

AECOM notes that title search information does not specify the year in which development of the Site had occurred.

3.3 Aerial Photographs

The following information was derived from reviewing historical aerial photographs for the Site and the surrounding area. The photographs were obtained from the NSW Department of Lands. Aerial photographs are included as **Appendix C**.

Table 3: Summary of Historical Aerial Photographs

Photograph	Description
6 March 1930 Map 3424 Black and White	**Site**: The Site comprises of predominantly vacant land which appears to be used for farmland. Hawkesbury Road is visible immediately to the south of the Site. **Surrounds**: The surrounding area appears to comprise of vacant land with some scattered vegetation and residential properties to the south and north west of the Site. Toongabbie Creek is located to the north, east and south of the Site. The Parramatta Park, located approximately 300 m south of the Site, is also visible.
May 1951 Run 9 Black and White	**Site:** The Site appeared to be almost similar to 1930 photograph. **Surrounds**: The surrounding area appears to be predominantly dense residential to the south and west of the Site. Development activities are visible adjacent to the north west of the Site; indicated by scarring of the oval shape land (sportsground) and two building structures, indicating the likely presence of some commercial buildings.
7 July 1970 Run 14 Black and White	**Site:** The Site appeared to be developed compared to the 1951 aerial photograph. Two building blocks in the north west portion of the Site and some scattered vegetations are visible in the southern portion of the Site. **Surrounds**: The surroundings area adjacent to the Site appear to be more developed compared to the 1951 aerial photograph and expanded significantly to all directions. The oval shape ground to the north west of the Site appears to be larger compared to the 1951 aerial photograph.
10 August 1982 Run 19 49-97 Colour	**Site:** The Site area appeared to be similar to the 1970 aerial photograph. **Surrounds**: The surroundings area adjacent to the Site appeared to be more developed to 1982 aerial photograph. The shape of the building suggests the presence of commercial building structure to the north, east and north west of the Site.
20 September 1991 Run 8 4176 Colour	**Site:** The Site appeared to be developed and covered by bitumen, indicating the likely presence of car park area for the hospital. The presence of big building to the north of the Site and some scarring to the open vacant land to the northeast of the Site indicates the development activities. **Surrounds**: No significant changes observed to the surrounding area from 1982 aerial photograph. The Toongabbie Creek is still visible to the north and south of the Site.

Photograph	Description
10 December 2002 Run 8 16-38 Colour	**Site:** No significant changes observed from 1991 photograph. Some vegetation is present at the southern and eastern boundary of the Site. The Site appeared to be covered by commercial properties to the north east and west of the Site. Hawkesbury Road is visible immediately to the south of the Site. **Surrounds**: No significant changes observed to the surrounding area from 1991 aerial photograph.

Review of the aerial photographs indicated that the Site appears to have been vacant land until 1951, and was developed sometime after 1951.

3.4 Dangerous Goods

A search of WorkCover NSW records pertaining to licenses for the storage of dangerous goods on the Site was initiated. No records of licenses to keep dangerous goods were located for the Site.

3.5 NSW DECC Records

The NSW EPA register (www.environment.nsw.gov.au/prclmapp/searchregister.aspx) contained no notices within 1 km of the Site.

3.6 Previous Investigation (Environsciences, 1992)

Environsciences Pty Ltd (Environsciences) conducted an investigation into the presence of Inbound Asbestos Waste for Western Area Health Services in 1992[2]. The purpose of the investigation was to identify potential health risks associated with asbestos, which was found in soil during the construction of Westmead and an adjacent property.

AECOM notes that this investigation mainly covered the entire Westmead Hospital premises including Westmead Children's Hospital.

The investigation comprised:

- Compilation of a detailed site history and research of historical records to identify areas where asbestos or other waste had been buried;
- Compilation of the information currently available on the distribution of asbestos wastes at Westmead Hospital ; and
- Development of system for future ongoing operation of the hospital.

The Environsciences findings are summarised below:

- The aerial photograph from 1951 indicated the development Showground Oval and one main building. The area to the north (between Institute Road and Toongabbie Creek) and area to the east of the showground was described as Hospital Paddocks based on the Certificate of Title in a Parramatta City Council Plan.
- The 1965 aerial photograph indicated further development of the showground (Note, the showground area is located to the north west of the current investigation site) with many new buildings and construction of five small complexes in the hospital paddock to the east of the showground.
- A review of the Council Plan, aerial photographs and Titles did not indicate evidence of commercial or private landfill operation at which asbestos or other waste may have been deposited.
- Fill material was imported to raise the original ground level of the showground, however, the source of the fill material was not known.

[2] Environsciences Pty Ltd. August, 1992, "Investigation into the Presence of Inbound Asbestos Waste at Westmead Hospital" (Environsciences, 1992).

- Construction waste material was indentified beneath car park 4 (north to north west of Grevillea Cottage building) which included plastic, timber, bricks and asbestos.
- In 1990/91, five small complexes in the hospital paddock were demolished and construction works was commenced for new Children's hospital.
- Asbestos material had been moved from one area to another area and had was mixed with a variety of material. The likely sources of asbestos were identified as:
  - Demolition material from the showground building;
  - Asbestos material was utilised as fill for muddy areas to stabilise the showground;
  - Asbestos material from James Hardie and Company, which was used as landfill to raise the ground adjacent to Toongabbie Creek.
- Anecdotal evidence suggested that the former showground area was utilised as fill area for the waste from James Hardie and Company.
- Asbestos had been identified in carpark 4, north of the Grevillea Cottage building, Westmead Child Care Centre building and other complexes of the Westmead Hospital.

3.7 Site History Summary

The findings of the site background and history review indicated that the site had been undeveloped until at least 1951.The presence of the building in the aerial photograph dated 1951 indicates that commercial activities (hospital) to the north, west and east of the Site appeared to have commenced sometime after 1951.

Based on the site history review, part of the Westmead Hospital Site and the surrounding area appeared to have been used for filling purposes by James Hardie and Company. Additionally Environsciences reported that asbestos material was utilised as fill for muddy areas to stabilise the showground. On the basis of the information reviewed, it was considered possible that the filling extended onto into the north west corner of the current investigation Site.

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4.0 Site Condition & Surrounding Environment

4.1 Site Description

At the time of the AECOM Site inspection on 23 December 2009 (Section **4.8),** the Site comprised two buildings associated with the hospital and car parking. 'Grevillea Cottage' was situated in the western portion of the Site and comprised a square shaped block of four separate buildings joined by glass walkways. An internal courtyard was present in the centre of the structure. This building was primarily used at the S.T.I Research Centre. 'Chesalon Cottage' was situated in the north eastern portion of the Site and was of similar design to that of 'Grevillea Cottage', also with an internal courtyard. This building was used for Geriatric Medicine Domiciliary Care Unit.

The north western and south eastern portions of the Site were used for car parking, having a gravel and sealed surface respectively. A sealed access road bisected the Site from the South to the East. A small grassed area was present in the south-western corner of the Site. AECOM notes that an electrical substation was observed at the southwest corner of the Site.

4.2 Surrounding Land Use

The landuse surrounding the Site on 23 December 2009 was observed to:

- North: Bitumen sealed lane immediately followed by wire mesh fenced brick buildings and Children's hospital building (**Plate 9** and **10**). Further north is Toongabbie Creek, which is located approximately 400 m north of the Site followed by industrial and residential area;
- East: Bitumen sealed lane with boom gate entrance to Children's hospital building /substation (**Plate 7**) adjacent to Site followed by other buildings associated with Children's hospital. Parramatta River is located approximately 400 m east of the Site;
- South: Hawkesbury Road followed by residential apartments. Parramatta Park is located approximately 300 m southeast of the Site followed by Parramatta River.
- West: Bitumen sealed lane with boom gate entrance to the Site, followed by Hospital buildings and car parks.

4.3 Topography and Drainage

The Site slopes moderately to the north and west. Two Stormwater drains were observed immediately outside the northern and western boundary of the Site.

4.4 Surface Water and Flood Potential

No Surface water was observed on the Site during the inspection on 23 December 2009.

The closest surface water feature to the Site is Toongabbie Creek located approximately 400 m to the north of the Site, which flows east towards Parramatta River. Parramatta River is located approximately 500 m to the east of the Site, and flows towards the south at this location. Domain Creek is located approximately 450 m to the south-east of the Site and flows north east towards Parramatta River.

Based on the topography of the Site, the flood potential of the Site is considered to be low.

4.5 Regional Meteorology

According to the Bureau of Meteorology Station 066124 situated at North Parramatta, the Site is expected to experience:

- Warm to hot summers, with average January minimum and maximum temperatures of 17.5^{0}C and 28.3 ^{0}C, respectively;
- Moderate winters, with average July minimum and maximum temperatures of 6.2^{0}C and 17.3^{0}C, respectively; and

- Average annual rainfall of approximately 956.5 mm, which is generally highest in February (average rainfall 124.4 mm) and lowest in July (average rainfall 45.4 mm).

4.6 Geology

The Site is underlain by the Blacktown Group, a residual soil landscape. The Blacktown soil landscape comprises of gently undulating rises on Wianamatta Group shales. Local relief is generally up to 30 metres with slope gradients usually less than 5%. Soils are generally shallow to moderately deep (<1 metre); consisting of hard setting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and drainage lines. (SCS, 1983)

Limitations to the Blacktown soil landscape group are the moderately reactive highly plastic subsoil, low soil fertility and poor soil drainage. (SCS, 1983).

The Soil Landscape Series Sheet also indicated that the Site is located on developed terrain.

4.7 Hydrogeology

The NSW Natural Resource Atlas website (http://www.nratlas.nsw.gov.au) indicates that one registered groundwater bore was located within a 1 km radius of the Site (**Appendix D**). The bore is located approximately 800 m to the north west of the Site. No other details were available for this well.

Based on the topography and surface water of the surrounding area, the groundwater flow was anticipated to be in an easterly to south easterly direction, towards Parramatta River.

4.8 Site Inspection

An inspection of the Site was undertaken by Sam Patel (AECOM Environmental Scientist) on 23 December 2009. A summary of the observations are summarised below:

- The Site was predominantly sealed with bitumen and utilised for carpark purposes.
- No staining was observed on the bitumen sealed ground surface which appeared in good condition;
- The southern portion of the Site was relatively densely vegetated with trees and shrubs;
- Mature trees were also present along the southern boundary (adjacent to Hawkesbury Road) and were sparsely present in other areas;
- The trees at the Site appeared to be healthy, and did not appear to be stressed;
- A bitumen sealed lane was present running north-south along the eastern portion of Site (**Plate 7**);
- A fenced area occupied by an electrical substation was located in the south eastern corner of the Site. It is understood that this is leased to Integral Energy;
- Some areas with no grass cover (bare surface) were present, mainly along the eastern boundary of the Site;
- A fenced off area was present to the south of the Site (**Plate 6**);
- Residential apartments were located to the south of the Site across Hawkesbury Road and
- The Parramatta Park is located approximately 300 m south of the Site.

5.0 Conceptual Site Model

Based on the Phase I ESA information reviewed, a conceptual Site Model (CSM) has been developed to identify potential areas of concern at the Site. The CSM has been developed based on the source – pathway – receptor scenario.

5.1 Potential Sources

5.1.1 Potential Source Areas

The following potential sources of contamination may exist at the Site:

- Unknown fill materials associated with the former carpark and adjacent Westmead Child Care Centre (now NETS building), where asbestos was identified during previous investigations;
- Indentified asbestos waste in north to north eastern portion of the Site; and
- Former possible agricultural landuse.

Off Site Areas with potential impact to the Site were identified as:

- Former Showground located to the west the Site, which operated as a landfill sometime between 1951 and 1970; and
- Commercial/industrial properties and activities to the north of the Site, beyond Toongabbie Creek.

Other surrounding land uses are considered unlikely to have resulted in significantly contaminating activities.

5.1.2 Contaminants of Potential Concern

The following potential contaminants of concern (PCoC) related to the above sources are based on the NSW EPA (1994 and 1995) Guidelines and on AECOM's professional knowledge and are considered to include:

- Asbestos: related to the use and subsequent weathering and damage of asbestos cement materials (sheets, gutters, down-pipes) in former Site buildings and can be present in fill materials containing demolition wastes. Given the origin of the previously identified fill material is not known, there is a potential that the material may contain building waste which may include asbestos containing materials
- Heavy Metals: which may occur in fill material of unknown origin (e.g. from former industrial properties), and can be associated with welding activities and general vehicle maintenance and servicing. Common metal contaminants include arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc;
- Petroleum Hydrocarbons: which occur in fuels, solvents, oils, transformer oils etc and may occur in fill material of unknown origin. Petroleum hydrocarbons are generally quantified by analytical laboratories as total petroleum hydrocarbons (TPH);
- Monocyclic Aromatic Hydrocarbons: including benzene, toluene, ethylbenzene and xylenes (BTEX), are found in petrol and to a lesser extent, diesel. Can be present in solvents. May occur in fill material of unknown origin;
- Polycyclic Aromatic Hydrocarbons (PAH): related to some petroleum hydrocarbons, such as waste and lubricating oils and diesel fuel, bitumen/asphalt. Can be present in incompletely combusted materials, such as ash and slag. PAHs are also potentially present in fill of unknown origin;
- Organochlorine Pesticides (OCP): can be related to pest control, such as termicides applied beneath building slabs, and can be present in fill of unknown origin and used during agricultural activities; and
- Polychlorinated biphenyls (PCB): historically present in electrical equipment such as transformers. PCBs can be present in fill of unknown origin.

5.2 Potential Pathways

The following potential pathways for the migration of CoPCs have been identified at the Site:

- Direct dermal contact or ingestion of contaminants in soil and/or groundwater;
- Vapour migration and inhalation;
- Leaching of soil contaminants to groundwater; and

- Groundwater flow.

5.3 Potential Receptors

The following potential receptors of CoPCs, impacted through the potential pathways in **Section 5.2** include:

- Humans at the Site that may be exposed to contaminants include workers and visitors (indoor and outdoor air) and construction/maintenance workers;
- Workers carrying out installation or maintenance of underground services on or in vicinity of the Site;
- Toongabbie Creek;
- Groundwater beneath the Site; and
- Beneficial users of registered and unregistered groundwater bores close to the Site.

6.0 Field Investigations

6.1 Field Activities

Field activities conducted at the Site comprised the following:

- Drilling and collection of shallow soil samples from boreholes BH03 to BH05 drilled as part of the geotechnical investigation ;
- Drilling and collection of shallow soil samples from auger holes (AH01 to AH15);
- Documentation of measurements and observations made during the drilling, augering and collection of the soil samples;
- Installation of groundwater monitoring wells (MW01 to MW05) in the boreholes.
- Measurement of groundwater level in groundwater monitoring wells MW01- to MW05and
- Collection of groundwater samples from monitoring wells MW02, MW03 and MW05.

The field activities were undertaken in concurrent with the geotechnical investigation undertaken by AECOM at the Site as reported in the AECOM draft report "Westmead Hospital Geotechnical Interpretative Report, dated 29 January 2010 (AECOM 2010).

The AECOM environmental investigation did not commence until BH01 and BH02 had been completed. Therefore environmental samples were not collected from these boreholes.

6.1.1 Sampling Personnel

Environmental soil and groundwater samples were collected by a suitably qualified and experienced AECOM Environmental Scientists.

6.2 Sampling Methodology

6.2.1 Soil Sampling

The soil assessment methodology undertaken on the Site is summarised below on **Table 4**.

Table 4: Soil Sampling Methodology

Activity	Details
Drilling Method to Retrieve Soil Samples	Boreholes (BH01 to BH05) were initially drilled by hand auger to a maximum depth of 1.0 metre below ground surface (m bgs), or until refusal on natural material, to reduce the risk of contact with underground services. A truck-mounted drill rig equipped with 100 mm diameter solid flight augers, was then used to advance until refusal on rock head was achieved. Boreholes were drilled using a combination of hand auger and truck mounted drill rig equipped with 100 mm diameter solid flight augers. The final depths of the auger holes were determined based on the identification of natural materials at each location.
Soil logging	Soil logging was in general accordance with the Unified Soil Classification System (USCS) and the AECOM documented standard field procedures. Borelogs and Auger Hole logs are provided in **Appendix E**.
Environmental Soil Sample Collection For Analysis	Environmental soil samples were collected directly from either the hand auger or solid flight auger by gloved hand. The soil samples were collected into laboratory-prepared 250 mL glass jars with Teflon-lined lids, which were filled to minimise headspace and placed in an esky containing crushed ice. A clean pair of gloves was used for each sample collection event.

Activity	Details
Field Screening	Sub-samples were placed in snap-locked plastic bags, and the headspace screened in the field for volatile organic compounds (VOCs) using a calibrated Photoionisation Detector (PID) equipped with a 10.6 eV lamp. Calibration details are provided in **Appendix F**.
QC samples	Quality control (QC) samples comprised collection of intra-laboratory and inter-laboratory field duplicates (refer to **Section 6.1**).

6.2.2 Groundwater Well Installation and Sampling Methodology

All boreholes (BH01 to BH05) were converted to monitoring wells (MW01 to MW05), respectively.

Table 5 describes the installation, monitoring and sampling program conducted by AECOM.

Table 5: Groundwater Well Installation and Sampling Methodology

Activity	Details
Well construction	Monitoring wells were constructed using 50 mm outside diameter machine threaded and slotted (0.5 mm) Class 18 uPVC casing and blank riser. The wells were finished with steel road box covers. Well construction details are provided in **Appendix E**.
Well development	The wells were developed on 11 February 2009, using dedicated disposable polyethylene bailers. Development involved purging at least ten well volumes of water, or until the well was bailed dry. AECOM considers that bore development activities undertaken were adequate to ensure that the aquifer could yield representative groundwater.
Well gauging	Prior to collecting groundwater samples the SWLs in all monitoring wells were measured using an electronic water/product interface probe, which was also suitable for detecting possible Phase Separated Hydrocarbons (PSH). The measurements were taken on the same day and in as close succession as possible to minimise temporal variation.
Well purging	One day after development, the wells were purged of three well volumes (or until dry) using the dedicated bailers. Field parameters, including temperature, electrical conductivity, redox, dissolved oxygen, salinity and pH were measured ex-situ during purging using a water quality meter. Once these parameters had stabilised to within approximately 10% difference between successive readings it was considered that groundwater entering the bore was representative of water from the aquifer. Field parameter measurements are provided in **Appendix G**. Calibration records for the water quality meter are provided in **Appendix F**.
Groundwater sampling	Groundwater samples were collected using the dedicated bailers to reduce the potential for cross contamination. The bailers were disposed of following the collection of samples. Samples for metals analysis were filtered in the field using a 0.45 µm pore size filter prior to filling an acid preserved laboratory-provided sample bottle.
Decontamination	Decontamination of the interface probe and water quality meter was undertaken using a phosphate free detergent (Decon 90 Solution) followed by a double rinse with de-ionised water.
QC samples	QC samples comprised collection of intra-laboratory and inter-laboratory field duplicates and a Rinsate Blank samples (refer to **Section 6.1**).

6.3 Laboratory Analysis

Primary and intra-laboratory duplicate samples were submitted to LabMark Environmental Laboratories (LabMark) in Sydney and inter-laboratory duplicate samples were submitted to LabMark in Melbourne.

Based on the CoPC identified in **Section 5.1.2** and field screening observations, selected soil and groundwater samples were selectively analysed for the following:

- Metals (arsenic, cadmium, chromium, copper, nickel, mercury, lead and zinc)
- Benzene, toluene, ethylbenzene and xylene (BTEX);
- Total petroleum hydrocarbons (TPH);
- Poly aromatic hydrocarbons (PAH);
- Poly chlorinated biphenyls (PCB);
- Organchlorine and organophosphorous pesticides (OCP and OPP).
- Asbestos fibres in soil.
- One fragment of potential asbestos containing material encountered in AH03 was submitted for asbestos identification. The soil sample collected from this location was also submitted for asbestos fibres in soil.

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7.0 Assessment Criteria

7.1 Soil Assessment

The current assessment criteria endorsed by NSW DECC to evaluate soil analytical results are based on the following guidelines:

- NSW EPA, 1994. Guidelines for Assessing Service Station Sites;
- NSW DEC, 2006. Guidelines for the NSW Site Auditor Scheme (2nd Edition); and
- National Environment Protection Council (NEPC), 1999. National Environment Protection (Assessment of Site Contamination) Measure.

The guidelines to which soil analytical results are compared within NSW present a range of Health-Based Soil Investigation Levels (SILs), provisional Phytotoxicity-Based Investigation Levels (PILs), Ecological Investigation Levels (EILs), sensitive land use thresholds and expected background concentration ranges for urban redevelopment Sites in NSW. Application of these guidelines is briefly described below.

7.1.1 SILs

The SILs described in the NSW DEC (2006) and NEPC (1999) are based on the National Environmental Health Forum (NEHF) levels devised by Imray and Langley (1996). A series of guideline levels are provided for various substances for the protection of human health based on four specific land use and exposure scenarios including:

SIL_1 Residential with gardens and accessible soil (home-grown produce contributing less than 10% fruit and vegetable intake; no poultry), including children's day care centres, preschools and primary schools, or town houses or villas. This level is the same as NEHF A, referred to in NSW DEC (2006).

SIL_2 Residential with minimal access to soil including high-rise apartments and flats. This level is the same as NEHF D, referred to in NSW DEC (2006).

SIL_3 Parks, recreational open space, playing fields including secondary schools. This level is the same as NEHF E, referred to in NSW DEC (2006).

SIL_4 Commercial or industrial. This level is the same as NEHF F, referred to in NSW DEC (2006).

For the assessment of petroleum hydrocarbon contamination, NSW DEC (2006) refers to the use of the NSW EPA (1994), which contains threshold concentrations for petroleum contaminants in soil and provide for the protection of human and environmental health assuming a sensitive land use. SILs specifically for the lower volatility aliphatic and aromatic petroleum hydrocarbon components are provided in NEPC (1999) for the other land use scenarios described above, however speciated TPH analysis must be conducted in order to use these criteria.

The NSW DEC (2006) assessment process also stipulates that the impact of contaminants on ground and surface water, potential degradation of building structures and affects of chemical mixtures need to be considered and that SILs may not be appropriate for the protection of groundwater, surface water or all potential environmental concerns, such as the protection of wildlife.

7.1.2 PILs & EILs

The PILs (NSW DEC, 2006) and EILs (NEPC, 1999), which are equivalent, relate to the protection of plants, and are designed to be applied as single number criteria indicative of environmental effect. Their use has significant limitations since phytotoxicity depends on soil properties and the species of plants, and are intended to be applied as a screening guide only. The "Decision-making Process" listed in NSW DEC (2006) for assessing urban redevelopment Sites relate to sandy loams with a pH 6 to 8 and stipulates that the PILs need to be considered on Sites used for residential purposes, parks, recreational open space and schools.

7.1.3 Adopted Soil Assessment Criteria (SAC)

It is understood that the Site will be developed as multi storey building with two levels two car parking for research, education and training purposes, and will therefore fall into the 'commercial' land use category. On the basis of the proposed on going commercial land use, the soil analytical results obtained during these assessment works were compared to the following guidelines:

- NSW EPA (1994) guidelines for TPH and BTEX, and
- NSW DEC (2006) SIL_4 for Metals, OCPs and PCBs.

The adopted soil assessment criteria (SAC) are presented in **Table T1**.

7.2 Groundwater Assessment

Guidance for selecting the most appropriate guidelines to apply to groundwater analytical results in NSW, is provided by NSW DEC *Guidelines for the Assessment and Management of Groundwater Contamination*, 2007. These guidelines require that in assessing groundwater contamination all environmental values of the groundwater need to be identified and their relevance considered such that appropriate groundwater criteria are selected to assess groundwater quality at a site. NSW DEC (2007) states that concentrations of potential contaminants of concern in groundwater at a site must be compared in the first instance against existing generic criteria, if available, which protect environmental values such as drinking water, provided in National Health and Medical Research Council and Natural Resource Management Ministerial Council (NHMRC & NRMMC) (2004 and aquatic ecosystems, provided in ANZECC & ARMCANZ (2000). Groundwater quality is protected in NSW by the Protection of the Environment Operations Act (1997) and the Water Management Act (2000).

7.2.1 NHMRC & NRMMC (2004)

The NHMRC & NRMMC (2004) guidelines state that drinking water should contain no harmful concentrations of chemicals or pathogenic microorganisms, and ideally it should be aesthetically pleasing in regard to appearance, taste and odour. These guidelines have been derived so as to take account of the needs of an individual through a normal lifetime, including changes in sensitivity that may occur between life stages.

7.2.2 ANZECC & ARMCANZ (2000)

The ANZECC & ARMCANZ (2000) provides 'Trigger' levels for chemicals within water, which represent the best current estimates of the concentrations of chemicals that should have no significant adverse effects on the aquatic ecosystem. ANZECC & ARMCANZ (2000) indicates that an exceedance of a trigger level does not necessarily imply that there is an inherent risk, rather that further assessment and monitoring may be required prior to implementing appropriate management actions. AECOM also notes that while low reliability Trigger Levels have been derived within ANZECC & ARMCANZ (2000), it is noted that their application is limited as the "*low reliability guideline trigger values were derived, in the absence of a data set of sufficient quantity, using larger assessment factors to account for greater uncertainty*", and that "*low reliability values should not be used as default guidelines*". ANZECC & ARMCANZ (2000) stipulates that the identification of the receiving environment or the likely beneficial use of the water is essential for selection of the most applicable criteria.

7.2.3 Adopted Groundwater Assessment Criteria (GAC)

The closest surface water features to the Site are Toongabbie Creek located approximately 400 m to the north, Domain Creek approximately 450 m to the south and Parramatta River approximately 500 m to the east. Both Toongabbie Creek and Domain Creek flow into Parramatta River.

Parramatta River considered to be a fresh water environment and as such the groundwater results from this investigation have been compared to the ANZECC & ARMCANZ (2000) Trigger Levels for Fresh Waters. Trigger Levels with a 95% level of species protection have been adopted.

There are no current ANZECC & ARMCANZ (2000) high reliability assessment criteria for TPH in groundwater. In the absence of high reliability TPH trigger levels, the laboratory limit of reporting (LOR) for all TPH fractions have been adopted as screening levels for this investigation.

Given that the Site and off-site areas are located in a residential/commercial/industrial area within a wider urban area with reticulated water supply (potable water), NHMRC & NRMMC (2004) guidelines are not considered applicable.

The adopted groundwater assessment criteria (GAC) compared to the groundwater analytical results in **Table T2**.

8.0 Quality of Analytical Data

8.1 Field Quality Control

The field Quality Assurance / Quality Control (QA/QC) procedures, Data Quality Objectives (DQOs) and acceptance limits established for the project are summarised below:

- Use of standard procedures for soil and groundwater sampling;
- Use of a new pair of disposable nitrile gloves for each soil and groundwater sampling location;
- Use dedicated groundwater sampling equipment;
- Use of appropriate equipment decontamination procedures;
- Use of laboratory prepared and supplied sampling containers appropriate for each CoPC investigated;
- Use of appropriate sample Chain of Custody (COC) documentation. Copies of the COCs are included in the laboratory reports (**Appendix H**);
- Analysis of field duplicate (intra-laboratory duplicate) samples at a rate of approximately one per 10 primary samples;
- Analysis of a field triplicate (inter-laboratory duplicate) samples at a rate of approximately one per 20 primary samples;
- The relative percentage differences (RPDs) of the primary and duplicate samples to be within the acceptable limit of less than 50% for all CoPC;
- Utilisation of a Trip Blank sample per sample batch. The Data Quality Indicator (DQI) set for the project is the CoPC are to be less than laboratory LOR; and
- Collection of one Rinsate Blank sample per day of sample collection. The Rinsate Blank samples were collected from the final rinse of sampling equipment, using laboratory supplied deionised water. The DQI set for the project is the CoPC in the Rinsate Blank samples are to be less than laboratory LOR.

Field sampling QC analytical results are summarised below.

- One intra-laboratory duplicate soil sample (QC02, 15/01/2010) and one intra-laboratory duplicate water sample (QC01, 02/02/2010) was analysed, meeting the project requirements of one per 10 primary samples;
- One inter-laboratory duplicate soil sample (QC03, 15/01/2010) and one inter-laboratory duplicate water sample (QC02, 02/02/2010) was analysed, meeting the project requirements of one per 20 primary samples
- The RPDs of the primary, intra-laboratory duplicate and inter-laboratory duplicate samples were all either non-calculable as the results were less than the laboratory LORs, or within acceptable limits with the exception of the following;
  - RPD for cadmium (66.7%) between primary soil sample AH03_0.0-0.1 and intra-laboratory duplicate sample QC02; and
  - RPD for nickel (66.7%) between primary water sample MW05 and inter-laboratory duplicate sample QC02;

  The elevated RPDs are considered to be negligible given that the reported concentrations were within 10 times the laboratory LOR.
- One Rinsate Blank sample (QC03, 02/02/2010) was collected, meeting the project requirements of one per day. The rinsate blank samples were collected from the final rinse of sampling equipment by using laboratory supplied deionised water;
- CoPCs were not detected at concentrations above the laboratory LOR in the Rinsate Blank samples analysed, indicating that the decontamination procedures employed were appropriate (Refer to **Table T5**).

8.2 Laboratory Quality Control

The DQOs and acceptable limits defined for the assessment of the laboratory analytical data included:

- Maximum acceptable sample holding time is 14 days for organic analyses and six months for metal analyses;
- Samples to be appropriately preserved and handled;

- Laboratory limit of reporting (LOR) to be less than the adopted assessment criteria;
- Laboratory method blank analyses to be less than the laboratory LOR;
- Laboratory duplicate samples to be analysed at a rate of one in 20 samples, when the batch size exceeds five samples;
- Matrix spike recoveries to be conducted by the laboratory at a rate of one in 20 samples;
- Laboratory control sample (LCS) analysis to be conducted at a rate of one in 20 samples; and
- Matrix, LCS and Surrogate recoveries to be within the DQO of 70-130%.

A review of laboratory QA/QC is summarised below:

- Samples were received by the laboratory chilled and intact;
- Soil and groundwater samples were extracted and analysed within acceptable holding times;
- Laboratory LORs were less than the adopted soil/groundwater assessment criteria. It is noted that the LORs for arsenic, chromium and copper were raised due to matrix interference;
- Method blank sample results were less than laboratory LORs;
- A laboratory duplicate was tested (consisting of one sample per batch) for both soil and groundwater. RPDs were all within acceptable limits; and
- All matrix spike recoveries, matrix spike duplicate, surrogate spike recoveries and control sample recoveries were within acceptable DQI range.

8.3 Data Useability

The data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of soil and groundwater conditions at the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this investigation.

9.0 Results

9.1 Sub-Surface Conditions

9.1.1 Soil Conditions

Fill material was present in (AH01, AH10 and AH12 to AH15) and generally comprised sandy gravelly road base. Topsoil material was identified in AH02 and AH03 and comprised sandy silt with frequent rootlets.

Natural soils were encountered in all boreholes and auger holes and generally comprised weathered shale recovered as sand and gravel. Refusal occurred in this material at each location.

No visual and / or olfactory evidence of contamination was observed, with the exception of a fragment (approximately 2 cm by 3cm) of potential asbestos containing material which was encountered in AH03 at 0 to 0.1 m bgl. The fragment was submitted for asbestos identification (**Section 9.2).**

The PID readings ranged from 0.1 to 1.4 part per million (ppm).

Borelogs describing the shallow subsurface soil profile encountered during the investigation are included in **Appendix E**.

9.1.2 Groundwater Gauging Data

The groundwater gauging data measured during this investigation are presented on **Table T3** and are summarised as follows:

- No PSH was observed in the monitoring wells, by either ruse of the interface probe or visual inspection of bailer contents. No odours or sheen were observed;
- The measured SWL ranged between 3.235 (MW05) to 5.400 (MW03) metres below top of casing(m toc); and
- The groundwater elevation ranged between 14.7 m AHD (MW03) and 17.865 m AHD (MW05).

9.1.3 Groundwater Water Quality Parameters

Field water quality parameters were measured during purging, following the removal of each bore volume and the results of the water quality measurements and field observations are presented in **Appendix G** and **Table T4**, and are summarised below:

- pH measurements ranged from 6.63 (MW02) to 7.35 (MW03), and indicate neutral conditions;
- Conductivity measurements ranged from 6 060 µS/cm (MW03) to 14 140 µS/cm (MW05), and indicate brackish conditions; and
- Redox measurements ranged from 180 milliVolts (mV) (MW05) to 309 mV (MW03).

9.2 Soil Analytical Results

The soil analytical results were assessed against the adopted soil assessment criteria (SAC) and are presented in **Table T1**. A summary of the results is provided below:

- Concentrations of metals were below the SAC in all the samples analysed.
- BTEX, TPH, OCP, OPP and PCB concentrations were less than the laboratory LOR in all the samples analysed.
- A fragment approximately 2 cm by 3 cm of fibro cement, which was found to contain chrysotile asbestos was identified in AH03_0.0-0.1.
- Asbestos fibres were not detected in the soil samples analysed.

9.3 Groundwater Analytical Results

The results of the laboratory analysis of groundwater are compared against the adopted GAC in **Table T2**.

- Concentrations of metals were below the GAC in all the samples analysed. Note that due to matrix interference, the laboratory LOR for chromium and copper was raised and therefore was greater than the GAC.
- BTEX concentrations were either less than the GAC or the laboratory LOR in all the samples analysed with the exception of MW03 with a concentration of toluene of 12 µg/l.
- TPH (C_6 – C_9 and C_{10} – C_{36} fractions), PAHS, OCP, OPP and PCB concentrations were below the laboratory LOR in all the samples analysed.

10.0 Summary of Findings

AECOM completed an ESA of the of the property located on the Hawkesbury Road side of the Westmead Hospital Campus next to the Children's Medical Research Institute (the Site)..

The results of the investigation indicated the following key findings:

- The Site occupied an area of approximately 1 ha and comprised a car park area and hospital associated buildings;
- The Site had been utilised as Westmead Hospital since 1978, before which it was owned by various trustees of show and athletic sports ground;
- Previous investigations identified the potential presence of unknown fill materials and potential asbestos containing material;
- The soil profile at the Site included a layer of fill material comprising sand / sandy clay and was encountered to a maximum depth of 0.9 m bgs, underlain by natural clay, soil and shale bedrock encountered to a maximum depth of 12.0 m bgs.
- A fragment of fibro cement containing chrysotile asbestos was identified in AH03 at 0 to 0.1 m bgl. Asbestos fibres were not detected in the soil samples

  Visual and / or olfactory evidence of contamination was not observed in soil samples, with the exception the fragment of cement fibro in AH03.
- Concentrations of metals, BTEX, TPH, OCP, OPP and PCBs were either below the laboratory LOR or below the SAC in soil samples analysed;
- Groundwater was encountered within the shale bedrock, and SWLs the groundwater elevation ranged from 1.155 m AHD (MW01) to 1.435 m AHD (MW02);
- There was no visual and / or olfactory evidence of contamination in the groundwater
- Concentrations of metals, BTEX, TPH, PAH, OCP, OPP and PCBs were either below the laboratory LOR or below the GAC in groundwater samples analysed.

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11.0 Conclusions and Recommendations

The soil and groundwater analytical results indicate that the concentrations of the CoPC identified for the Site were below the adopted assessment criteria and are not considered to present a risk to human health or the environment given the current use and proposed development of the Site. On the basis of the soil and groundwater analytical results for the potential contaminants of concern identified for the Site, AECOM considers that the Site is suitable for the proposed ongoing commercial land use.

The result of the investigation did not indicate the presence of asbestos fill. However one fragment of asbestos containing material was encountered during the investigation, and there is the potential for other asbestos containing materials to be encountered during excavations at the Site.

AECOM notes that the proposed development will include underground car parking which will require excavation of fill and soil material. It is understood that the final development will cover approximately 0.7 ha of the site.

AECOM recommends the following during the development:

- All fill and soil excavated during the development should be assessed and classified in accordance with the NSW DECC[3] Waste Classification Guideline (DECC, 2008) prior to for off-site disposal purposes at an appropriately licensed landfill;
- Implementation of an Unexpected Finds protocol provide protocols and appropriate mechanisms for the identification and management of asbestos containing materials should they be encountered during the during excavation works for the development.

[3] Now known as the Department of Environment, Climate Change and Water (DECCW)

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12.0 References

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Tables

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AECOM

Table T1
Soil Analytical Results
Environmental Site Assessment
Westmead Hospital

			Location	AH01	AH02	AH03	AH04	AH05	AH06	AH07	AH08	AH09	AH09	AH10	AH11	AH12	AH12	AH13	AH13	AH14	AH14	AH15	AH15	BH03	BH03	BH04	BH05	BH05
			Depth	0.2-0.3	0 - 0.1	0 - 0.1	0 - 0.1	0.2-0.3	0.05-0.15	0 - 0.1	0 - 0.1	0 - 0.1	0.4-0.5	0.05-0.15	0.05-0.15	0.05-0.15	0.4-0.5	0.05-0.15	0.4-0.5	0 - 0.1	0.4-0.5	0.05-0.1	1.3-1.5	0.18-0.28	0.4-0.5	0.1-0.2	0 - 0.1	0.6-0.8
			Date	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/18/2010	01/14/2010	01/14/2010	01/15/2010	01/18/2010	01/18/2010
Analyte	**Units**	**LOR**	**SAC**																									
METALS																												
Arsenic	mg/kg	1	**500**[a]	4	4	2	5	7	3	6	8	5	7	<1	2	4	8	<1	4	3	8	10	15	3	7	<1	6	14
Cadmium	mg/kg	0.1	**100**[a]	<0.1	0.9	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	<0.1	0.8	<0.1	<0.1
Chromium (III+VI)	mg/kg	1	**600000**[a]	14	12	7	13	9	9	13	17	13	13	89	104	13	11	11	5	11	16	17	27	84	14	10	14	8
Copper	mg/kg	2	**5000**[a]	28	34	15	33	22	17	32	20	19	14	18	28	19	24	50	23	48	14	15	24	11	18	42	22	30
Lead	mg/kg	2	**1500**[a]	17	59	24	67	17	36	36	49	26	31	4	7	20	16	3	23	22	23	32	30	6	18	4	47	19
Mercury	mg/kg	0.05	**75**[a]	0.05	0.12	<0.05	0.12	0.05	0.06	0.08	0.12	0.05	0.06	0.06	0.07	0.06	<0.05	<0.05	0.06	<0.05	0.05	0.11	0.05	<0.05	<0.05	<0.05	0.11	0.07
Nickel	mg/kg	1	**3000**[a]	39	8	3	5	1	5	9	7	9	2	73	105	12	8	97	7	8	5	7	4	18	5	69	7	9
Zinc	mg/kg	5	**35000**[a]	37	276	67	87	24	36	50	62	46	14	43	83	33	24	49	18	49	22	49	26	37	10	39	57	57
BTEX																												
Benzene	mg/kg	0.2	**1**[b]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	**1.4**[b]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	**3.1**[b]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (m & p)	mg/kg	1	~	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylene (o)	mg/kg	0.5	~	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene Total	mg/kg	~	**25**[b]	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
TPH																												
TPH C6 - C9	mg/kg	5	**65**[b]	<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
TPH C10 - C14	mg/kg	10	~	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
TPH C15 - C28	mg/kg	20	~	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
TPH C29-C36	mg/kg	20	~	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	110	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	600	<100	<100
TPH+C10 - C36 (Sum of total)	mg/kg	~	**1000**[b]	#	#	#	#	#	#	#	#	#	#	110	#	#	#	#	#	#	#	#	#	#	#	600	#	#
OCP																												
a-BHC	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Hexachlorobenzene	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
b-BHC	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
g-BHC (Lindane)	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
d-BHC	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Heptachlor	mg/kg	0.05	**50**[a]	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Aldrin	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Heptachlor epoxide	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Chlordane (trans)	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Endosulfan I	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Chlordane (cis)	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Dieldrin	mg/kg	0.05	~	-	<0.05	-	-	0.13	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	0.16	-	<0.05	<0.05	-
4,4-DDE	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Endrin	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Endosulfan II	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
DDD	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
Endosulfan sulphate	mg/kg	0.05	~	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05	-
DDT	mg/kg	0.2	~	-	<0.2	-	-	<0.2	-	-	-	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	-	-	<0.2	-	<0.2	<0.2	-
Methoxychlor	mg/kg	0.2	~	-	<0.2	-	-	<0.2	-	-	-	<0.2	-	-	<0.2	<0.2	-	-	-	<0.2	-	-	-	<0.2	-	<0.2	<0.2	-
OCP																												
Dichlorvos	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Mevinphos (Phosdrin)	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Demeton (total)	mg/kg	1	~	-	<1	-	-	<1	-	-	-	<1	-	-	<1	<1	-	-	-	<1	-	-	-	<1	-	<1	<1	-
Ethoprop	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Monocrotophos	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Phorate	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Dimethoate	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Diazinon	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Disulfoton	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Methyl parathion	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Ronnel	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Fenitrothion	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Malathion	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Chlorpyrifos	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Fenthion	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Parathion	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Stirophos	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Prothiofos	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Azinophos methyl	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Coumaphos	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
PCB																												
Arochlor 1016	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Arochlor 1232	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Arochlor 1242	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Arochlor 1248	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
Arochlor 1254	mg/kg	0.5	~	-	<0.5	-	-	#	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	1	-	-	-	<0.5	-	<0.5	<0.5	-
Arochlor 1260	mg/kg	0.5	~	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	<0.5	-	<0.5	<0.5	-
PCBs (Sum of total)	mg/kg	~	**50**[a]	-	#	-	-	#	-	-	-	#	-	-	#	#	-	-	-	1	-	-	-	#	-	#	#	-

Notes
mg/kg = milligrams per kilogram
SAC = Soil Assessment Criteria
a = DEC 2006 (SIL_4)
b = NSW EPA (1994)
LOR = Limit of Reporting
# denotes sum of concentrations not calculable as all <LOR
< result less than LOR
- not analysed
~ no value

AECOM

Table T2
Groundwater Analytical Results
Environmental Site Assessment
Westm

Monitoring Well				MW02	MW03	MW05
Date				02/12/2010	02/12/2010	02/12/2010
Analyte	**Units**	**LOR**	**GAC**			
METALS						
Arsenic	µg/L	10	13	<10	<10	<10
Cadmium	µg/L	0.1	0.2	0.2	<0.1	<0.1
Chromium (III+VI)	µg/L	5	1	<5	<5	<5
Copper	µg/L	10	1.4	<10	<10	<10
Lead	µg/L	1	3.4	<1	<1	<1
Mercury	µg/L	0.1	0.6	<0.2	<0.1	<0.2
Nickel	µg/L	1	11	13	11	6
Zinc	µg/L	5	8	25	14	9
BTEX						
Benzene	µg/L	1	**950**	<1	<1	<1
Toluene	µg/L	1	~	<1	12	<1
Ethylbenzene	µg/L	1	~	<1	<1	<1
Xylene (m & p)	µg/L	2	~	<2	<2	<2
Xylene (o)	µg/L	1	**350**	<1	<1	<1
Xylene Total	µg/L		~	#	#	#
TPH						
TPH C6 - C9	µg/L	50	~	<50	<50	<50
TPH C10 - C14	µg/L	50	~	<50	<50	<50
TPH C15 - C28	µg/L	200	~	<200	<200	<200
TPH C29-C36	µg/L	50	~	<50	<50	<50
TPH+C10 - C36 (Sum of total)	µg/L		~	#	#	#
PAH						
Acenaphthene	µg/L	2	~	-	<2	-
Acenaphthylene	µg/L	2	~	-	<2	-
Anthracene	µg/L	2	~	-	<2	-
Benz(a)anthracene	µg/L	2	~	-	<2	-
Benzo(a) pyrene	µg/L	2	~	-	<2	-
Benzo(b)&(k)fluoranthene	µg/L	4	~	-	<4	-
Benzo(g,h,i)perylene	µg/L	2	~	-	<2	-
Chrysene	µg/L	2	~	-	<2	-
Dibenz(a,h)anthracene	µg/L	2	~	-	<2	-
Fluoranthene	µg/L	2	~	-	<2	-
Fluorene	µg/L	2	~	-	<2	-
Indeno(1,2,3-c,d)pyrene	µg/L	2	~	-	<2	-
Naphthalene	µg/L	2	**16**	-	<2	-
Phenanthrene	µg/L	2	~	-	<2	-
Pyrene	µg/L	2	~	-	<2	-
OCP						
a-BHC	µg/L	2	~	-	<2	-
b-BHC	µg/L	2	~	-	<2	-
d-BHC	µg/L	2	~	-	<2	-
g-BHC (Lindane)	µg/L	2	**0.2**	-	**<2**	-
Heptachlor	µg/L	2	**0.09**	-	**<2**	-
Aldrin	µg/L	2	~	-	<2	-
Heptachlor epoxide	µg/L	2	~	-	<2	-
Endosulfan I	µg/L	2	~	-	<2	-
Chlordane (trans)	µg/L	2	~	-	<2	-
Chlordane (cis)	µg/L	2	~	-	<2	-
4,4-DDE	µg/L	2	~	-	<2	-
Dieldrin	µg/L	2	~	-	<2	-
Endrin	µg/L	2	**0.02**	-	**<2**	-
Endosulfan II	µg/L	2	~	-	<2	-
DDD	µg/L	2	~	-	<2	-
Endosulfan sulphate	µg/L	2	~	-	<2	-
Endrin aldehyde	µg/L	2	~	-	<2	-
Endrin ketone	µg/L	2	~	-	<2	-
DDT	µg/L	4	**0.01**	-	**<4**	-
Methoxychlor	µg/L	2	~	-	<2	-
OPP						
Dichlorvos	µg/L	2	~	-	<2	-
Mevinphos (Phosdrin)	µg/L	2	~	-	<2	-
Demeton-O	µg/L	2	~	-	<2	-
Ethoprop	µg/L	2	~	-	<2	-
Naled (Dibrom)	µg/L	2	~	-	<2	-
Phorate	µg/L	2	~	-	<2	-
Demeton-S	µg/L	2	~	-	<2	-
Dimethoate	µg/L	2	**0.15**	-	**<2**	-
Diazinon	µg/L	2	**0.01**	-	**<2**	-
Sulfotepp	µg/L	2	~	-	<2	-
Disulfoton	µg/L	2	~	-	<2	-
Methyl parathion	µg/L	2	~	-	<2	-
Ronnel	µg/L	2	~	-	<2	-
Malathion	µg/L	2	**0.05**	-	**<2**	-
Fenitrothion	µg/L	2	**0.2**	-	**<2**	-
Fenthion	µg/L	2	~	-	<2	-
Chlorpyrifos	µg/L	2	**0.01**	-	**<2**	-
Parathion	µg/L	2	**0.004**	-	**<2**	-
Trichloronate	µg/L	2	~	-	<2	-
EPN	µg/L	2	~	-	<2	-
Stirophos	µg/L	2	~	-	<2	-
Prothiofos	µg/L	2	~	-	<2	-
Profenofos	µg/L	2	~	-	<2	-
Fensulfothion	µg/L	2	~	-	<2	-
Azinophos methyl	µg/L	2	**0.02**	-	**<2**	-
Coumaphos	µg/L	2	~	-	<2	-

Data Entry: LT
Data Review:

AECOM

Table T2
Groundwater Analytical Results
Environmental Site Assessment
Westmead Hospital

			Monitoring Well	MW02	MW03	MW05
			Date	02/12/2010	02/12/2010	02/12/2010
Analyte	**Units**	**LOR**	**GAC**			
SVOC						
1,2,4,5-tetrachlorobenzene	µg/L	2	~	-	<2	-
1,2,4-trichlorobenzene	µg/L	2	**170**	-	<2	-
1,2-dichlorobenzene	µg/L	2	**160**	-	<2	-
1,3-dichlorobenzene	µg/L	2	**260**	-	<2	-
1,4-dichlorobenzene	µg/L	2	**60**	-	<2	-
1,4-dinitrobenzene	µg/L	2	~	-	<2	-
1-naphthylamine	µg/L	2	~	-	<2	-
2-(acetylamino) fluorene	µg/L	2	~	-	<2	-
2,3,4,6-tetrachlorophenol	µg/L	2	**20**	-	<2	-
2,4,5-trichlorophenol	µg/L	2	~	-	<2	-
2,4,6-trichlorophenol	µg/L	2	**20**	-	<2	-
2,4-dichlorophenol	µg/L	2	**160**	-	<2	-
2,4-dimethylphenol	µg/L	2	~	-	<2	-
2,4-Dinitrotoluene	µg/L	4	**65**	-	<4	-
2,6-dichlorophenol	µg/L	2	~	-	<2	-
2,6-dinitrotoluene	µg/L	4	~	-	<4	-
2-chloronaphthalene	µg/L	2	~	-	<2	-
2-chlorophenol	µg/L	2	**490**	-	<2	-
2-methylnaphthalene	µg/L	2	~	-	<2	-
2-methylphenol	µg/L	2	~	-	<2	-
2-naphthylamine	µg/L	2	~	-	<2	-
2-nitroaniline	µg/L	4	~	-	<4	-
2-nitrophenol	µg/L	2	~	-	<2	-
3-&4-methylphenol	µg/L	4	~	-	<4	-
3-methylcholanthrene	µg/L	2	~	-	<2	-
3-nitroaniline	µg/L	4	~	-	<4	-
4-(dimethylamino) azobenzene	µg/L	2	~	-	<2	-
4-aminobiphenyl	µg/L	2	~	-	<2	-
4-bromophenyl phenyl ether	µg/L	2	~	-	<2	-
4-chloro-3-methylphenol	µg/L	2	~	-	<2	-
4-chloroaniline	µg/L	2	~	-	<2	-
4-chlorophenyl phenyl ether	µg/L	2	~	-	<2	-
4-nitroaniline	µg/L	2	~	-	<2	-
2-methyl-5-nitroaniline	µg/L	2	~	-	<2	-
7,12-dimethylbenz(a)anthracene	µg/L	2	~	-	<2	-
Acetophenone	µg/L	2	~	-	<2	-
Aniline	µg/L	2	**250**	-	<2	-
Azobenzene	µg/L	2	~	-	<2	-
Benzyl alcohol	µg/L	2	~	-	<2	-
Bis(2-chloroethoxy) methane	µg/L	2	~	-	<2	-
Bis(2-chloroethyl)ether	µg/L	2	~	-	<2	-
Bis(2-chloroisopropyl) ether	µg/L	2	~	-	<2	-
Bis(2-ethylhexyl) phthalate	µg/L	20	~	-	<20	-
Butyl benzyl phthalate	µg/L	2	~	-	<2	-
Carbazole	µg/L	2	~	-	<2	-
Dibenzofuran	µg/L	2	~	-	<2	-
Diethylphthalate	µg/L	2	**1000**	-	<2	-
Dimethyl phthalate	µg/L	2	**3700**	-	<2	-
Di-n-butyl phthalate	µg/L	2	**26**	-	<2	-
Di-n-octyl phthalate	µg/L	2	~	-	<2	-
Diphenylamine	µg/L	2	~	-	<2	-
Ethyl methanesulfonate	µg/L	2	~	-	<2	-
Hexachlorobenzene	µg/L	2	~	-	<2	-
Hexachlorobutadiene	µg/L	2	~	-	<2	-
Hexachlorocyclopentadiene	µg/L	4	~	-	<4	-
Hexachloroethane	µg/L	2	**360**	-	<2	-
Hexachloropropene	µg/L	2	~	-	<2	-
Isophorone	µg/L	2	~	-	<2	-
Isosafrole	µg/L	2	~	-	<2	-
Methyl methanesulfonate	µg/L	2	~	-	<2	-
Nitrobenzene	µg/L	2	**550**	-	<2	-
N-nitrosodiethylamine	µg/L	2	~	-	<2	-
N-nitrosodi-n-butylamine	µg/L	2	~	-	<2	-
N-nitrosodi-n-propylamine	µg/L	2	~	-	<2	-
N-nitrosomorpholine	µg/L	2	~	-	<2	-
N-nitrosopiperidine	µg/L	2	~	-	<2	-
N-nitrosopyrrolidine	µg/L	4	~	-	<4	-
2-methylaniline	µg/L	2	~	-	<2	-
Pentachlorobenzene	µg/L	2	~	-	<2	-
Pentachloroethane	µg/L	2	~	-	<2	-
Pentachloronitrobenzene	µg/L	2	~	-	<2	-
Pentachlorophenol	µg/L	4	**10**	-	<4	-
Phenacetin	µg/L	2	~	-	<2	-
Phenol	µg/L	2	**320**	-	<2	-
Safrole	µg/L	2	~	-	<2	-

Notes

µg/L = micrograms per litre

LOR = Limit of Reporting

GAC = Groundwater Assessment Criteria - ANZECC (2000) Protection of Fresh Water Ecosystems (95%)

# denotes sum of concentrations not calculable as all <LOR

< denotes result less than LOR

- denotes not analysed

~ denotes no value

Table T3
Groundwater Gauging Data
Environmental Site Assessment
Westmead Hospital

Well ID	Gauging Date	Event	Total Well Depth (m btoc)	TOC Elevation (m AHD)	SWL (m btoc)	Measured Water Elevation (m AHD)
MW02	12/02/2010	PRE	9.195	21.000	4.325	16.675
MW03	12/02/2010	PRE	9.810	20.100	5.400	14.700
MW05	12/02/2010	PRE	8.540	21.100	3.235	17.865

Note:
SWL=Standing Water Level
AHD=Australian Height Datum
PSH=Phase Separated Hydrocarbon
PRE=Pre-Purging
m=Metres
TOC=Top of Casing
bgs=Below Ground Surface
- Indicates that Data is not available.

Table T4
Groundwater Parameters
Environmental Site Assessment
Westmead Hospital

Well ID	PURGE DATE	EVENT	TEMP (°c)	DO (ppm)	EC (µScm-¹)	Eh (mV)	pH	Purge Vol (L)	Comment
MW02	2/12/10	PRE	23.1	2.85	7,870	248	6.81	1	Clear / No Observed Contamination
		POST	21.5	2.54	8,090	201	6.63	21	
MW03	2/12/10	PRE	20.0	6.37	5,200	357	7	1	Clear / No Observed Contamination / Well purged dry after 13 L
		POST	19.7	6.79	6,060	309	7.35	13	
MW05	2/12/10	PRE	18.7	5.11	13,950	192	6.87	1	Slightly turbid / No Observed Contamination
		POST	18.8	3.69	14,140	180	6.84	32	

PRE=Pre-Purging
Post=Post-Purging
MW=Monitoring Well
DO=Dissolved Oxygen
ppm=part per million
EC=Electrical Conductivity
PSH=Phase Separated Hydrocarbons
L=Litres
mV=milli Volts
µScm-¹ = microSiemens per centimetre

Table T5
QA / QC Results
Environmental Site Assessment
Westmead Hospital

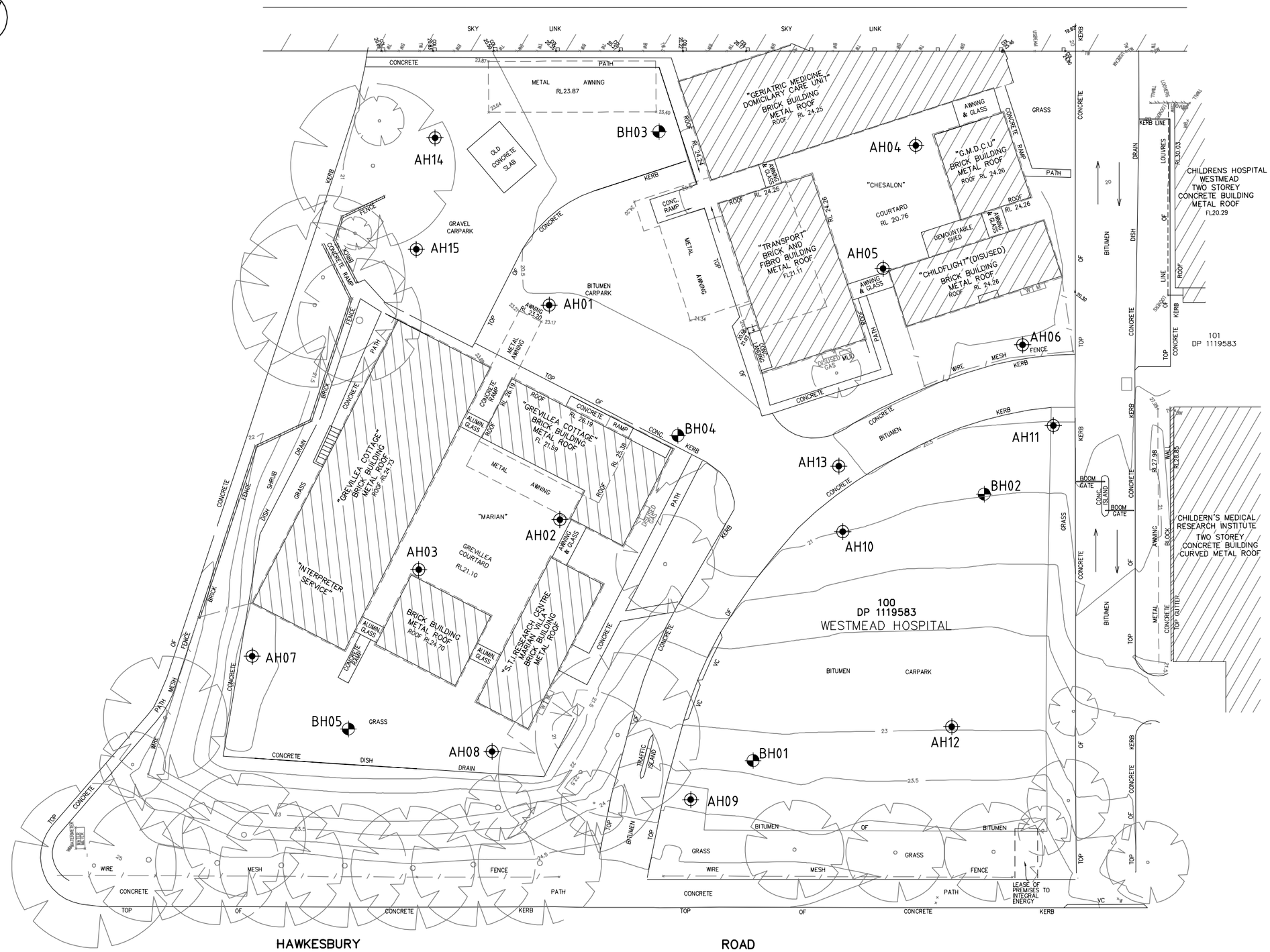
Matrix		Soil						Water							
		Location	AH03_0.0-0.1	QC02	RPD	QC03	RPD		Location	MW05	QC01	RPD	QC02	RPD	QC03
		Date	15/01/2010	15/01/2010		15/01/2010			Date	02/02/2010	02/02/2010		02/02/2010		02/02/2010
Analyte	Units	LOR	Primary Sample	Intra-laboratory duplicate of AH03_0.0-0.1	%	Inter-laboratory duplicate of AH03_0.0-0.1	%	Units	LOR	Primary Sample	Intra-laboratory duplicate of MW05	%	Inter-laboratory duplicate of MW05	%	Rinsate
Metals															
Arsenic	mg/kg	1	2	2	0.0	2	0.0	µg/L	10-Jan	<10	<10	nc	<1	nc	<5
Cadmium	mg/kg	0.1	0.1	0.2	66.7	<2	nc	µg/L	0.1	<0.1	<0.1	nc	<0.1	nc	<0.5
Chromium (III+VI)	mg/kg	1	7	9	25.0	7.1	1.4	µg/L	5	<5	<5	nc	<1	nc	<5
Copper	mg/kg	2	15	15	0.0	16	6.5	µg/L	10	<10	<10	nc	1	nc	<5
Lead	mg/kg	2	24	25	4.1	27	11.8	µg/L	1	<1	<1	nc	<1	nc	<5
Mercury	mg/kg	0.05	<0.05	0.07	nc	0.05	nc	µg/L	0.1	<0.2	<0.2	nc	<0.1	nc	<0.1
Nickel	mg/kg	1	3	4	28.6	3.1	3.3	µg/L	1	6	5	18.2	3	66.7	<5
Zinc	mg/kg	5	67	78	15.2	88	27.1	µg/L	5	9	9	0.0	11	20.0	<5
BTEX															
Benzene	mg/kg	0.2	<0.2	<0.2	nc	<0.2	nc	µg/L	<1	<1	<1	nc	<1	nc	<1
Toluene	mg/kg	0.5	<0.5	<0.5	nc	<1	nc	µg/L	<1	<1	<1	nc	<5	nc	<1
Ethylbenzene	mg/kg	0.5	<0.5	<0.5	nc	<1	nc	µg/L	<1	<1	<1	nc	<2	nc	<1
Xylene (m & p)	mg/kg	1	<1	<1	nc	<2	nc	µg/L	<2	<2	<2	nc	<2	nc	<2
Xylene (o)	mg/kg	0.5	<0.5	<0.5	nc	<1	nc	µg/L	<1	<1	<1	nc	<2	nc	<1
Xylene Total	mg/kg	~	#	#	nc		nc	µg/L	~	#	#	nc	#	nc	#
TPH															
TPH C 6 - C 9 Fraction	mg/kg	10	<10	<10	nc	<5	nc	µg/L	50/20	<50	<50	nc	<20	nc	<50
TPH C10-C14 Fraction	mg/kg	50	<50	<50	nc	14	nc	µg/L	50/40	<50	<50	nc	<50	nc	<50
TPH C15 - C28 Fraction	mg/kg	100/20	<100	100	nc	77	nc	µg/L	200/100	<200	<200	nc	<100	nc	<200
TPH C29-C36 Fraction	mg/kg	100	<100	110	nc	89	nc	µg/L	50/100	<50	<50	nc	<50	nc	<50
TPH+C10 - C36 (Sum of total)	mg/kg	~	#	210	nc	180	nc	µg/L	~	#	#	nc	<50	nc	#

Notes

mg/kg = milligrams per kilogram
µg/L = micrograms per litre
LOR = Limit of Reporting
# denotes sum of concentrations not calculable as all <LOR
< result less than LOR
- not analysed
~ no value
nc = not calculable

Figures

Cad ref: K:\60146790_Westmead\Hspdocs\5. CADD\5.3 Working\ORG\60146790-GT-SK-002.dwg Last modified: 01 Mar 10 - 16:24



This drawing is confidential and shall only be used for the purposes of this project.

REVISIONS No.	BY	DATE	DESCRIPTION	APPD
0		01.03.10	FOR INFORMATION	

SCALES: 2.5 0 2.5 5 7.5m — 1 : 250 FULL SIZE A1

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED	JL	CHECKED	
DRAWN	TT	CHECKED	
APPROVED		DATE	

CONTRACTOR:

DESIGNER: AECOM

AECOM Australia Pty Ltd A.B.N. 20 093 846 925

CLIENT: LOGO_CLIENT

WESTMEAD HOSPITAL

ENVIRONMENTAL SITE ASSESSMENT REPORT
BOREHOLE LOCATION PLAN

SHEET 1 OF 1

STATUS:	DRAWING NO:	REV:
FOR INFORMATION	60146790-GT-SK-002	0

Plates

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PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Capital Insight Pty Ltd	Westmead Hospital , Hawkesbury Road, NSW	S777101

Photo No.	**Date:**
1	23.12.09

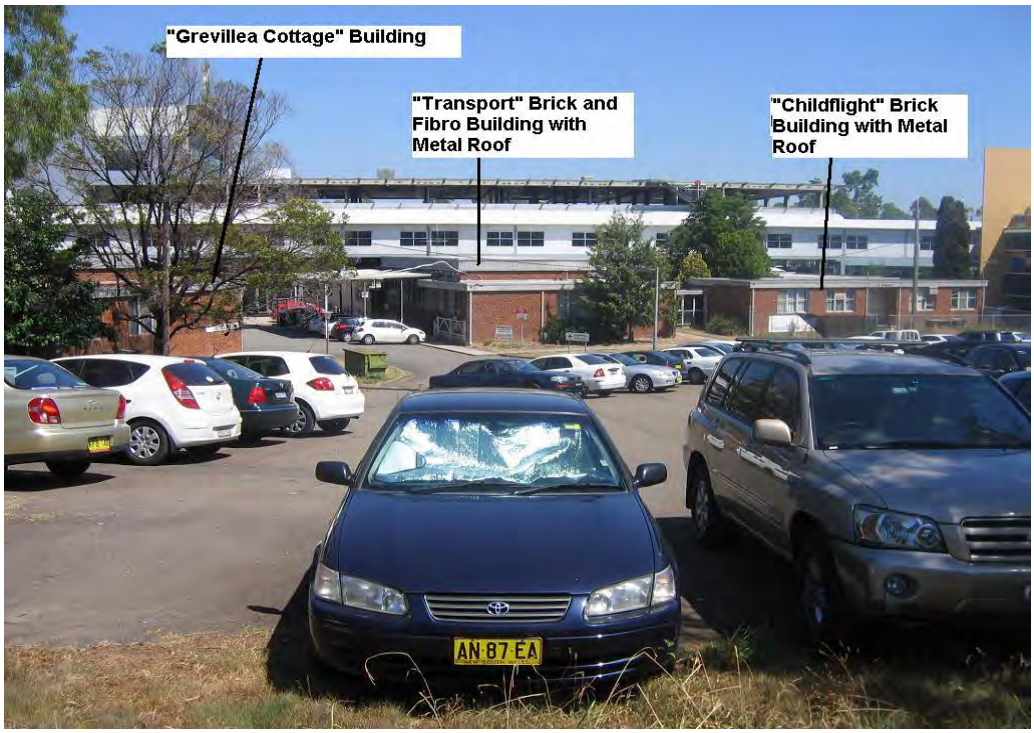
Direction Photo Taken:
Facing north

Description:
Photograph showing boom gate for the site entrance, surrounding topography and adjacent bitumen sealed carpark area. Note the S.T.I Research Centre (Marian Villa) building is to the left of boom gate.

Photo No.	**Date:**
2	23.12.09

Direction Photo Taken:
Facing north

Description:
The carpark area and other surrounding buildings are visible in the photograph.



PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Capital Insight Pty Ltd	Westmead Hospital , Hawkesbury Road, NSW	S777101

Photo No.	**Date:**
3	23.12.09

Direction Photo Taken:
Facing north-west

Description:
Photograph showing the Site entrance located on the Hawkesbury Road. Note the bitumen sealed carpark area to the right of the entrance gate.

Photo No.	**Date:**
4	23.12.09

Direction Photo Taken:
Facing north-west

Description:
Photograph showing NSW new born and Pediatric Emergency Transport Services building located to the north west of the Site.

PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Capital Insight Pty Ltd	Westmead Hospital , Hawkesbury Road, NSW	S777101

Photo No.	**Date:**
5	23.12.09

Direction Photo Taken:
Facing North

Description:
Photograph showing substation of Integral Energy (right of the photograph) located in the south east corner of the Site. Note that only substation area lease to Integral Energy.

Photo No.	**Date:**
6	23.12.09

Direction Photo Taken:
Facing east

Description:
Photograph showing Hawkesbury Road which running east to west along southern portion of the Site. Note predominantly fenced off southern portion of the Site is visible.

PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Capital Insight Pty Ltd	Westmead Hospital , Hawkesbury Road, NSW	S777101

Photo No.	**Date:**
7	23.12.09

Direction Photo Taken:
Facing west

Description:
Bitumen sealed running north- south to the southern portion of the Site. Note the Children Hospital building is to the right of the photograph.

Photo No.	**Date:**
8	23.12.09

Direction Photo Taken:
Facing west

Description:
Photograph showing another carpark area located to the north and north west of Gravilliea Cottage building is visible along mid-western boundary. NETS building is visible beyond the carpark area.

PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.**
Capital Insight Pty Ltd	Westmead Hospital , Hawkesbury Road, NSW	S777101

Photo No.	**Date:**
9	23.12.09

Direction Photo Taken:
Facing south west

Description:
Photograph showing bitumen sealed carpark area and moderate slope to the north to north-west. Note the high rise residential building located across Hawkesbury Road is visible.

Photo No.	**Date:**
10	23.12.09

Direction Photo Taken:
Facing east

Description:
Photograph showing carpark area of the Site. Note the NETS building is visible in the background.

Appendix A

Section 149 Certificate

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PLANNING CERTIFICATE

CERTIFICATE UNDER SECTION 149

Environmental Planning and Assessment Act, 1979 as amended 1998

AECOM
Level 5
828 Pacific Highway
GORDON NSW 2072

Certificate No: 2009/5599

Fee: $100.00

Issue Date: 22 December 2009

Receipt No: 3063691

Applicant Ref: SAM PATEL

DESCRIPTION OF LAND

Address: 166-174 Hawkesbury Road
WESTMEAD NSW 2145

Lot Details: Lot 100 DP 1119583

SECTION A

The following Environmental planning instrument to which this certificate relates applies to the land:

Parramatta Local Environmental Plan 2001 (as amended).

Sydney Regional Environmental Plan No.28 – Parramatta (as amended).

The land being:
Special Uses 5

The purpose for which development may be carried out with or without development consent or is prohibited in this zone are set out in the table contained in Annexure 'A' to this certificate.

SECTION B

For the purpose of **Section 149(2)** it is advised that as the date of this certificate the abovementioned land is affected by the matters referred to as follows:

The land is affected by State Environmental Planning Policies and Regional Environmental Plans as detailed in Annexure "B1".

The land is affected by Draft State Environmental Plans in respect of information as detailed in Annexure "B2". This information is provided only to the extent that the Council has been notified by Department of Planning.

Is NOT AFFECTED by Draft Environmental Plans which have been placed on Public Exhibition but which has not yet been prescribed.

Parramatta Development Control Plan (DCP) for Sex Services and Restricted Premises applies to the land.

The land IS AFFECTED by Parramatta Development Control Plan 2005.

The Parramatta Child Care Centres Development Control Plan applies to all land within the City of Parramatta.

The Minister for Planning has issued directions that provisions of an EPI do not apply to certain Part 4 development where a concept plan has been approved under Part 3A.

The Parramatta Section 94A Development Contributions Plan applies to the land.

The land IS AFFECTED by a Tree Preservation Order.

Council has not been notified of an order under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land.

The land is not affected by Section 38 or 39 of the Coastal Protection Act 1979.

The land IS NOT AFFECTED by road widening or road realignment under:

(1) Roads Act, 1993.
(2) Any Environmental Planning Instrument.
(3) Any Resolution of Council.

The land is not affected by Section 15 of the Mine Subsidence Compensation Act 1961 proclaiming land to be a Mine Subsidence District.

The land IS NOT in a conservation area.

An item of environmental heritage IS NOT situated on the land.

The land is affected by exempt development provisions. (Parramatta Local Environmental Plan 2001, Clause 17).

The land is affected by complying development provisions. (Parramatta Local Environmental Plan 2001 Clause 18).

A person may excavate or fill land with the consent of Council. (Parramatta Local Environmental Plan 2001 Clause 23).

A master plan IS REQUIRED for development of land exceeding 5000 sqm and listed in schedule 4. (Parramatta Local Environmental Plan 2001 Clause 30).

The land IS NOT bushfire prone land.

The Director General with responsibility for the Threatened Species Conservation Act 1995 has not advised Council that the land includes or comprises a critical habitat.

The Parramatta Local Environmental Plan 2001 clause 12 provides for acquisition of certain lands by public authorities.

Site Compatibility Certificate

At the date of issue of this certificate Council is not aware of any

a. Site compatibility certificate (affordable rental housing),
b. Site compatibility certificate (infrastructure),
c. Site compatibility certificate (seniors housing)

in respect to the land issued pursuant to the Environmental Planning & Assessment Amendment (Site Compatibility Certificates) Regulation 2009 (NSW).

The land is **not affected** by any of the matters contained in Clause 59(2) as amended in the Contaminated Land Management Act 1997 – as listed

a. that the land to which the certificate relates is significantly contaminated land
b. that the land to which the certificate relates is subject to a management order
c. that the land to which the certificate relates is the subject of an approved voluntary management proposal
d. that the land to which the certificate relates is subject to an ongoing maintenance order
e. that the land to which the certificate relates is the subject of a site audit statement

Council has adopted a policy covering the entire City of Parramatta to restrict development of any land by reason of the likelihood of flooding.

Council HAS NOT adopted a policy to restrict the development of the land by reason of the likelihood of land slip, tidal inundation, subsidence or any other risk.

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

General Housing Code
Complying development pursuant to the General Housing Code **may not** be carried out on the land. The land is affected by specific land exemptions:

- land is within an environmentally sensitive area
- land is a flood control lot

Housing Internal Alterations Code
Complying development pursuant to the Housing Internal Alternations Code **may not** be carried out on the land. The land is affected by specific land exemptions:

- land is within an environmentally sensitive area

General Commercial and Industrial Code
Complying development pursuant to the General Commercial and Industrial Code **may not** be carried out on the land. The land is affected by specific land exemptions:

- land is within an environmentally sensitive area

SPECIAL NOTES

The land is identified on an Acid Sulfate Soils Map as being Class 5.

Applicants for Sections 149 Certificates are advised that Council does not hold sufficient information to fully detail the effect of any encumbrances on the title of the subject land. The information available to Council is provided on the basis that neither Council nor its servants hold out advice or warrant to you in any way its accuracy, nor shall Council or its servants, be liable for any negligence in the preparation of that information. Further information should be sought from relevant Statutory Departments.

SECTION C
The following additional information is issued under Section 149(5)

Pursuant to S149(5) the Council supplies information as set out below on the basis that the Council takes no responsibility for the accuracy of the information. The information if material should be independently checked by the applicant.

Aboriginal Heritage – low sensitivity – limited potential to contain items of Aboriginal heritage. Contact Council's Customer Service/Duty Planner (02) 9806 5050 for more information.

Aboriginal Heritage – High Sensitivity – potential to contain items of Aboriginal heritage. Contact Council's Customer Service/Duty Planner (02) 9806 5050 for more information.

Aboriginal Heritage – within proximity of a recorded site. May contain a registered site. Contact National Parks and Wildlife Service (02) 9585 6470.

The land is affected by a 100 year Average Recurrence Interval flood as indicated by Council's current flooding information. As such Council is required to take that into account when determining any development application made in respect of the land.

Further information is available at the Design Services Section within Council's Technical Services Unit.

Additional advice should be also sought from an appropriately qualified person as to the extents and potential hazards associated with the likely flooding of the land. The names of qualified persons maybe obtained from the Institution of Engineers Australia.

ANNEXURE "A"

issued pursuant to Section 149 of the Environmental Planning and Assessment Act, 1979.
NOTE: This table is an excerpt from LEP 2001 (as amended) and must be read in conjunction with and subject to the other provisions of that instrument, and the other Environmental Planning Instruments specified in the Certificate and in force at that date.

SPECIAL USES 5 ZONE

1. Objectives of the Special Uses 5 Zone

(a) to facilitate certain development on land which is, or is proposed to be, used by public authorities, institutions or organisations, including the Council, to provide community facilities, services, utilities and transport facilities, and
(b) to allow other ancillary land uses that are incidental to that primary use of land within the zone, and
(c) to provide flexibility in the development of sites identified for special uses by allowing development which is permissible in an adjacent zone.

2. Development within the Special Uses 5 zone

(a) Within the Special Uses 5 zone, development for the purpose of exempt development may be carried out without development consent.

(b) Within the Special Uses 5 zone, development for the purpose of the following may be carried out, but only with development consent:

Car parking spaces, centre based child care services, community facilities, depots, drainage, educational establishments, hospitals, housing for older people or people with a disability, places of public worship, public utility installations (other than gas holders and generating works), roads, the particular land use indicated by black lettering on the zoning map, demolition, development that may be carried out on adjoining or adjacent land in the same zone or in a different zone, subdivision.

(c) Any other development is prohibited within the Special Uses 5 zone.

ANNEXURE "B1"

issued pursuant to Section 149 of the Environmental Planning and Assessment Act 1979.
Note:The following information is supplied in respect of Section 149 and embodies the requirements of Department of Planning Circular No. A2 dated 17 March 1989 and the Ministerial Notification dated 15 December 1986.

STATE ENVIRONMENTAL PLANNING POLICY NO.1 - Development Standards

STATE ENVIRONMENTAL PLANNING POLICY NO.4 - Development without Consent and Miscellaneous Complying Development

STATE ENVIRONMENTAL PLANNING POLICY NO.6 - Number of Storeys in a Building

STATE ENVIRONMENTAL PLANNING POLICY NO.8 - Surplus Public Land

STATE ENVIRONMENTAL PLANNING POLICY NO.9 - Group Homes

STATE ENVIRONMENTAL PLANNING POLICY NO.10 - Retention of Low Cost Rental Accommodation

STATE ENVIRONMENTAL PLANNING POLICY NO.11 - Traffic Generating Developments

STATE ENVIRONMENTAL PLANNING POLICY NO.16 - Tertiary Institutions

STATE ENVIRONMENTAL PLANNING POLICY NO.19 - Bushland in Urban Areas

STATE ENVIRONMENTAL PLANNING POLICY NO.21 – Caravan Parks

STATE ENVIRONMENTAL PLANNING POLICY NO.22 - Shops and Commercial Premises

STATE ENVIRONMENTAL PLANNING POLICY NO.32 - Urban Consolidation (Redevelopment of Urban Land)

STATE ENVIRONMENTAL PLANNING POLICY NO.33 - Hazardous and Offensive Development

STATE ENVIRONMENTAL PLANNING POLICY NO.35 – Maintenance Dredging of Tidal Waterways

STATE ENVIRONMENTAL PLANNING POLICY NO.48 - Major Putrescible Landfill Sites

STATE ENVIRONMENTAL PLANNING POLICY NO.55 - Remediation of Land

STATE ENVIRONMENTAL PLANNING POLICY NO.60 - Exempt and Complying Development

STATE ENVIRONMENTAL PLANNING POLICY NO.63 - Major Transport Projects

STATE ENVIRONMENTAL PLANNING POLICY NO.64 - Advertising and Signage

STATE ENVIRONMENTAL PLANNING POLICY NO.65 – Design Quality of Residential Flat Development.

STATE ENVIRONMENTAL PLANNING POLICY NO.70 – Affordable Housing (Revised Schemes)

STATE ENVIRONMENTAL PLANNING POLICY – (Housing for Seniors or People with a Disability) 2004

STATE ENVIRONMENTAL PLANNING POLICY – (Building Sustainability Index: BASIX) 2004

STATE ENVIRONMENTAL PLANNING POLICY – (Major Projects) 2005

STATE ENVIRONMENTAL PLANNING POLICY – (Mining, Petroleum Production and Extractive Industries) 2007

STATE ENVIRONMENTAL PLANNING POLICY – (Temporary Structures and Places of Public Entertainment) 2007

STATE ENVIRONMENTAL PLANNING POLICY (Infrastructure) 2007

STATE ENVIRONMENTAL PLANNING POLICY (Exempt and Complying Development Codes) 2008

SYDNEY REGIONAL ENVIRONMENTAL PLAN NO.9 (No.2) - Extractive Industries

SYDNEY REGIONAL ENVIRONMENTAL PLAN NO.18 – Public Transport Corridors

SYDNEY REGIONAL ENVIRONMENTAL PLAN NO.24 - Homebush Bay Area

SYDNEY REGIONAL ENVIRONMENTAL PLAN NO.28 – Parramatta

SYDNEY REGIONAL ENVIRONMENTAL PLAN – (Sydney Harbour Catchment) 2005

ANNEXURE "B2"
issued pursuant to Section 149 of the Environmental Planning and Assessment Act 1979.

The following information is supplied in respect of Section 149 and embodies the requirements of Department of Environment and Planning Circular No.120 dated 6 January 1987 and the Ministerial Notification dated 15 December 1986;

DRAFT STATE ENVIRONMENTAL PLANNING POLICY
Subdivision

This draft policy helps to complete the transfer of subdivision control to the planning system. It defines the subdivision and introduces the requirement that consent be obtained for

"subdivision where not covered by an existing environmental planning instrument":
and
"subdivision works".

DRAFT STATE ENVIRONMENTAL PLANNING POLICY NO. 66
Integration of Land Use and Transport

This draft policy aims to better integrate land use and transport planning at the local level by putting in place provisions to guide the preparation of draft local environmental plans, the adoption of development control plans and master plans and the consideration of development applications.

N.B. All enquiries as to the application of Draft, State and Regional Environmental Planning Policies should be directed to The Department of Planning – 23-33 Bridge Street Sydney NSW 2000.

Dr Robert Lang
Chief Executive Officer

per **dated 22 December 2009**

Appendix B

Certificates of Title

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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

23rd December 2009

AECOM PTY LTD
PO Box 726,
PYMBLE NSW 2073

Attention: Sam Patel

RE: **Westmead Hospital,**
Hawkesbury Road,
Westmead
Purchase Order Number 1303678

Current Search

Folio Identifier 100/1119583 (title attached)
DP 1119583 (plan attached)
Dated 21st December 2009
Registered Proprietor:
HEALTH ADMINISTRATION CORPORATION

Title Tree
Lot 100 DP 1119583

Folio Identifier 100/1119583

(a)

F/I 411/1016834

F/I 2/847561

F/I 2/591088

CTVol 13618 Fol 128

PA 53398

Govt Gazette 6 January 1978 Folio 27

****

(b)

F/I 5/1077852

F/I 410/1016834

F/I 41/876232

F/I 4/839109

F/I 1/591088

CTVol 13618 Fol 127

(bi)

CTVol 1261 Fol 79

****

(bii)

PA 53398

****

(biii)

CTVol 4521 Fol 72

Crown Land

****

Summary of Proprietors
Lot 100 DP 1119583

Year	**Proprietor**
	(Lot 100 DP 1119583)
2008 – todate	Health Administration Corporation
(2008 – todate)	*(various current leases see Folio Identifier 100/1119583)*

See Notes (a) & (b)

Note (a)

	(Lot 411 DP 1016834)
2000 – 2008	Health Administration Corporation
	(Lot 2 DP 847561)
1995 – 2000	Health Commission of New South Wales
(1995 – 2000)	*(various commercial leases see Historical Folio 2/847561)*
	(Lot 2 DP 591088)
1988 – 1995	Health Commission of New South Wales
	(Lot 2 DP 591088 – CTVol 13618 Fol 128)
1978 – 1988	Health Commission of New South Wales
(1980 – 1988)	*(lease to The Prospect County Council of substation No 7793)*
	(Part Parramatta Mental Hospital site and Crown Roads – Parish St John)
Prior – 1978	Crown Land

****

Note (b)

	(Lot 5 DP 1077852)
2005 – 2008	Health Administration Corporation
(2005 – 2008)	*(various commercial leases see Historical Folio 5/1077852)*
	(Lot 410 DP 1016834)
2000 – 2005	Health Administration Corporation
(2000 – 2005)	*(various commercial leases see Historical Folio 410/1016834)*
	(Lot 41 DP 876232)
1998 – 2000	Health Administration Corporation
(1998 – 2000)	*(various commercial leases see Historical Folio 41/876232)*
	(Lot 4 DP 839109)
1994 – 1998	Health Administration Corporation
1994 – 1994	Health Commission of New South Wales
(1994 – 1998)	*(various commercial leases see Historical Folio 4/839109)*
	(Lot 1 DP 591088)
1988 – 1994	Health Commission of New South Wales
	(Lot 1 DP 591088 – CTVol 13618 Fol 127)
1978 – 1988	Health Commission of New South Wales

See Notes (bi), (bii) & (biii)

Note (bi)

	(Portion 105 Parish St John – Area 14 Acres 3 Roods – CTVol 1261 Fol 79)
1969 – 1978	Crown Land
1901 – 1969	The Minister for Public Works
1899 – 1901	Alexander Kinghorne, grazier
1898 – 1899	Isaac Platt Slack, auctioneer
1898 – 1898	William Joseph Moulder, orchardist Humphrey Moulder, fruitgrower

****

Note (bii)

	(Part Parramatta Mental Hospital site and Crown Roads – Parish St John)
Prior – 1978	Crown Land

****

Note (biii)

	(Portion 262 Parish St John – Area 34 Acres 2 Roods 30 Perches – CTVol 4521 Fol 72)
1974 – 1978	Crown Land
(1978 – 1978)	*(Acquired for Westmead Hospital)*
1959 – 1974	Douglas William Lindsay Frederick Charles Berry James Cummings Browning Healey Victor Harwood Harold Steel Hewitt Edwin Baskerville *(trustees of show and athletic sports ground Parramatta)*
1948 – 1959	Charles McArthur Miller, works manager James Cummings Browning Phillip Henry Jeffery Healey Victor Harwood Harold Steel Hewitt Harry Raymond Thurston Edwin Baskerville *(trustees of show and athletic sports ground Parramatta)*
1947 – 1948	Phillip Henry Jeffery, company director Healey Victor Harwood, garage proprietor Harold Steel Hewitt, boat retailer Harry Raymond Thurston, bank officer Edwin Baskerville, railway employee *(trustees of show and athletic sports ground Parramatta)*
1933 – 1947	Henry Olsen James Mays McKay Samuel Alfred Hanscombe George Henry Mobbs William Robert Hulks Henry Edward Haddrill James Cummings Browning *(trustees of show and athletic sports ground Parramatta)*

Cont.

1932 – 1933	Henry Olsen Timothy Lockitt James Mays McKay Samuel Alfred Hanscombe George Henry Mobbs William Robert Hulks Michael Benedict Donnellan *(trustees of show and athletic sports ground Parramatta)*
	(Portion 262 Parish St John – Area 34 Acres 2 Roods 30 Perches)
Prior – 1932	Crown Land
(1931 – 1932)	*(Dedicated for show and athletic Sports Ground at Parramatta)*

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Appendix C

Aerial Photographs

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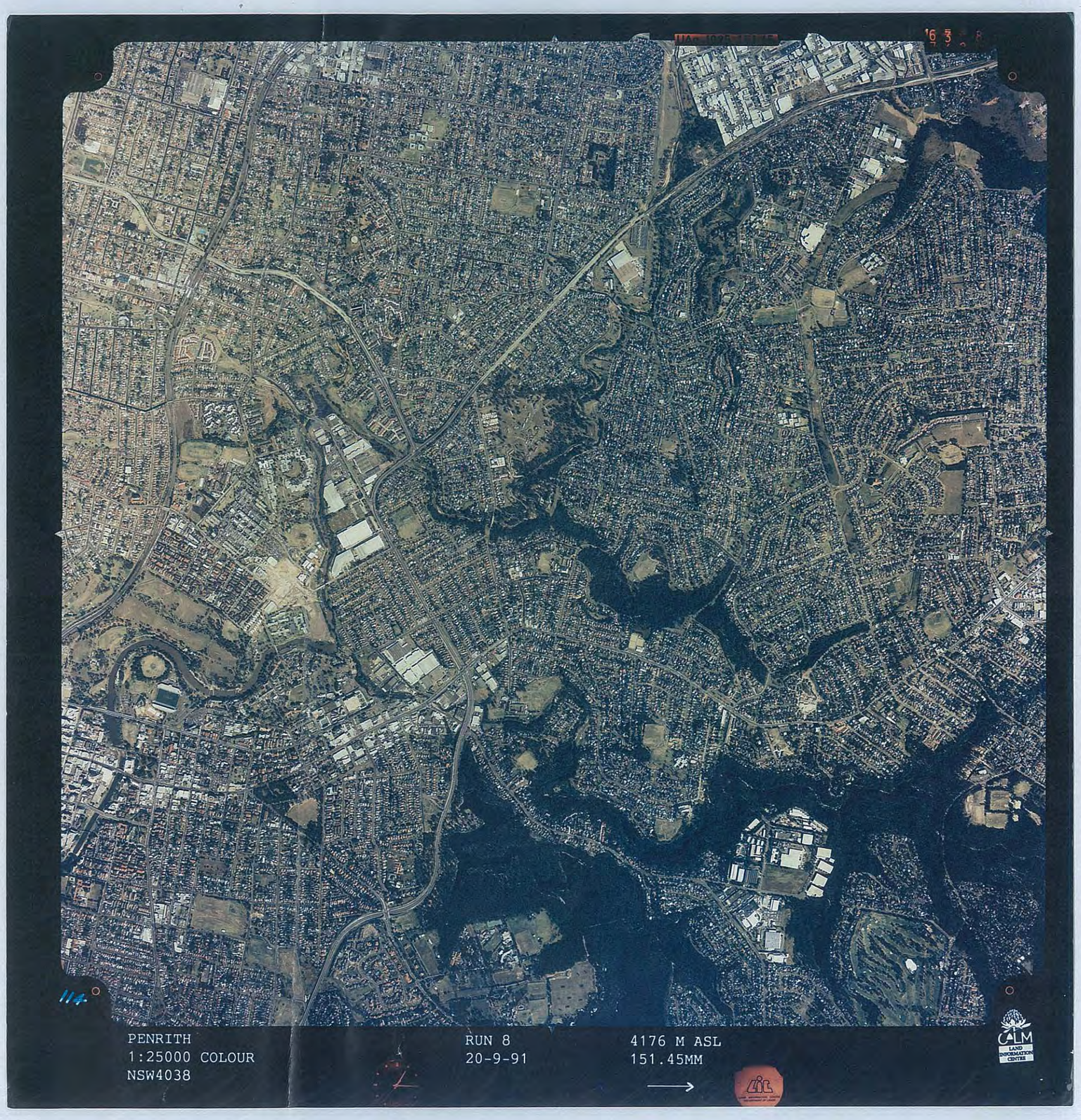
0015
PENRITH
1:25000 Approx. Scale
NSW4938 (M2510)
RUN 8
10-12-05
16-38
152.76 mm
© Department of Lands
All Rights Reserved


PENRITH
1:25000 COLOUR
NSW4038
RUN 8
20-9-91
4176 M ASL
151.45MM
CALM
LAND INFORMATION CENTRE