



Report Type: Detailed Site Investigation

Site Address: Arthur Phillip High School and Parramatta Public School

Report Number: 1915/ER-1-1

Report Date: 11th August 2015

Prepared for

NSW Department of Education
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11th August 2015

NSW Department of Education
Level 4, 33 – 35 Bridge Street
Sydney, NSW, 2000

RE: DETAILED SITE INVESTIGATION – ARTHUR PHILLIP HIGH SCHOOL & PARRAMATTA PUBLIC SCHOOL

Alliance Geotechnical Pty Ltd (AG) hereby submits this Detailed Site Investigation (DSI) of the above site.

This report documents the findings of all completed environmental tasks, including reviews of historical information, statutory notices and site works and soil sample collection to assess areas of environmental concern. Based on desktop study findings, field observations and laboratory data, conclusions are drawn regarding the potential for site contamination, with recommendations for additional action, if necessary.

Should you require further information or clarification regarding any aspect of this report, please call the undersigned on 9675 1777.

For and on behalf of,
Alliance Geotechnical Pty Ltd

A handwritten signature in blue ink, appearing to read 'B Regan', is positioned above the printed name of Benjamin Regan.

Benjamin Regan
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EXECUTIVE SUMMARY

Alliance Geotechnical Pty Ltd (AG) was engaged by NSW Department of Education (the client), to conduct a detailed site investigation (DSI) (contamination assessment) at Arthur Phillip High School and Parramatta Public School, Macquarie Street, Parramatta, NSW (herein referred to as 'the site'), refer to **Figure 1**. Arthur Phillip High School covers an area of approximately 1.24 hectares on the northern side of Macquarie Street and 0.9 hectares on the southern side of Macquarie Street. Parramatta Public School covers an area of approximately 0.87 hectares on the southern side of Macquarie Street.

The objectives of this investigation were to assess the potential for soil and groundwater contamination on the site, based on a review of site setting and past land uses (i.e. site history) and to conduct an investigation to characterise potential contamination at the site and to draw conclusions regarding the suitability of the site for the proposed high rise school use, or to make recommendations to enable such conclusions.

A site inspection was completed on 9 – 10th & 13th July 2015 by one of AG's trained and experienced environmental consultants. During the site inspections the site was observed to comprise a high school and primary school with Macquarie Street running through the centre. Refer to **Figure 2** for locations of site features and **Appendix A** for site photographs.

The portion of the site on the northern side of Macquarie Street was part of Arthur Phillip High School. The northern side of Macquarie Street consisted of approximately twenty (20) buildings, a car park with a driveway, a grassed sports ground and a soft bitumen covered sports courts. The portion of the site on the southern side of Macquarie Street consisted of the remainder of Arthur Phillip High School and Parramatta Public School. The southern portion of Arthur Phillip High School consisted of a number of large school buildings, a car park and a bitumen covered playground. Parramatta Public School consisted of a large brick building, ten (10) demountable classrooms, a car park, a large metal awning and a number of playgrounds including a large area in the centre of the school which was covered in soft bitumen.

The entire site was bound by a 2.5 m high fence with secure gates. No underground storage tanks (USTs) or above ground storage tanks (ASTs) were observed. No bulk storage of dangerous chemicals or other hazardous goods was observed.

Suspected asbestos containing material (ACM) fragments were observed in the following areas (refer to **Figure 2**):

- On the ground surface to the north of the school hall (northern portion of the site);
- On the ground surface at the slope west of the demountable buildings (northern portion of the site); and
- On the ground surface at the centre of the southern boundary of the site (southern portion of the site).

Inaccessible areas at the time of the borehole drilling and site inspection included:

- The sports courts at the northern portion of the site;
- The building footprints at all site buildings (including demountable buildings due to restricted access); and
- The majority of the surface of the southern portion of the site due to the soft bitumen that covered the ground surfaces at Parramatta Public School and hard bitumen at Arthur Phillip High School.

Based on the aerial photographs and land title information, the site appeared to have been used for agricultural purposes until c. 1918 – 1925. The site was used as a school and possibly other public uses until the present day. Other uses for the site included defence trenches during WWII.

The configuration of site buildings appeared to have changed throughout the years, the most significant being the removal of a large building at the northern portion of the site (similar location to the present day car park) and simultaneous earthworks to construct the slope on the western periphery of the school sports ground. This indicated the potential for the demolition of buildings of potentially hazardous building materials and the subsequent disposal / burial on-site.

The southern portion of the site did not appear to undergo any significant earthworks, however a number of buildings were removed and constructed prior to 1985. Construction materials used prior to 1985 are a higher risk of containing asbestos and/or lead paint.

Based on the review of historical information and observations from the site inspection, the potential areas of environmental concern (AECs) identified at the site were:

- Former agricultural uses of the site;
- Potential for hazardous materials in footprints of former site structures;
- Known asbestos in building materials used to construct current site structures;
- Suspected ACM fragments on the ground surface at a number of locations at the site (refer to **Figure 2**); and
- Fill material of unknown origin at the site.

The following contaminants were therefore deemed to be of potential concern in the soils at this site:

- Heavy metals;
- Organochloride and Organophosphate Pesticides (OCP/OPPs);
- Total petroleum hydrocarbons (TPH);
- Benzene, toluene, ethyl-benzene and xylenes (BTEX);
- Polycyclic aromatic hydrocarbons (PAHs);
- Polychlorinated Biphenyls (PCBs); and
- Asbestos.

AG contracted Eurofins MGT at Lane Cove, NSW as the primary laboratory for the required analyses and Eurofins MGT – Melbourne as the secondary laboratory. The laboratories were NATA accredited for the selected analyses. The completed analysis schedule is summarised below:

AEC	Number of Samples Locations and Sample ID	Analysis Schedule (excluding QA/QC)
Previous agricultural uses of the site	10 sample locations	OCP/OPP – 10 samples Heavy Metals – 10 samples
Potential for hazardous building materials in former building footprints and potential for fill material of unknown origin at the site	53 sample locations	Heavy Metals – 55 samples PCB – 10 samples TPH/BTEX – 10 samples PAH – 10 samples Asbestos – 31 samples

A total of 37 mechanically advanced boreholes, 16 manually advanced boreholes and two (2) surface samples were excavated for soil investigation purposes. The total number of sample points was 55 in accordance with NSW EPA Sample Design Guidelines.

Fill material at the northern portion of the site generally ranged from depths of 0.3 to 1.0 m and was observed to comprise gravelly silty clay and gravelly sandy clay, brown to grey, dry to damp with foreign materials such as brick, concrete and tile. ACM was observed at two locations on the surface (sample locations BH7 and HA9). No other indicators of contamination were observed in site soils, including hydrocarbon odours and staining.

Fill material at the southern portion of the site generally ranged from depths of 0.4 to 0.7 m and was observed to comprise gravelly clay and gravelly silty clay, brown to grey, dry to damp with foreign materials such as igneous gravels and bitumen. ACM was observed at one location on the surface (sample location HA16). No other indicators of contamination were observed in site soils, including hydrocarbon odours and staining.

All COPCs were reported below the human health and ecological based assessment criteria for residential land use with the exception of asbestos at soil sample locations:

- BH4-0.0-0.1 (non-friable ACM);
- HA9-0.0-0.2 (friable asbestos in soils); and
- HA16-0.0-0.2 (friable asbestos in soils).

The asbestos in these locations were deemed to be a risk to human health and will require remediation. A Remediation Action Plan (RAP) and Asbestos Management Plan (AMP) are required to be prepared to ensure that the asbestos is adequately removed or managed. Further assessment may be required prior to reusing asbestos impacted material on-site.

There were no potential chemical mixtures identified during the investigation that may pose a contamination issue at the site.

The ACM observed at locations BH7, HA9 and HA16 were removed to the laboratory during this site assessment. It is anticipated that all asbestos will be appropriately managed or removed during site remediation earthworks in accordance with a pre-approved RAP and AMP.

Based upon physical observations and chemical assessment of soil samples obtained from locations across the site, broad scale or gross contamination associated with the fill material was not apparent such that conditions may represent a potential migration risk.

Based on the findings of this environmental investigation, and subject to the limitations in **Section 11**, the site is able to be made suitable for residential with accessible soils land use with the following recommendations:

- Prior to any development works or earthworks, a Remediation Action Plan (RAP) should be prepared to evaluate appropriate remediation and/or management actions and to select a preferred strategy for the site, as well as to document relevant regulatory approvals and appropriate site controls and validation requirements for any remedial actions;
- There is the potential for beneficial reuse of asbestos impacted soils on-site pending further assessment;
- Due to the presence of asbestos at the site, an Asbestos Management Plan (AMP) should be prepared to ensure asbestos is appropriately managed during redevelopment works; and
- Following remediation, a final validation report should be prepared to demonstrate the adequate remediation of asbestos and any unexpected finds (if found) and to provide a statement on the suitability of the site for the proposed use.

1.0 INTRODUCTION

1.1 Background

Alliance Geotechnical Pty Ltd (AG) was engaged by NSW Department of Education (the client), to conduct a detailed site investigation (DSI) (contamination assessment) at Arthur Phillip High School and Parramatta Public School, Macquarie Street, Parramatta, NSW (herein referred to as 'the site'), refer to **Figure 1**.

Arthur Phillip High School covers an area of approximately 1.24 hectares on the northern side of Macquarie Street and 0.9 hectares on the southern side of Macquarie Street and is comprised of the following Lots:

- Lot 65 Sec 17 in DP 758829;
- Lot 413 in DP 820541;
- Lot 64 Sec 17 in DP 758829;
- Lot 63A Sec 17 in DP 758829;
- Lot 63 in DP 758829;
- Lot 62 Sec 17 in DP 758829;
- Lot 1 in DP 115296;
- Lot 2 in DP 115296;
- Lot 3 in DP 115296; and
- Part of Lot 414 in DP 820542.

Parramatta Public School covers an area of approximately 0.87 hectares and is comprised of the following Lots:

- Part of Lot 414 in DP 820542;
- Lot 23 in DP 7809;
- Lot 24 in DP 7809;
- Lot 25 in DP 7809;
- Lot 26 in DP 7809; and
- Lot 27A in DP 449406.

The site is currently used as a high school and primary school with playgrounds and it is understood that the client is planning to develop two multi-storey school buildings with playgrounds. The site is located in an area of Parramatta with a history of site use for other purposes. A Detailed Site Investigation is required to identify any soil contamination that is required to be remediation during the proposed development and to provide a comment on the suitability of the site for the proposed use.

The investigation has been developed in general accordance with relevant guidelines made or approved by the NSW Environment Protection Authority (EPA).

1.2 Objectives

The objectives of this investigation were to:

- Assess the potential for soil and groundwater contamination on the site, based on a review of site setting and past land uses (i.e. site history);
- Collect soil samples to characterise potential contamination at the site; and
- Draw conclusions regarding the suitability of the site for the continued school land use, or to make recommendations to enable such conclusions.

1.3 Scope of Work

The scope of works comprised:

- Reviews of regional topographic, geological and soil landscape maps;
- assessment of local hydrogeological conditions, including a search for groundwater data from registered water supply bores within a 500 m radius of the site;
- A site history review including collation of land titles information, supplied by Advanced Legal Searchers Pty Ltd (Title Searchers);
- a search of historical aerial photographs archived by the NSW Land and Property Information (LPI);
- a review of the NSW Environment Protection Authority (EPA) public registers to confirm that there were no statutory notices on any parts of the site under the Contaminated Land Management Act 1997 and the Protection of the Environment Operations Act 1997 (POEO Act 1997);
- field works including a site walkover inspection, borehole drilling and collection of soil samples and laboratory analysis for concentrations of contaminants of potential concern (COPCs) by a NATA accredited laboratory; and
- Interpretation of the available site history/site setting information, field observations and laboratory data and compilation of a final report, including a statement regarding the suitability of the site for the proposed end land use.

2.0 SITE CHARACTERISTICS

2.1 Site Location and Identification

The site was located at Arthur Phillip High School and Parramatta Public School, Macquarie Street, Parramatta, NSW (Ref. **Figure 1**). The nearest cross streets were Smith Street to the west and Charles Street to the east. Arthur Phillip High School covered an area of approximately 1.24 hectares on the northern side of Macquarie Street and 0.9 hectares on the southern side of Macquarie Street.

Arthur Phillip High School was legally identified as the following Lots:

- Lot 65 Sec 17 in DP 758829;
- Lot 413 in DP 820541;
- Lot 64 Sec 17 in DP 758829;
- Lot 63A Sec 17 in DP 758829;
- Lot 63 in DP 758829;
- Lot 62 Sec 17 in DP 758829;
- Lot 1 in DP 115296;
- Lot 2 in DP 115296;
- Lot 3 in DP 115296; and
- Part of Lot 414 in DP 820542.

Parramatta Public School covered an area of approximately 0.87 hectares on the southern side of Macquarie Street and is comprised of the following Lots:

- Part of Lot 414 in DP 820542;
- Lot 23 in DP 7809;
- Lot 24 in DP 7809;
- Lot 25 in DP 7809;
- Lot 26 in DP 7809; and
- Lot 27A in DP 449406.

The approximate geographic coordinates of the site were -33.816088 E, 151.007492 N.

2.2 Site Inspection

A site inspection was completed on 9 – 10th & 13th July 2015 by one of AG's trained and experienced environmental consultants. During the site inspections the site was observed to comprise a high school and primary school with Macquarie Street running through the centre. Refer to **Figure 2** for locations of site features and **Appendix A** for site photographs.

The portion of the site on the northern side of Macquarie Street was part of Arthur Phillip High School. The northern side of Macquarie Street consisted of approximately twenty (20) buildings, a car park with a driveway, a grassed sports ground and a soft bitumen covered sports courts. The school buildings consisted of a large school hall and approximately 19 demountable classrooms. In addition, a number of shipping containers were

observed to be used to store sporting equipment and school maintenance equipment. The car park and driveway were partially sealed with bitumen and partially unsealed with gravelly clay observed on the surface. The grassed sportsground was a flat, square area with a batter on the southern and western sides. The batter sloped down from Macquarie Street and the car park to the sportsground.

The portion of the site on the southern side of Macquarie Street consisted of the remainder of Arthur Phillip High School and Parramatta Public School. The southern portion of Arthur Phillip High School consisted of a number of large school buildings, a car park and a bitumen covered playground. The school buildings were located on the periphery of the site with the bitumen covered playground in the centre. The car park was also covered in bitumen and was located in the north-western corner of the southern portion of the site.

Parramatta Public School consisted of a large brick building, ten (10) demountable classrooms, a car park, a large metal awning and a number of playgrounds including a large area in the centre of the school which was covered in soft bitumen.

The entire site was bound by a 2.5 m high fence with secure gates. No underground storage tanks (USTs) or above ground storage tanks (ASTs) were observed. No bulk storage of dangerous chemicals or other hazardous goods was observed.

Suspected asbestos containing material (ACM) fragments were observed in the following areas (refer to **Figure 2**):

- On the ground surface to the north of the school hall (northern portion of the site);
- On the ground surface at the slope west of the demountable buildings (northern portion of the site); and
- On the ground surface at the centre of the southern boundary of the site (southern portion of the site).

Inaccessible areas at the time of the borehole drilling and site inspection included:

- The sports courts at the northern portion of the site;
- The building footprints at all site buildings (including demountable buildings due to restricted access); and
- The majority of the surface of the southern portion of the site due to the soft bitumen that covered the ground surfaces at Parramatta Public School and hard bitumen at Arthur Phillip High School.

2.3 Surrounding Areas

The site was bound by:

- Commercial / industrial buildings to the north, including office buildings and a mechanic workshop;
- Charles Street and commercial offices to the east;
- Little Street, a military museum and a commercial office building to the south; and
- Smith Street, Barrack Lane and commercial buildings to the west.

2.4 Topography and Site Drainage

The site was located on the crest of a hill and a relatively steady gradient (approximately 5 %) which generally sloped down towards the east. The site was also observed to slope slightly towards the north and south. Information on regional topographic conditions, referenced from the Central Mapping Authority of NSW

Penrith 9130 Topographic Map 1:25,000 (CMA, 1986), was consistent with this description and indicated that the property's elevation was approximately 10 m above sea level (i.e. 10 m Australian Height Datum (AHD)).

In unsealed areas of the site, precipitation is anticipated to infiltrate the ground surface until it reaches saturation point and then flow along the surface towards the low lying areas of the site i.e. towards the east. In sealed areas of the site, precipitation is anticipated to be captured by the building gutters and site stormwater drainage system.

The nearest surface water receptor was the Parramatta River, located approximately 240 m to the east of the site. Runoff and groundwater at the site is likely to find its way to this system.

2.5 Regional Geology and Soil Landscape

Information on regional sub-surface conditions, referenced from the Geological Survey of NSW / Department of Mineral Resources Sydney 1:100,000 Geological Series Sheet 9030 (GS NSW / DMR, 1983), indicated that the site overlies the Wianamatta Group Ashfield Shale (Rwa) which generally comprises black to dark grey shale and laminite.

Review of the NSW National Resource Atlas Acid Sulfate Soil Risk Maps indicated that the site overlies an area of "no known occurrence of acid sulphate soils". There is not anticipated to be a risk to current or future site buildings from acid sulphate soils.

2.6 Hydrogeology

A review of the NSW Office of Water groundwater database indicated that five (5) registered groundwater bores were located within a 1 km radius of the site. Groundwater bore information was supplied by the NSW Office of Water and is attached in **Appendix B**.

Table 2.1: Groundwater Monitoring Bore Information

Groundwater Bore ID	Distance from site (m)	Total Depth (m bgs)	Standing Water Level (m bgs)	Geology
GW024667	750 m east	4.60	2.40	0.0 – 4.6 m – Sand
GW110912	900 m north-east	10.00	7.000	0.0 – 0.1 m – Concrete 0.1 – 0.5 m – Fill 0.5 – 3.5 m – Clay 3.5 – 10.0 m – Shale and sandstone
GW110913		10.00	7.000	0.0 – 0.1 m – Concrete 0.1 – 4.5 m – Clay 4.5 – 10.0 m – Sandstone and residual clay
GW110914		6.00	5.000	0.0 – 1.1 m – Fill 1.1 – 5.5 m – Clay and siltstone 5.5 – 6.0 m – Sandstone
GW108611	900 m north-west	60.50	6.200	0.0 – 1.0 m – Fill 1.0 – 3.0 m – Clay, brown 3.0 – 5.5 m – Shale 5.5 – 60.5 m – Sandstone

*ND = No data

Based on this information, groundwater in the vicinity of Parramatta River is expected to be at approximately 2.4 m bgs. Based on the regional geology maps, the soils in the vicinity of the site are higher than the areas of the groundwater wells in **Table 2.1**. A conservative approach to groundwater at the site would be to assume that groundwater is expected to be within 5 – 10 m below ground surface and will flow in an easterly direction towards Parramatta River.

3.0 SITE HISTORY

3.1 Land Titles Information

A search of historical land title ownership records search was conducted through Advanced Legal Searchers Pty Ltd (Legal Searchers). Relevant documents resulting from this search are presented in **Appendix C**. A review of these records provided a source of information which may relate to potential or likely historical land use on the site. A summary of the ownership record is presented below:

Arthur Phillip High School

Lot 65 Sec 17 DP 758829 and Lot 413 DP 820541

Prior to 1990	Crown Land
(1918 – 1940)	<i>Reserve from occupation under Mining Reserve or Business Lease</i>
(1940 – 1990)	<i>Within Reserve 69063 from sale for Public School purposes</i>
(1945 – 1953)	<i>Special Lease 1945/1 Metropolitan, Parramatta Child Centre</i>
1990 – 2003	State of New South Wales
2003 – todate	Minister for Education and Training

Lot 62, Lot 63, Lot 63A and Lot 64 Sec 17 DP 758829

Prior to 1990	Crown Land
(1918 – 1940)	<i>Reserve from occupation under Mining Reserve or Business Lease</i>
(1940 – 1990)	<i>Within Reserve 69063 from sale for Public School purposes</i>
(1925 – 1936)	<i>Resumed for Asylum for the Infirm Purposes</i>
1990 – 2003	State of New South Wales
2003 – todate	Minister for Education and Training

Parramatta Public School (nine separate Lots)

Lot 1 DP 115296

1882 – 1988	The Honourable Francis Bathurst Suttor, minister for public instruction
1988 – todate	Minister for Education

Lot 2 DP 115296

1880 – 1988	The Council of Education, grantee
1988 – todate	Minister for Education

Lot 3 DP 115296

1877 – 1988	The Council of Education, grantee
1988 – todate	Minister for Education

Lot 414 DP 820542

1914 – 1915	Fanny Edgeworth Webb, wife of merchant
1915 – 1918	William Murray (merchant), Thomas Little, John Murray (merchant), William Nollen (builder), Henry Mason
1918 – 1988	His Most Gracious Majesty King George the Fifth
1988 – todate	Minister for Education

Lot 23 DP 7809

1914 – 1915	Fanny Edgeworth Webb, wife of merchant
1915 – 1918	William Murray (merchant), Thomas Little, John Murray (merchant), William Nollen (builder), Henry Mason
1918 – 1988	His Most Gracious Majesty King George the Fifth
1988 – todate	Minister for Education

Lot 24 DP 7809

1914 – 1915	Fanny Edgeworth Webb, wife of merchant
1915 – 1919	William Murray (merchant), Thomas Little, John Murray (merchant), William Nollen (builder), Henry Mason
1919 – 1921	William Murray (merchant)
1921 – 1925	War Services Homes Commissioner
1925 – 1988	His Most Gracious Majesty King George the Fifth
1988 – todate	Minister for Education

Lot 25 DP 7809

1914 – 1915	Fanny Edgeworth Webb, wife of merchant
1915 – 1919	William Murray (merchant), Thomas Little, John Murray (merchant), William Nollen (builder), Henry Mason
1919 – 1925	John Murray (merchant)
1925 – 1988	His Most Gracious Majesty King George the Fifth
1988 – todate	Minister for Education

Lot 26 DP 7809

1914 – 1915	Fanny Edgeworth Webb, wife of merchant
1915 – 1919	William Murray (merchant), Thomas Little, John Murray (merchant), William Nollen (builder), Henry Mason
1919 – 1925	John Murray (merchant)
1925 – 1988	His Most Gracious Majesty King George the Fifth
1988 – todate	Minister for Education

Lot 27A DP 449406

1914 – 1915	Fanny Edgeworth Webb, wife of merchant
1915 – 1919	William Murray (merchant), Thomas Little, John Murray (merchant), William Nollen (builder), Henry Mason
1919 – 1925	William Nollen (builder)
1925 – 1988	His Most Gracious Majesty King George the Fifth
1988 – todate	Minister for Education

3.2 Historical Aerial Photography

The site history review included a search of LPI historical aerial photographs, as shown in **Appendix D**. A summary of the photographs is shown below:

- 1930:** In the northern portion of the site, three large buildings, including two long, narrow buildings were observed. The long narrow buildings were consistent with the size and layout of barracks. The area to the east of the buildings appeared to be an unsealed, vacant area.

In the southern portion of the site, approximately eleven buildings were observed. All observed buildings were consistent with the size, age and layout of the present day site layout with the exception of a number of small buildings on the southern boundary and in the south-eastern corner of the site. The remainder of the site area appeared to comprise unsealed areas with a number of trees.

The areas to the north and east appeared to comprise residential dwellings. The areas to the south and west appeared to comprise commercial with minor residential land use.
- 1943:** In the northern portion of the site, all site buildings appeared to have been removed with the exception of a large dwelling or small commercial/industrial building on the southern boundary. A small building had been constructed on the western boundary. In the cleared areas of the site vegetation and grassed vacant areas were observed. 'Zig zag trenches' were observed in the cleared areas of the site, suspected to have been constructed due to World War II.

In the southern portion of the site, all buildings appeared similar to the previous aerial photograph with the exception of the configuration of a number of buildings on the southern boundary and the removal of two large buildings in the south-eastern corner of the site.

The land use of all surrounding areas appeared unchanged compared to the previous aerial photograph.

- **1951:** The northern portion of the site appeared unchanged with the exception of the removal of the zig zag trenches that appeared in the previous aerial photograph. The area of the former trenches appeared to be vacant and bare, potentially due to earthworks to fill the trenches.

The southern portion of the site appeared similar to the previous aerial photograph with the exception of the construction of two buildings at the centre of the southern boundary.

The land use of all surrounding areas appeared unchanged compared to the previous aerial photograph.

- **1961:** In the northern portion of the site, the area to the west of the building had been cleared. The remainder of the northern portion of the site appeared similar to the previous aerial photograph.

In the southern portion of the site, two buildings were constructed in the south-eastern corner and one large building was removed from the south-western corner.

In the surrounding areas to the north and west, a number of commercial / industrial buildings were constructed. The areas to the south and east appeared similar to the previous aerial photograph.

- **1978:** The building in the northern portion of the site appeared to have been removed and the area to the east appeared to have undergone recent earthworks (bare and vacant). This area was consistent with the present day embankment located to the west of the Arthur Phillip High School sportsground. The area of the former building was consistent with the size and location of the present day car park. A large building had been constructed in a location consistent with the present day school hall. The area to the south of the school hall appeared to be used as sports courts. All other areas remained vacant and unsealed.

At the southern portion of the site, a building in the centre of APHS and all buildings on the southern periphery of APHS had been removed and a large building had been constructed in a location consistent with the present day layout. At Parramatta Public School, three buildings on the southern boundary had been removed and one small building was constructed. In addition, two buildings had been constructed in the north-eastern corner of the site.

Further commercial development had continued in the areas to the north and east of the site. All other areas appeared similar to the previous aerial photograph.

- **1991:** All buildings at the site appeared similar the previous aerial photograph. The areas surrounding the buildings on the southern portion of the site appeared to have been covered in bitumen. High rise buildings appeared to have been constructed in the areas to the north, east and west. Minor commercial development had occurred in the area to the south.
- **2002:** A number of buildings were constructed at both sides of the site, in the same size and location of a number of present day demountable buildings. The remainder of the site remained similar to the previous aerial photograph. The land use in the surrounding areas appeared unchanged, with continued high rise residential and commercial developments.
- **2015:** The site appeared similar to the previous aerial photograph with the exception of the construction of a number of newer demountable buildings on both sides of the site. The land use in the surrounding areas appeared unchanged, with continued high rise residential and commercial developments.

3.3 Regulatory Compliance

On 10th August 2015, an on-line search of the NSW EPA Contaminated Land Management Act 1997 (CLM Act) Record of Notices was conducted. This search confirmed that the EPA had no involvement, or regulation, under

Section 58 or Section 60 of the Contaminated Land Management Act 1997 for the site. Search results are attached in **Appendix E**.

On 10th August 2015, an on-line search of the public register for licences, applications, notices, audits, pollution studies and reduction programs under the Protection of the Environment Operations Act 1997 (POEO Act 1997) was conducted, this being another database that is maintained by the EPA. This search confirmed that the EPA had no current involvement, or regulation, under the POEO Act 1997 for the site and surrounding areas. Search results are attached in **Appendix E**.

3.4 Site History Summary

Based on the aerial photographs and land title information, the site appeared to have been used for agricultural purposes until c. 1918 – 1925. The site was used as a school and possibly other public uses until the present day. Other uses for the site included defence trenches during WWII.

The configuration of site buildings appeared to have changed throughout the years, the most significant being the removal of a large building at the northern portion of the site (similar location to the present day car park) and simultaneous earthworks to construct the slope on the western periphery of the school sports ground. This indicated the potential for the demolition of buildings of potentially hazardous building materials and the subsequent disposal / burial on-site.

The southern portion of the site did not appear to undergo any significant earthworks, however a number of buildings were removed and constructed prior to 1985. Construction materials used prior to 1985 are a higher risk of containing asbestos and/or lead paint.

3.5 Integrity Assessment

The information obtained from the historical sources reviewed have been found to be in general agreement. It is therefore considered that the information provided in this historical assessment has an acceptable level of accuracy.

4.0 CONCEPTUAL SITE MODEL

4.1 Areas and Contaminants of Environmental Concern

Based on the review of historical information and observations from the site inspection, the potential areas of environmental concern (AECs) identified at the site were:

- Former agricultural uses of the site;
- Potential for hazardous materials in footprints of former site structures;
- Known asbestos in building materials used to construct current site structures;
- Suspected ACM fragments on the ground surface at a number of locations at the site (refer to **Figure 2**); and
- Fill material of unknown origin at the site.

No information in relation to historical occurrences of product spills/losses, discharges to the land, water or air associated with chemical storage at the site has been identified as part of this assessment.

4.2 Contaminants of Potential Concern

The following contaminants were therefore deemed to be of potential concern in the soils at this site:

- Heavy metals;
- Organochloride and Organophosphate Pesticides (OCP/OPPs);
- Total petroleum hydrocarbons (TPH);
- Benzene, toluene, ethyl-benzene and xylenes (BTEX);
- Polycyclic aromatic hydrocarbons (PAHs);
- Polychlorinated Biphenyls (PCBs); and
- Asbestos.

4.3 Potentially Contaminated Media

Fill material is considered to be a potentially contaminated media based on the unidentified sources of the fill material potentially imported to the site historically to backfill/raise topographic features.

Based on the potential leachability of COPCs that may be in the fill, vertical migration COPCs through the soil profile may occur. Consequently, natural soils underlying fill are considered to be a potentially contaminated media.

The potential for groundwater to be a contaminated media is low due to the low permeability of the underlying clay material and the anticipated depth to groundwater at the site (5.0 – 10.0 m bgs). As with natural soils, the potential for contamination of groundwater will depend upon the actual nature, occurrence and characteristics of contamination within the overlying stratigraphy.

4.4 Potential for Migration

Contaminants generally migrate from the site via a combination of windblown dusts, rainwater infiltration, groundwater migration and surface water runoff. The potential for contaminants to migrate is a combination of:

- The nature of the contaminants (solid/liquid and mobility characteristics);
- The extent of the contaminants (isolated or widespread);
- The location of the contaminants (surface soils or at depth); and
- The site topography, geology, hydrology and hydrogeology.

The potential contaminants identified as part of the site history review are generally in a solid form (e.g. heavy metals, asbestos etc.) or liquid form (e.g. fuel, lubricants etc.).

Due to some portions of the site being unsealed, there is the potential for contaminant transport via windblown dust migration. There is also the potential for contamination via surface water movement and infiltration of water and subsequent migration through the soil profile. However, given the low permeability of the underlying soils, migration via groundwater movement is not considered to be a potential migration pathway.

4.5 Potential Exposure Pathways

Based on the COPCs identified, potential exposure pathways at the site include:

- Potential dermal and oral contact to impacted soils and/or groundwater as present at shallow depths and/or accessible by future excavations; and/or
- Potential contaminant uptake by vegetation.

4.6 Receptors

Potential receptors of environmental impact present within the site which will require to be addressed with respect to suitability of the site for potential residential use include:

- Future users/occupants of the site may potentially be exposed to COPCs through direct contact with impacted soils/groundwater and/or ingestion of impacted soils/groundwater and/or ingestion of impacted soils/groundwater and/or inhalation of dusts/fibres associated with impacted soils/groundwater; and/or
- Excavation/construction/maintenance workers conducting activities at the site, who may potentially be exposed to COPCs through direct contact with impacted soils/groundwater present within excavations and/or inhalation of dusts/fibres associated with impacted soils/groundwater; and/or
- Flora species to be established on the vegetated areas of the site.

5.0 SAMPLING AND ANALYSIS PLAN

5.1 Data Quality Objectives

Data quality objectives (DQOs) were established for the site validation works, following the DQO decision making procedures outlined in NEPC (2013):

1. Define the problem;
2. Identify the decision;
3. Identify Inputs to the decision;
4. Define the Study Boundaries;
5. Develop a Decision Rule;
6. Specify Limits of Decision errors; and
7. Optimise the Design for obtaining data.

5.1.1 Define the Problem

The site was used for agricultural purposes and site history has indicated the potential for fill material of unknown origin or associated with the demolition of former site structures. It is understood that the client has proposed to develop the site for high rise school buildings with open space land use. The contamination status of the site was unknown.

5.1.2 Identify the decision

Based on the decision making process for assessing urban redevelopment sites, detailed in DEC (2006), the following decisions must be made:

- Are there any unacceptable health risks to future onsite receptors?
- Are there any unacceptable ecological risks posed by the site?
- Are there any impacts of chemical mixtures?
- Are there any aesthetic issues at the site?
- Is there any evidence of, or potential for, migration of contaminants from the site?
- Is a site management strategy required?

5.1.3 Identify Inputs to the Decision

The following inputs were used to allow the assessment of the decisions:

- Physical observations including visual or olfactory during site investigation;
- Soil analytical data from samples collected from test pits/boreholes;
- Adopted site assessment criteria (refer to **Section 6** below);
- Levels of COPCs in soil; and
- Data Quality indicators as generated by an assessment of quality assurance / quality control.

5.1.4 Define the Study Boundaries

The site was located at 175 Macquarie Street, Parramatta, NSW. Arthur Phillip High School covered an area of approximately 1.24 hectares on the northern side of Macquarie Street and 0.9 hectares on the southern side of Macquarie Street and is comprised of the following Lots:

- Lot 65 Sec 17 in DP 758829;
- Lot 413 in DP 820541;
- Lot 64 Sec 17 in DP 758829;
- Lot 63A Sec 17 in DP 758829;
- Lot 63 in DP 758829;
- Lot 62 Sec 17 in DP 758829;
- Lot 1 in DP 115296;
- Lot 2 in DP 115296;
- Lot 3 in DP 115296; and
- Part of Lot 414 in DP 820542.

Parramatta Public School covers an area of approximately 0.87 hectares and is comprised of the following Lots:

- Part of Lot 414 in DP 820542;
- Lot 23 in DP 7809;
- Lot 24 in DP 7809;
- Lot 25 in DP 7809;
- Lot 26 in DP 7809; and
- Lot 27A in DP 449406.

The maximum vertical extent of the assessment works was 2.2 m bgs i.e. below the level of natural soils.

5.1.5 Develop a Decision Rule

Soil analytical data were assessed against NSW EPA endorsed criteria as identified in **Section 6**. Statistical analysis of the data will be undertaken, if required, in accordance with relevant guidance documents. The following statistical criteria shall be adopted:

- The upper 95% confidence limit on the average concentration for each analyte (calculated for samples collected from consistent soil horizons, stratigraphy or material types) must be below the adopted criterion;
- No single analyte shall exceed 250% of the adopted criterion; and
- The standard deviation of the results must be below 50 % of the criterion.

5.1.6 Specify Limits of Decision Errors

Data generated during the project must be appropriate to allow decisions to be made with confidence. The acceptable limit on decision error is 95 % compliance with DQIs. Pre-determined DQIs are precision, accuracy, representativeness, comparability, completeness and sensitivity. The DQIs and data assessment criteria are discussed in **Section 7**.

5.1.7 Optimise Design for Obtaining Data

Based on the existing reviewed information and preliminary nature of the investigation, a grid-based and targeted sampling plan was considered most appropriate to provide sufficient characterisation data to address the AECs. Based on the size of the site the following number of sample locations were excavated:

- Northern portion of the site – 1.25 hectares – 25 sample locations; and
- Southern portion of the site – 1.77 hectares – 30 sample locations.

The total number of sample locations was consistent with the requirements of the *NSW EPA Sample Design Guidelines* (NSW EPA 1995). Sample locations are shown in **Figure 3**.

Based on the objectives of the investigation and available site use, the frequency and location of sample locations undertaken as part of this assessment are considered appropriate.

5.2 Soil Sample Methodology

Soil samples were collected during the site investigation works via bore hole drilling using a hand auger. The borehole locations were extended to a depth of approximately 0.7 – 2.2 m bgs. Samples were generally collected from depth intervals of near surface (0.0-0.1 m), 0.5 – 0.6 m and at every 1 m interval until natural or prior refusal. Lithological logs are provided in **Appendix F**.

During the collection of soil samples, features such as seepage, discoloration, staining, odours, and other physical indicators of contamination were noted. Soil samples were collected by one of AG's trained and experienced technicians and were transferred directly from the test holes into laboratory supplied 250 mL sample jars and sealed with Teflon lids. Soil samples collected for asbestos analysis were transferred directly into laboratory supplied zip lock, plastic bags. The soil samples were stored in a chilled container and transferred to a NATA accredited laboratory under stringent chain of custody (COC) procedures.

The laboratories used throughout the investigation were Eurofins mgt. All samples were analysed for a range of COPCs including heavy metals, TPH/BTEX, PAH, OCP/OPP/PCBs and asbestos. Laboratory reports are shown in **Appendix G**.

5.3 Decontamination

Prior to the commencement of soil sampling activities, non-disposable sampling equipment was cleaned with a pressurised water/detergent spray, rinsed with water and then dried. The equipment was then inspected to ensure that no soil, oil, debris or other contaminants were visible prior to the commencement of works. This procedure was completed between each sampling location.

5.4 Laboratory Analysis

AG contracted Eurofins MGT at Lane Cove, NSW as the primary laboratory for the required analyses and Eurofins MGT – Melbourne as the secondary laboratory. The laboratories were NATA accredited for the selected analyses. Laboratory analysis of samples was conducted with reference to COPCs discussed in **Section 4**. The completed analysis schedule is summarised in **Table 5.1** below:

Table 5.1: Analytical Schedule

AEC	Number of Samples Locations and Sample ID	Analysis Schedule (excluding QA/QC)
Previous agricultural uses of the site	10 sample locations	OCP/OPP – 10 samples Heavy Metals – 10 samples
Potential for hazardous building materials in former building footprints and potential for fill material of unknown origin at the site	53 sample locations	Heavy Metals – 55 samples PCB – 10 samples TPH/BTEX – 10 samples PAH – 10 samples Asbestos – 31 samples

6.0 SITE ASSESSMENT CRITERIA

Based on the proposed use of the site and in accordance with the decision process for urban redevelopment sites (DEC 2006), concentrations of contaminants in soil samples will be compared against the site assessment criteria presented below in **Tables 6.1 and 6.2**, sourced from the following:

- Health based investigation levels Residential A – NEPC (2013) HIL A;
- Health Screening Levels (HSLs) for vapour intrusion, fine grained soil for Residential land uses at various depths;
- Management Limits for hydrocarbons, Residential land uses, fine grained soil (NEPC 2013);
- Generic and calculated site specific Ecological Investigation Levels (EILs) for Residential land use, aged soils (NEPC 2013); and
- Ecological Screening Levels (ESLs) for Residential land use, fine grained soils.

Based on the proposed use of the site and as a high-rise school with minimal access to soils in building footprint areas, the HIL-A criteria is considered to be a conservative approach. Consideration will be given to other exposure scenarios where appropriate.

Table 6.1: Human Health Based Soil Criteria and Hydrocarbon Management Limits (all units in mg/kg)

	Limit of Reporting	Health Investigation / Screening Levels Residential A	Management Limits Residential / Parkland Fine Grained Soils
METALS			
Arsenic	4.0	100	-
Cadmium	0.4	20	-
Chromium	1.0	100	-
Copper	1.0	6000	-
Lead	1.0	300	-
Mercury	0.1	40	-
Nickel	1.0	400	-
Zinc	1.0	7400	-
POLYCYCLIC AROMATIC HYDROCARBONS			
Carcinogenic PAHs (as B(a)P TEQ)	0.028	3	-
Total PAHs	0.4	300	-
BTEX ⁽¹⁾			
Benzene	1.0	0.7	-
Toluene	1.0	480	-
Ethylbenzene	1.0	NL	-
Total Xylenes	3.0	110	-
TOTAL RECOVERABLE HYDROCARBONS			
F1 C6 – C10 ⁽²⁾	25	50	800
F2 > C10 – C16 ⁽³⁾	25	280	1000
F3 > C16 – C34	50	-	3500
F4 > C34 – C40	100	-	10,000
ORGANOCHLORIDE PESTICIDES			
DDT + DDE + DDD	0.05	3600	-
Aldrin + Dieldrin	0.05	45	-
Chlordane	0.05	530	-

⁽¹⁾ Assumes 0 – 1m depth

⁽²⁾ (Less BTEX)

⁽³⁾ (Less Naphthalene)

	Limit of Reporting	Health Investigation / Screening Levels Residential A	Management Limits Residential / Parkland Fine Grained Soils
Endosulfan	0.05	2000	-
Endrin	0.05	100	-
Heptachlor	0.05	50	-
HCB	0.05	80	-
Methoxychlor	0.05	2500	-
Mirex	0.05	100	-
Toxaphene	0.1	160	-
POLYCHLORINATED BIPHENYLS			
Total PCBs	0.1	1	-
ASBESTOS			
Bonded ACM	-	0.01 %	-
Fibrous asbestos or asbestos fines	-	0.001 %	-
All forms of asbestos	-	No visible asbestos on surface	-

Table 6.2: Ecological Screening Levels and Ecological Investigation Levels (all units in mg/kg)

	Limit of Reporting	Ecological Investigation Levels Residential	Ecological Screening Levels Residential / Parkland Fine Grained Soils
METALS			
Arsenic	4.0	100	-
Cadmium	0.4	-	-
Chromium	1.0	400	-
Copper	1.0	210	-
Nickel	1.0	270	-
Lead	1.0	1100	-
Zinc	1.0	590	-
Mercury	0.1	-	-
POLYCYCLIC AROMATIC HYDROCARBONS			
B(a)P	0.02	-	0.7
Naphthalene	0.1	170	-
BTEX			
Benzene	1.0	-	62
Toluene	1.0	-	105
Ethylbenzene	1.0	-	125
Total Xylenes	3.0	-	45
TOTAL RECOVERABLE HYDROCARBONS			
F1 C6 – C10	25	-	180
F2 > C10 – C16	25	-	120
F3 > C16 – C34	50	-	300
F4 > C34 – C40	100	-	1300

7.0 QUALITY ASSURANCE / QUALITY CONTROL

The results of the QA/QC program are presented in the following sections.

7.1 QA/QC Results

The QA/QC results for collected soil samples are summarised in **Table 7.1** and discussed in **Section 7.2**. This review summarises QA/QC measures undertaken at the site.

Table 7.1: Soil QA/QC Results Summary

Data Quality Indicator	Frequency	Results	Criteria Met?
<u>Precision</u>			
Blind duplicates (intra laboratory)	3/55	0 – 111 %	Partial*
Split duplicates (inter laboratory)	2/55	0 – 98 %	Partial*
Laboratory Duplicates	1 per batch	RPDs 0 – 84 %	Partial*
<u>Accuracy</u>			
Surrogate spikes	One per lab batch	70 – 128 %	Yes
Matrix spikes	One per lab batch	38 – 128 %	Partial*
Laboratory control samples	One per lab batch	76 – 110 %	Yes
<u>Representativeness</u>			
Sampling appropriate for media and analytes	All	Yes	Yes
Trip spike	None	NA	No*
Trip Blank	None	NA	No*
Laboratory blanks	One	All <LOR	Yes
Samples extracted within holding times	All samples	Extracted within holding times	Yes
<u>Comparability</u>			
Standard operating procedures used for sample collection and handling	All	Standard procedures for all sampling	Yes
Standard analytical methods used	All	Standard analytical methods	Yes
Limits of reporting appropriate and consistent	All	LORs appropriate	Yes
<u>Completeness</u>			
All field notes and COCs completed and appropriate	All	All COCs and field documentation provided	Yes
Appropriate documentation	All	Documentation provided	Yes
Satisfactory frequency/result for QC samples	All	See discussion	Yes
Data from critical samples is considered valid	All	Yes	Yes
<u>Sensitivity</u>			
Analytical methods and limits of recovery appropriate for media and adopted site assessment criteria	All analytes	All limits of reporting were less than the adopted site assessment criteria.	Partial

* see discussion below.

7.2 QA/QC Discussion

7.2.1 Precision

Blind duplicate

The rate of blind duplicate sampling was three blind duplicates per 55 primary samples which met the nominated frequency of 1 / 20, refer to **Table 5**. Returned relative percentage difference (RPD) values were in the required range of 0 – 50 % with the following exceptions:

- Primary sample HA6-0.0-0.2 and duplicate sample QC01 with RPD exceedances for Cadmium (111.1 %) and Copper (76 %);
- Primary sample HA14-0.0-0.2 and duplicate sample QC02 with an RPD exceedance for Cadmium (66.7 %); and

- Primary sample HA16-0.0-0.2 and duplicate sample QC03 with RPD exceedances for Arsenic (84.2 %) and Chromium (109.3 %).

These high RPDs were due to the heterogeneity of the fill material (refer to bore logs in **Appendix F**) and in some situations due to the proximity of the sample concentrations to the laboratory limit of reporting. In all instances, the concentrations did not exceed the adopted site assessment criteria and are considered to not affect the accuracy of the data.

Split Duplicate

The rate of split duplicate sampling was two split duplicate per 55 primary samples which did not meet the nominated frequency of 1 / 20, refer to **Table 5**. However the rate was considered to be appropriate due to the number of blind duplicate samples. Returned relative percentage difference (RPD) values were in the required range of 0 – 50 % with the following exceptions:

- Primary sample HA6-0.0-0.2 and duplicate sample QA01 with an RPD exceedance for Nickel (98.0 %); and
- Primary sample HA14-0.0-0.2 and duplicate sample QA02 with an RPD exceedance for Cadmium (66.7 %).

These high RPDs were due to the heterogeneity of the fill material and due to the proximity of the sample concentrations to the laboratory limit of reporting. The concentrations of primary and triplicate samples did not exceed the adopted site assessment criteria and are considered to not affect the accuracy of the data.

Laboratory Duplicate

A laboratory duplicate analysis of soil samples was reported for heavy metals, TPH/BTEX, PAHs, OCPs, OPPS and PCBs. The frequency of laboratory duplicates for soils was one per batch of samples which met the nominated frequency. Laboratory duplicate RPDs were within the range of 0 – 50% with the exception of Nickel (84%). However, the laboratory report indicated that this RPD was within the Eurofins MGT acceptance criteria. Generally the laboratory duplicate met the nominated frequency and was considered acceptable by the laboratory's NATA accredited QA/QC program.

7.2.2 Accuracy

Surrogate Spikes

Surrogate recovery results for all organic analyses were within the AG acceptance criteria of 60 – 140 % adopted for this investigation. It is noted that the reported results were also within the acceptable range of recovery for the laboratory NATA accredited methods.

Matrix Spike Samples

Matrix spike recovery results for all organic analyses were within the AG acceptance criteria of 60 – 140 % adopted for this investigation with the exception of a number of two spike recoveries for 4,4'-DDT (38%) and Methoxychlor (56%). However, the laboratory notes indicated that "the matrix spike recovery is outside the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a matrix interference. This matrix interference is considered to not affect the accuracy of the dataset.

Laboratory Control Samples

Analyses completed for laboratory control samples from the laboratory batch were within the range of 60 – 140 % adopted for this investigation. It is noted that the reported results were also within the acceptable range of recovery for the laboratory NATA accredited methods.

7.2.3 Representativeness

Sampling appropriate for characterisation, media and analytes

The sampling methods were considered appropriate for soil media and other analytes targeted. Soil samples were collected wearing a new pair of disposable nitrile gloves for each sample. Disturbance of the samples was minimised at all times during collection.

Holding times

Copies of Sample Receipt Notes (SRNs) are included in **Appendix G**. All soil analyses were undertaken within holding times.

Laboratory Blanks

One laboratory blank was analysed by the laboratory during the assessment which complied with the adopted frequency. All results were reported to be below the laboratory limit of reporting (LOR).

Trip Spike

No trip spikes were analysed during the investigation. This is not expected to affect the overall accuracy of the data due to strict decontamination and sample preservation during sample transport to the laboratory.

7.2.4 Comparability

The laboratories used (Eurofins Sydney (primary) and Eurofins Melbourne (secondary)) were NATA accredited for all selected analyses. Where different LORs were adopted by the laboratories, consideration of the data set was not impacted.

7.2.5 Completeness

All laboratory and field documentation is complete and correct. Chain of custody documentation is provided with laboratory reports in **Appendix G**.

The frequency of all duplicate and triplicate samples was considered appropriate and valid and sufficient other quality analyses were available to demonstrate that the DQI criteria were suitably addressed.

7.2.6 Sensitivity

The adopted soil analytical methods provided suitable LORs with respect to the adopted site assessment criteria.

7.3 QA/QC Conclusions

The field sampling and handling procedures across the site produced QA/QC results which indicate that the soil data collected is of acceptable quality and suitable for use in site characterisation.

The NATA certified laboratory reports indicate that the laboratory was generally achieving levels of performance within its recommended control limits during the period when the samples from this program were analysed.

On this basis of the results and the laboratory QA/QC program, the soil data is of an acceptable quality upon which to draw conclusions regarding the environmental condition of the site.

8.0 RESULTS

8.1 Field Observations

Field observations and geology encountered at the site during the intrusive investigation is summarised below. Sampling locations are shown on **Figure 3** and bore logs are shown in **Appendix F**. Laboratory analysis data is shown in **Table 1**.

A total of 37 mechanically advanced boreholes, 16 manually advanced boreholes and two (2) surface samples were excavated for soil investigation purposes. The total number of sample points was 55 in accordance with NSW EPA Sample Design Guidelines.

Fill material at the northern portion of the site generally ranged from depths of 0.3 to 1.0 m and was observed to comprise gravelly silty clay and gravelly sandy clay, brown to grey, dry to damp with foreign materials such as brick, concrete and tile. ACM was observed at two locations on the surface (sample locations BH7 and HA9). No other indicators of contamination were observed in site soils, including hydrocarbon odours and staining.

Fill material at the southern portion of the site generally ranged from depths of 0.4 to 0.7 m and was observed to comprise gravelly clay and gravelly silty clay, brown to grey, dry to damp with foreign materials such as igneous gravels and bitumen. ACM was observed at one location on the surface (sample location HA16). No other indicators of contamination were observed in site soils, including hydrocarbon odours and staining.

Natural material was observed underlying the fill material at the majority of borehole locations at depths ranging from 0.3 m to 1.0 m. Natural material was observed to comprise clay, red to brown, stiff to hard, high plasticity, dry to damp. In some locations, shale was identified underlying the natural clay material.

8.2 Soil Results

The soil sampling locations are shown on **Figure 3** and summarised laboratory results are presented in **Tables 1 to 4**. Detailed laboratory reports and chain of custody documentation is provided in **Appendix G**. Laboratory results are discussed in the following sections in relation to the adopted assessment criteria in **Section 6.1**.

8.2.1 Heavy Metals

A total of fifty-three (53) primary soil samples were analysed for heavy metals. All samples were reported by the laboratory to be below the adopted human health and ecological site assessment criteria with the exception of lead at sample locations BH19-0.5-0.6 (740 mg/kg), HA4-0.0-0.1 (320 mg/kg) and HA10-0.0-0.2 (410 mg/kg) above the human health assessment criteria (300 mg/kg).

In accordance with the Decision Rules discussed in **Section 5.1.5**, statistical analysis of the data was undertaken, in accordance with relevant guidance documents. The statistical analysis is included in **Appendix H** with the results summarised below:

- The upper 95 % confidence limit on the average concentration for lead was calculated to be 176.4 mg/kg which was below the adopted site assessment criteria;
- The standard deviation was 127.8 which was below 50 % of the criterion (300 mg/kg); and
- No single analyte concentration exceeded 250 % of the adopted criterion.

8.2.2 PAH

A total of ten (10) primary soil samples were analysed for polycyclic aromatic hydrocarbons (PAH). All soil samples were reported by the laboratory to have concentrations below the adopted site assessment criteria. In addition, all soil samples were reported to be below the laboratory limit of reporting (LOR).

8.2.3 TRH/BTEX

A total of ten (10) primary soil samples were analysed for total recoverable hydrocarbons (TRH) and benzene, toluene, ethylbenzene and xylenes (BTEX). All soil samples were reported by the laboratory to have concentrations below the adopted site assessment criteria.

8.2.4 OCP/OPP

A total of ten (10) primary soil samples were analysed for organochloride pesticides (OCP) and organophosphate pesticides (OPP). All soil samples were reported by the laboratory to have concentrations below the adopted site assessment criteria. In addition, all soil samples were reported to be below the laboratory limit of reporting (LOR).

8.2.5 PCBs

A total of ten (10) primary soil samples were analysed for polychlorinated biphenyls (PCBs). All soil samples were reported by the laboratory to have concentrations below the adopted site assessment criteria. In addition, all soil samples were reported to be below the laboratory limit of reporting (LOR).

8.2.5 Asbestos

A total of thirty-one (31) primary soil samples were analysed for asbestos. All soil samples were reported by the laboratory to have concentrations below the adopted site assessment criteria with the exception of the following locations:

- BH4-0.0-0.1 (non-friable ACM);
- HA9-0.0-0.2 (friable asbestos in soils); and
- HA16-0.0-0.2 (friable asbestos in soils).

In addition, ACM fragments were observed on the surface in the locations of samples BH7, HA9 and HA16. No asbestos was identified in any of the other soil samples analysed for asbestos.

9.0 DISCUSSION

The results are discussed in the following sections in relation to the identified decisions developed as part of the DQO process (**Section 5.1**).

9.1 Potential Risks to Future Onsite Receptors

All COPCs were reported below the human health and ecological based assessment criteria for residential land use with the exception of asbestos at soil sample locations:

- BH4-0.0-0.1 (non-friable ACM);
- HA9-0.0-0.2 (friable asbestos in soils); and
- HA16-0.0-0.2 (friable asbestos in soils).

The asbestos in these locations were deemed to be a risk to human health and will require remediation. A Remediation Action Plan (RAP) and Asbestos Management Plan (AMP) are required to be prepared to ensure that the asbestos is adequately removed or managed. Further assessment may be required prior to reusing asbestos impacted material on-site.

9.2 Chemical Mixtures

There were no potential chemical mixtures identified during the investigation that may pose a contamination issue at the site.

9.3 Aesthetic Issues

Inspection of the ground surface and unearthed material was undertaken during the intrusive investigation for the presence of discoloration, fibrous cement fragments that may contain asbestos or other indications of potentially contaminated materials. No indicators of contamination were observed during the assessment with the exception of ACM fragments were observed on the surface in the locations of samples BH7, HA9 and HA16.

The ACM observed at these locations was removed to the laboratory during this site assessment. It is anticipated that all asbestos will be appropriately managed or removed during site remediation earthworks in accordance with a pre-approved RAP and AMP.

9.4 Potential for Migration of Contaminants

Based upon physical observations and chemical assessment of soil samples obtained from locations across the site, broad scale or gross contamination associated with the fill material was not apparent such that conditions may represent a potential migration risk.

9.5 Site Management Strategy

Based on the above characterisation of decisions consistent with DEC (2006) and the decision rules in **Section 5**, a management strategy is required to manage the non-friable and friable asbestos at the site. It is recommended that an asbestos management plan (AMP) be developed and implemented during future site redevelopment works. It is also recommended that a remediation action plan (RAP) be prepared to evaluate appropriate remediation options and validation requirements to make the site suitable for the proposed land use.

10.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this environmental investigation, and subject to the limitations in **Section 11**, the site is able to be made suitable for residential with accessible soils land use with the following recommendations:

- Prior to any development works or earthworks, a Remediation Action Plan (RAP) should be prepared to evaluate appropriate remediation and/or management actions and to select a preferred strategy for the site, as well as to document relevant regulatory approvals and appropriate site controls and validation requirements for any remedial actions;
- There is the potential for beneficial reuse of asbestos impacted soils on-site pending further assessment;
- Due to the presence of asbestos at the site, an Asbestos Management Plan (AMP) should be prepared to ensure asbestos is appropriately managed during redevelopment works; and
- Following remediation, a final validation report should be prepared to demonstrate the adequate remediation of asbestos and any unexpected finds (if found) and to provide a statement on the suitability of the site for the proposed use.

11.0 STATEMENT OF LIMITATIONS

This Detailed Site Investigation Report should be read in conjunction with any previous investigations and evaluated the likelihood of the site contamination resulting from previous uses of the site. Limited sampling and laboratory analysis were undertaken as part of the investigations reviewed, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site or material investigated, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, AG reserves the right to review the report in the context of the additional information.

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Should you require additional information or clarification regarding any aspect of this report, please call the undersigned on (02) 9675 1777.

For and on behalf of,
Alliance Geotechnical Pty Ltd



Benjamin Regan
B. Eng. (Environmental)
Senior Environmental Consultant
Alliance Geotechnical Pty Ltd

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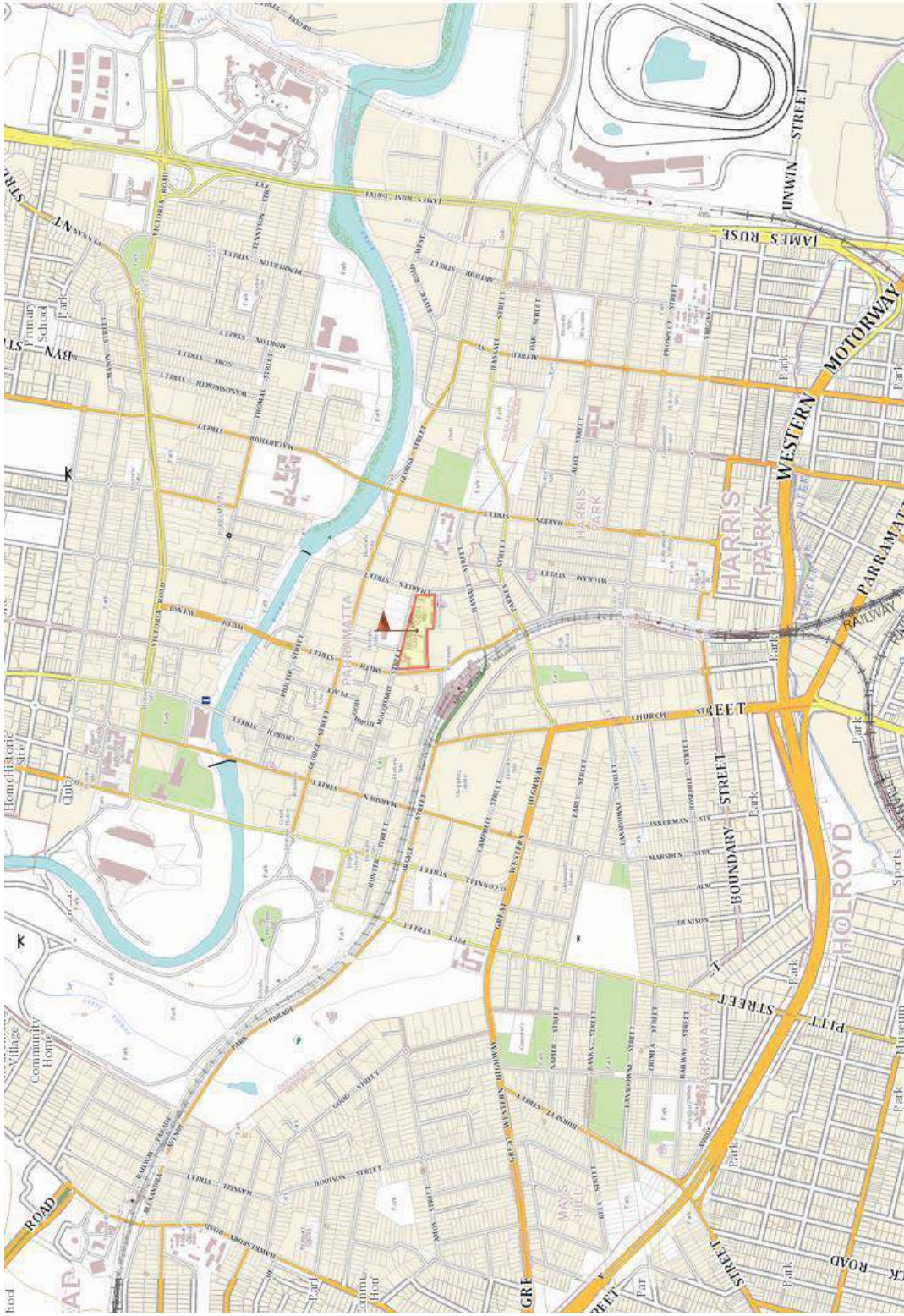
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FIGURES

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Source: SIX Maps (www.maps.six.nsw.gov.au)

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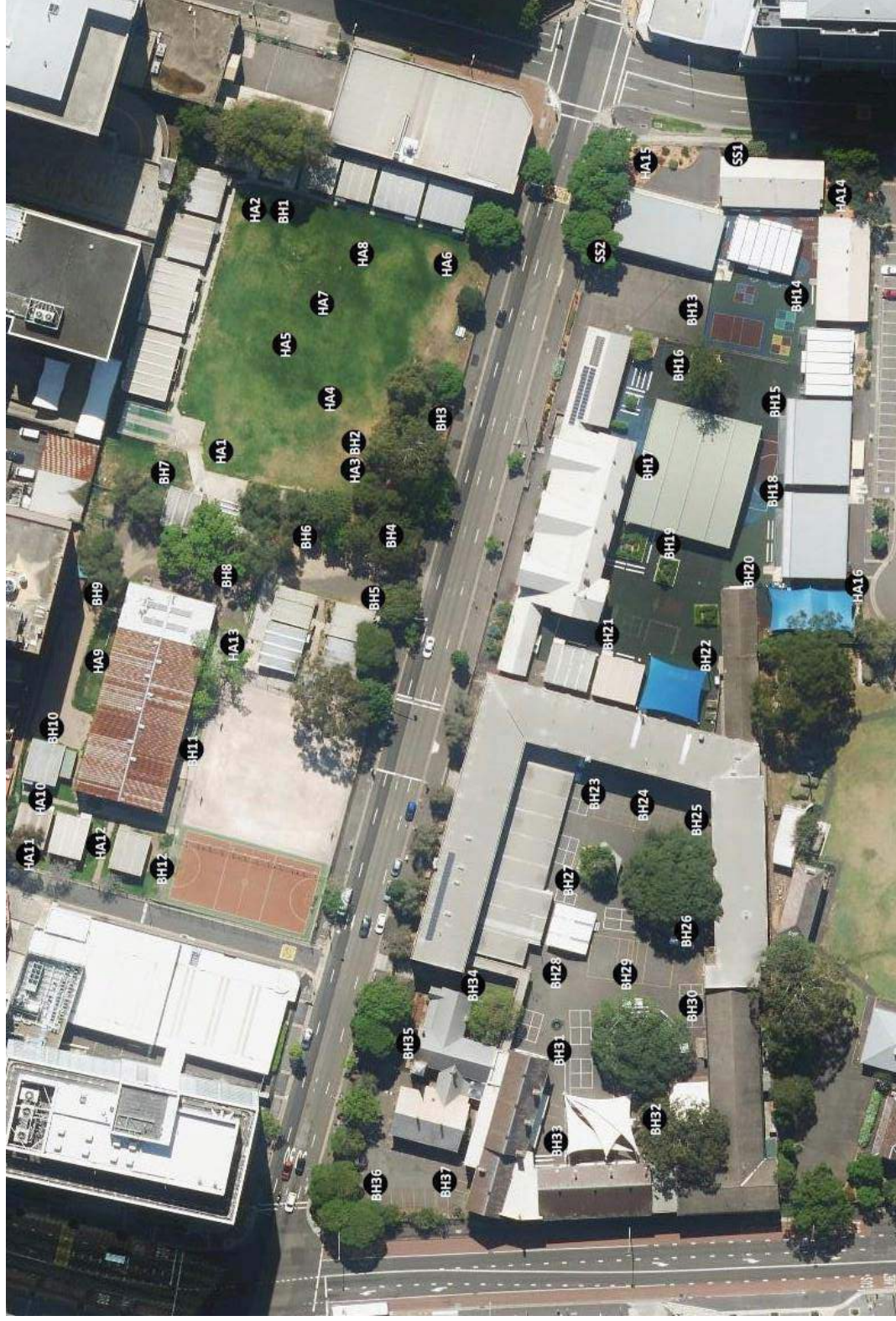


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Client: NSW Department of Education
Project: Arthur Phillip High School and Parramatta Public School
Location: 175 Macquarie Street, Parramatta, NSW

Job Number: 1915
Report Number: 19
Report Date: 11/08

TABLES

Table 1
Arthur Phillip High School and Parramatta Public School
Soil Results & Adopted Site Criteria - Heavy Metals
1915-ER-1-1

Group	Analyte	Units	PQL	NEPA ESL / EL (fresh/ aged)	NEPA HSL A / HSLA	DATASET MINIMUM	DATASET MAXIMUM															
Metals	Arsenic	mg/kg	<3	100	100	2.1	31	<2	16	7.8	3.2	4.6	2.7	5.4	<0.4	2.5	4.9	10	8.8	9.7	4.6	10
	Cadmium	mg/kg	<0.3	-	20	0.4	0.7	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
	Chromium	mg/kg	<0.3	400	100	6.4	89	6.4	11	29	36	33	25	12	24	13	16	22	24	32	17	23
	Copper	mg/kg	<0.5	210	6000	5.3	79	19	25	24	59	62	42	35	38	45	23	38	19	21	37	47
	Lead	mg/kg	<1	1100	300	7	740	190	94	180	180	77	72	73	77	21	200	180	260	210	18	21
	Mercury	mg/kg	<0.5	-	40	0.06	1.6	0.4	<0.05	0.22	0.17	0.86	0.06	0.1	0.36	<0.05	0.37	0.56	0.41	0.31	<0.05	<0.05
	Nickel	mg/kg	<0.5	230	400	9.2	93	5.2	5	8	45	32	35	8	13	30	70	13	71	48	37	40
	Zinc	mg/kg	<0.5	500	7400	6	530	80	13	100	110	81	64	52	43	160	170	88	140	33	43	43

NEPM Ecological Investigation Levels 2013 - Residential with Acceptable Soils
NEPM Table 14.11 Current Residential Land Uses 2013
NEPM HSL A - residential (for soil)

Table 1
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Soil Results & Adopted Site Criteria - Heavy Metals
1915-ER-1-1

Group	Analyte	Units	PQL	NEPM ESL / EL (fresh/ aged)	NEPM HIL A / HSLA	DATASET MINIMUM	DATASET MAXIMUM																
Metals	Arsenic	mg/kg	<3	100	100	2.1	31	5	6.1	5	10	<0.4	<0.4	6	<0.4	5.6	11	10	13	8	12	14	12
	Cadmium	mg/kg	<0.3	-	20	0.4	0.7	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
	Chromium	mg/kg	<0.3	400	1000	6.4	89	12	16	18	19	15	18	15	23	11	23	17	34	32	37	35	38
	Copper	mg/kg	<0.5	210	6000	5.3	79	42	43	28	13	13	16	25	17	9.7	40	16	18	29	11	15	14
	Lead	mg/kg	<1	1100	300	7	740	13	11	31	15	740	40	740	40	16	20	21	20	21	32	23	23
	Mercury	mg/kg	<0.5	-	40	0.06	1.6	<0.05	<0.05	<0.05	<0.05	<0.05	0.19	0.06	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel	mg/kg	<0.5	230	400	3.2	53	34	39	24	6.3	6.2	4.1	6.2	4.3	4.3	8.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Pb/Zn	mg/kg	<0.5	230	400	3.2	53	34	39	24	6.3	6.2	4.1	6.2	4.3	4.3	8.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Pb/Zn	mg/kg	<0.5	230	400	3.2	53	34	39	24	6.3	6.2	4.1	6.2	4.3	4.3	8.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Pb/Zn	mg/kg	<0.5	230	400	3.2	53	34	39	24	6.3	6.2	4.1	6.2	4.3	4.3	8.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

NEPM Ecological Investigation Levels 2013 - Residential with Accessible Soils
NEPM Table 14.11 Current Residential Land Uses 2013
NEPM HIL A - Residential (for soil)

Table 1
Arthur Phillip High School and Parramatta Public School
Soil Results & Adopted Site Criteria - Heavy Metals
1915-ER-1-1

Group	Analyte	Units	PQL	NEPM ESL / EL (mg/m ² / kg/m ³)	NEPM HIL A / HSLA	DATASET MINIMUM	DATASET MAXIMUM												
Metals	Arsenic	mg/kg	<3	100	100	2.1	31	10	9.5	2.3	15	7.2	8.2	3.6	2.3	<2	21	HAS 0.001	HAS 0.001
	Cadmium	mg/kg	<0.3	-	20	0.4	0.7	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	S15-J14467	S15-J14470
	Chromium	mg/kg	<0.3	400	100	6.4	89	29	26	40	36	29	27	8.8	12	<5	28	S15-J14468	S15-J14470
	Copper	mg/kg	<0.5	210	6000	5.3	79	11	15	32	13	13	9.1	19	29	5.3	17	320	120
	Lead	mg/kg	<1	1100	300	7	740	19	29	11	23	27	20	120	24	7	<0.05	0.31	0.07
	Mercury	mg/kg	<0.5	-	40	0.06	1.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.27	<0.05	<0.05	<5	<5	12
	Nickel	mg/kg	<0.5	230	400	3.2	53	<5	5.3	13	<3	11	6.3	17	49	<5	<5	<5	12
	Pb+Cu	mg/kg	<0.5	230	400	3.2	53	<5	5.3	13	<3	11	6.3	17	49	<5	<5	<5	12
	Zinc	mg/kg	<0.5	230	400	3.2	53	<5	5.3	13	<3	11	6.3	17	49	<5	<5	<5	12
	Ag	mg/kg	<0.05	230	400	3.2	53	<5	5.3	13	<3	11	6.3	17	49	<5	<5	<5	12

NEPM Ecological Investigation Levels 2013 - Residential with Accessible Soils
NEPM Table 14.11 Current Residential Land Uses 2013
NEPM HIL A - Residential (for soil)

Table 1
Arthur Phillip High School and Parramatta Public School
Soil Results & Adopted Site Criteria - Heavy Metals

Group	Analyte	Units	PQL	NEPM ESL / EL (mg/m ² / kg/m ³)	NEPM HSL A / HSLA	DATASET MINIMUM	DATASET MAXIMUM	HA7 0.0-0.1 S15-J14872 10/07/2015	HA8 0.0-0.2 S15-J14874 10/07/2015	HA6 0.0-0.2 S15-J1476 10/07/2015	HA5 0.0-0.2 S15-J1477 10/07/2015	HA10 0.0-0.2 S15-J14878 10/07/2015	HA1 0.0-0.2 S15-J1479 10/07/2015	HA12 0.0-0.2 S15-J1480 10/07/2015	HA13 0.0-0.2 S15-J1481 10/07/2015	HA14 0.0-0.2 S15-J1482 10/07/2015	HA15 0.0-0.2 S15-J1483 10/07/2015	HA16 0.0-0.2 S15-J1484 10/07/2015
Metals	Arsenic	mg/kg	<3	100	100	2.1	31	5.4	4.5	4	4.9	4.8	8	6.5	2.1	8.9	31	11
	Cadmium	mg/kg	<0.3	-	20	0.4	0.7	<0.4	<0.4	<0.4	<0.4	0.7	0.4	<0.4	<0.4	0.4	<0.4	<0.4
	Chromium	mg/kg	<0.3	400	100	6.4	89	15	15	13	13	19	20	19	25	26	89	58
	Copper	mg/kg	<0.5	210	6000	5.3	79	19	18	22	19	37	32	23	43	35	79	21
	Lead	mg/kg	<1	1100	300	7	740	150	92	210	150	410	220	120	140	170	51	63
	Mercury	mg/kg	<0.5	-	40	0.06	1.6	0.27	0.15	0.32	0.29	0.9	0.4	0.7	0.07	0.38	1.6	0.2
	Nickel	mg/kg	<0.5	230	400	3.2	53	5	4.8	7.3	3.2	5.4	3.4	6.3	7.1	12	4.9	17.3
	Zinc	mg/kg	<0.55	250	7400	6	510	79	87	110	190	330	200	110	230	360	170	200

NEPM Ecological Investigation Levels 2013 - Residential with Accessible Soils
NEPM Table 14.11 Current Residential Land Uses 2013
NEPM HSL A - Residential (for soil)

Table 2
Arthur Phillip High School and Paramatta Public School
Soil Results & Adopted Site Criteria - PAH & TPH/BTEX
1915-ER-1-1

Group	Analyte	Units	PQL	NEPM ESL/ ELC (fresh/ aged)	NEPM HSL A/ HSL A	DATASET MINIMUM	DATASET MAXIMUM	BH4_0.0-0.1	BH5_0.0-0.1	BH6_0.0-0.1	BH8_0.0-0.1	BH13_0.4-0.5	BH35_0.5-0.6	BH36_0.5-0.6	BH37_0.5-0.6	HA6_0.0-0.2	HA14_0.0-0.2
PAH	Acenaphthene	mg/kg	0.1			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Acenaphthylene	mg/kg	0.1			0.8	0.8	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Anthracene	mg/kg	0.1			0.8	0.8	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benz(a)anthracene	mg/kg	0.1			0.8	4.8	4.8	1.4	<0.5	0.8	<0.5	<0.5	0.8	1	<0.5	1.2
	Benz(a)pyrene	mg/kg	0.1	0.7		0.8	5.9	5.9	1.5	<0.5	0.8	<0.5	<0.5	0.8	0.9	<0.5	1.8
	Benz(a)pyrene TEQ (lower bound) *	TEQ (mg/kg)	0.1		3	1	8.7	8.7	1.9	<0.5	1	<0.5	<0.5	1	1.2	<0.5	2.4
	Benz(a)pyrene TEQ (medium bound) *	TEQ (mg/kg)	0.1		3	0.6	8.7	8.7	2.2	0.6	1.3	0.6	0.6	1.3	1.5	0.6	2.6
	Benz(a)pyrene TEQ (upper bound) *	TEQ (mg/kg)	0.1		3	1.2	8.7	8.7	2.4	1.2	1.6	1.2	1.2	1.6	1.7	1.2	2.9
	Benz(b)fluoranthene	mg/kg	0.1			0.7	5.1	5.1	0.8	<0.5	0.8	<0.5	<0.5	0.7	1	<0.5	1.7
	Benz(g,h,i)perylene	mg/kg	0.1			0.6	3.4	3.4	0.9	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	1.6
	Benz(k)fluoranthene	mg/kg	0.1			0.6	4.6	4.6	1.1	<0.5	0.6	<0.5	<0.5	0.7	0.8	<0.5	1.6
	Chrysene	mg/kg	0.1			0.6	4.3	4.3	1.1	<0.5	0.6	<0.5	<0.5	<0.5	0.8	<0.5	1.3
	Dibenz(a,h)anthracene	mg/kg	0.1			1	1	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fluoranthene	mg/kg	0.1			0.6	7.1	7.1	2	0.6	1.4	<0.5	<0.5	1.1	2.5	1	1.7
	Fluorene	mg/kg	0.1			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1			0.7	2.6	2.6	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2
TPH/BTEX	Naphthalene	mg/kg	0.1	170		0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Phenanthrene	mg/kg	0.1			0.6	2.1	2.1	0.6	<0.5	1.1	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
	Pyrene	mg/kg	0.2			0.6	8	8	2.1	0.6	1.5	<0.5	<0.5	1.1	2.3	1	1.9
	Total PAH*	mg/kg	0.3		300	1.2	51	51	12	1.2	8.2	<0.5	<0.5	5.2	11	2	14
	TRH <C10-C16	mg/kg	50	120		0	0	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH <C10-C16 less Naphthalene (F2)	mg/kg	50		280	0	0	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH <C16-C34	mg/kg	100	1300		130	870	870	250	400	240	<100	<100	<100	<100	130	420
	TRH <C34-C40	mg/kg	100	5600		130	820	820	320	650	470	<100	<100	<100	<100	<100	130
	TRH C6-C10	mg/kg	20	180		0	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	TRH C6-C10 less BTEX (F1)	mg/kg	20		50	0	0	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	Benzene	mg/kg	0.2	65	0.7	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Toluene	mg/kg	0.1	105	480	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Ethylbenzene	mg/kg	0.1	125	NL	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Xylenes - Total	mg/kg	0.3	45	110	0	0	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

NEPM Ecological Investigation Levels 2013 - Residential with Accessible Soils
NEPM Table 1A (1) Column A Residential Land Use 2013
NEPM HSL A - Residential (fine soils)

Table 3
Arthur Phillip High School and Parramatta Public School
Soil Results & Adopted Site Criteria - OCP/OPP/PCBs
1915-ER-1-1

Group	Analyte	Units	PQL	NEPM ESL / EIL (fresh / aged)	NEPM HSL A / HSL A	DATASET MINIMUM	DATASET MAXIMUM	BH7_0.0-0.1 S15-J114410	BH10_0.0-0.1 S15-J114421	BH11_0.0-0.1 S15-J114424	BH12_0.0-0.1 S15-J114427	HA2_0.0-0.1 S15-J114466	HA3_0.0-0.1 S15-J114467	HA4_0.0-0.1 S15-J114468	HA5_0.0-0.1 S15-J114470	HA6_0.0-0.2 S15-J114476	HA11_0.0-0.2 S15-J114479
OCPs	4,4'-DDD	mg/kg	<0.05		240	0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	4,4'-DDE	mg/kg	<0.05			0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	4,4'-DDT	mg/kg	<0.05			0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	β-BHC	mg/kg	<0.05			0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	α-BHC	mg/kg	<0.05		6	0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	γ-BHC	mg/kg	<0.05			0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Chlordane - Total	mg/kg	<0.1		50	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	d-BHC	mg/kg	<0.05			0	0	<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		6	0	0	<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	0	<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		270	0	0	<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	0	<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		10	0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Endrin aldehyde	mg/kg	<0.05			0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Endrin ketone	mg/kg	<0.05			0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	γ-BHC (lindane)	mg/kg	<0.05			0	0	<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		6	0	0	<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	0	<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		10	0	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OPPs	Methoxychlor	mg/kg	<0.2		300	0	0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Toxaphene	mg/kg	<1		20	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chlorpyrifos	mg/kg	<0.5		160	0	0	<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	0	<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			0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Diazinon	mg/kg	<0.5			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	mg/kg	<0.5			0	0	<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	0	<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	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethionop	mg/kg	<0.5			0	0	<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	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fensulfathion	mg/kg	<0.5			0	0	<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	0	<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	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methyl azinphos	mg/kg	<0.5			0	0	<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	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Mevinphos	mg/kg	<0.5			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Monocrotophos	mg/kg	<10			0	0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PCBs	Parathion	mg/kg	<0.5			0	0	<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	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Profenofos	mg/kg	<0.5			0	0	<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	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Rannel	mg/kg	<0.5			0	0	<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	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Trichloronate	mg/kg	<0.5			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aroclor-1016	mg/kg	<0.5			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aroclor-1221	mg/kg	<0.1			0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Aroclor-1232	mg/kg	<0.5			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aroclor-1242	mg/kg	<0.5			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aroclor-1248	mg/kg	<0.5			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aroclor-1254	mg/kg	<0.5			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aroclor-1260	mg/kg	<0.5			0	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Total PCB*	mg/kg	<0.1		1	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Table 4
Arthur Phillip High School and Parramatta Public School
Soil Results & Adopted Site Criteria - Asbestos
1915-ER-1-1

Group	Analyte	Units	PQL	NEPM HSL A / HSL A							
Asbestos	Asbestos (NEPC 2013 method)	% w/w	-	No asbestos detected. Organic fibre detected. No respirable fibres detected.	Chrysotile and amosite asbestos detected in fibre cement fragments. Approximate weight of asbestos 0.0469g. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.
				No asbestos detected. Organic fibre detected. No respirable fibres detected.	Chrysotile and amosite asbestos detected in fibre cement fragments. Approximate weight of asbestos 0.0469g. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.
				No asbestos detected. Organic fibre detected. No respirable fibres detected.	Chrysotile and amosite asbestos detected in fibre cement fragments. Approximate weight of asbestos 0.0469g. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.
				No asbestos detected. Organic fibre detected. No respirable fibres detected.	Chrysotile and amosite asbestos detected in fibre cement fragments. Approximate weight of asbestos 0.0469g. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.
				BH3_0.0-0.1 S15-J14399 10/07/2015 Soil	BH4_0.0-0.1 S15-J14402 10/07/2015 Soil	BH5_0.0-0.1 S15-J14405 10/07/2015 Soil	BH6_0.0-0.1 S15-J14407 10/07/2015 Soil	BH7_0.0-0.1 S15-J14410 10/07/2015 Soil	BH8_0.0-0.1 S15-J14414 10/07/2015 Soil	BH9_0.0-0.1 S15-J14417 10/07/2015 Soil	BH10_0.0-0.1 S15-J14421 10/07/2015 Soil

NEPM Ecological Investigation Levels 2013 - Residential with Accessible Soils
NEPM Table 1A (1) Column A Residential Land Uses 2013
NEPM HSL A - Residential (fine soils)

Table 4
Arthur Phillip High School and Parramatta Public School
Soil Results & Adopted Site Criteria - Asbestos
1915-ER-1-1

Table 4																					
Arthur Phillip High School and Parramatta Public School																					
Soil Results & Adopted Site Criteria - Asbestos																					
1915-ER-1-1																					
Group	Analyte	Units	PQL	NEPM HSL A / HSL A																	
Asbestos	Asbestos (NEPC 2013 method)	% w/w	-	0.001 % w/w	No asbestos detected. Organic fibre detected. No respirable fibres detected.	Chrysotile asbestos detected in the form of loose fibre bundles. Approximate weight of asbestos = 0.0001 g. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.			
					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
					10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015
					S15-J114424	S15-J114427	S15-J114431	S15-J114433	S15-J114437	S15-J114441	S15-J114446	S15-J114448	BH11_0.0-0.1	BH12_0.0-0.1	BH13_0.4-0.5	BH14_0.5-0.6	BH16_0.5-0.6	BH18_0.5-0.6	BH21_0.5-0.6	BH23_0.5-0.6	

NEPM Ecological Investigation Levels 2013 - Residential with Accessible Soils
 NEPM Table 1A (1) Column A Residential Land Uses 2013
 NEPM HSL A - Residential (fine soils)

Table 4
Arthur Phillip High School and Parramatta Public School
Soil Results & Adopted Site Criteria - Asbestos
1915-ER-1-1

Group	Analyte	Units	PQL	NEPM HSL A / HSL A									
Asbestos	Asbestos (NEPC 2013 method)	% w/w	-	0.001 % w/w	BH25_0.5-0.6	BH27_0.5-0.6	BH29_0.5-0.6	BH31_0.5-0.6	HA2_0.0-0.1	HA3_0.0-0.1	HA4_0.0-0.1	HA5_0.0-0.1	
					S15-II14450	S15-II14452	S15-II14454	S15-II14457	S15-II14466	S15-II14467	S15-II14468	S15-II14470	
					10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	10/07/2015	
					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
					No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	No asbestos detected. Organic fibre detected. No respirable fibres detected.	

NEPM Ecological Investigation Levels 2013 - Residential with Accessible Soils

NEPM Table 1A (1) Column A Residential Land Uses 2013

NEPM HSL A - Residential (fine soils)

Table 4
Arthur Phillip High School and Parramatta Public School
Soil Results & Adopted Site Criteria - Asbestos
1915-ER-1-1

Table 4									
Arthur Phillip High School and Parramatta Public School									
Soil Results & Adopted Site Criteria - Asbestos									
1915-ER-1-1									
Group	Analyte	Units	PQL	NEPM HSL A / HSL A					
Asbestos	Asbestos (NEPC 2013 method)	% w/w	-	HA6_0.0-0.2	HA9_0.0-0.2	HA13_0.0-0.2	HA14_0.0-0.2	HA16_0.0-0.2	SS2
				S15-J114476	S15-J114477	S15-J114481	S15-J114482	S15-J114484	S15-J114485
				13/07/2015	13/07/2015	13/07/2015	13/07/2015	13/07/2015	13/07/2015
				Soil	Soil	Soil	Soil	Soil	Soil
				No asbestos detected. Organic fibre detected. No respirable fibres detected.					

NEPM Ecological Investigation Levels 2013 - Residential with Accessible Soils

NEPM Table 1A (1) Column A Residential Land Uses 2013

NEPM HSL A - Residential (fine soils)

Table 5
Arthur Philip High School and Parramatta Public School
Data Quality Assessment
1915-ER-1-1

Reference		S15-J1476	S15-J1487	M15-J15498			S15-J1482	S15-J1488	M15-J15499			S15-J1484	S15-J1489		
Sample ID		HA6_0.0-0.2	QC01	QA01	RPD %		HA34_0.0-0.2	QC02	QA02	RPD %		HA16_0.0-0.2	QC03	RPD %	
Date Sampled		13/07/2015	13/07/2015	13/07/2015			13/07/2015	13/07/2015	13/07/2015			13/07/2015	13/07/2015		
Sample Matrix		Soil	Soil	Soil			Soil	Soil	Soil			Soil	Soil		
Group	Analyte														
Metals	Arsenic	4	3.6	10.5	4.7	-16.1	8.9	13	8	10.7		11	27	-84.2	
	Cadmium	<0.4	0.7	-111.1	<0.4	0.0	0.4	<0.4	<0.4	66.7		<0.4	<0.4	0.0	
	Chromium	13	11	16.7	12	8.0	26	36	18	36.4		58	17	108.3	
	Copper	22	49	-76.1	21	4.7	35	36	35	0.0		21	23	-9.1	
	Lead	210	200	4.9	160	27.0	170	150	120	34.5		63	97	-42.5	
	Mercury	0.32	0.34	-6.1	0.3	6.5	0.38	0.36	5.4	-5.1		0.2	0.2	0.0	
	Nickel	7.3	5.3	31.7	<5	98.0	12	17	10	18.2		7.3	6.9	5.6	
	Zinc	120	110	8.7	88	30.8	360	340	260	32.3		260	240	8.0	

APPENDIX A

SITE PHOTOGRAPHS



Photograph 1: Driveway and car park of northern portion of the site, looking south. Location of boreholes BH4, BH5 and BH6.



Photograph 2: Western side of school hall and demountable buildings, looking north.



Photograph 3: Northern side of school hall and location of samples BH9, HA9 and BH10, looking west.



Photograph 4: Sports Courts at Arthur Phillip High School, looking south-west. Inaccessible area for borehole drilling.



Photograph 5: Area to the west of the sports ground, looking west. Location of borehole BH7.



Photograph 6: Sports ground, looking east.



Photograph 7: Sports ground with batter / slopes in the background, looking south.



Photograph 8: Arthur Phillip High School car park and administration building on southern portion of the site, looking west.



Photograph 9: Arthur Phillip High School buildings in background with hard bitumen play area in foreground, looking east.



Photograph 10: Parramatta Public School car park, looking north.

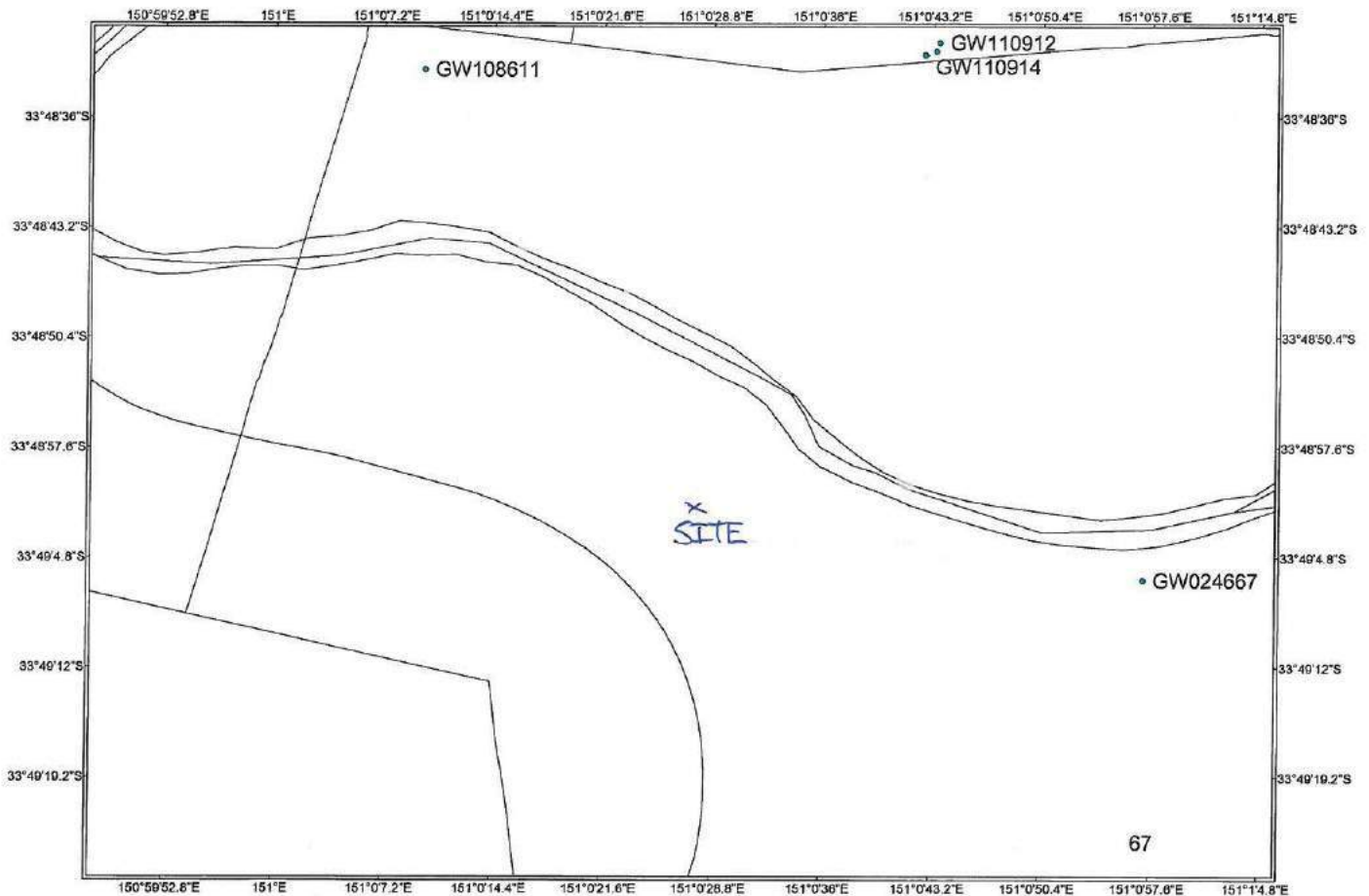


Photograph 11: Parramatta Public School playground with soft bitumen on surface, looking west.

APPENDIX B

REGISTERED GROUNDWATER BORES WITHIN 500 M OF THE SITE

NSW GW Map



Scale : Kilometres



Projection : Latitude/Longitude

Key	
• SMALLTWN	— NSW Railway Lines
• MEDTOWNS	— NSW Main Roads
• ALLBORES	□ Irrigation Dams
— NSW Major Rivers	□ Local Government Areas
— Nsw Rivers	□ Ground Water Management Areas

NSW Office of Water Work Summary

GW024667

Licence: 10BL019073

Licence Status: CONVERTED

Authorised Purpose(s):
Intended Purpose(s): 04

Work Type:
Work Status:
Construct.Method:
Owner Type:

Commenced Date:
Completion Date: 01/10/1966

Final Depth: 4.50 m
Drilled Depth: 4.60 m

Contractor Name:
Driller:
Assistant Driller:

Property: N/A
GWMA: 603
GW Zone:

Standing Water Level:
Salinity: fresh
Yield:

Site Details

Site Chosen By:

County
Form A: CUMBE
Licensed: CUMBERLA

Parish
CUMBE.048
STJOHN

Cadastre
99999
Whole Lot

Region: 10 - Sydney South Coast
River Basin: 213 - SYDNEY COAST - GEORGES
RIVER
Area/District:

CMA Map: 9130-3N
Grid Zone: ?

Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown

Northing: 6256207.0
Easting: 316368.0

Latitude: 33°49'06.3"S
Longitude: 151°00'57.2"E

GS Map: -

MGA Zone: 56

Coordinate Source: GPS Satell.

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Concrete Cylinder	-0.60	-0.60	914			

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
2.40	2.40	0.00	Unconsolidated	2.40					

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	4.57	4.57	Sand Water Supply	Sand	

Remarks

07/08/1974: SITED 68 HASSALL ST. PARRAMATTA

*** End of GW024667 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water Work Summary

GW108611

Licence: 10BL162941

Licence Status: CONVERTED

Authorised Purpose(s):
Intended Purpose(s): J

Work Type:
Work Status:
Construct.Method:
Owner Type:

Commenced Date:
Completion Date: 20/04/2005

Final Depth: 60.50 m
Drilled Depth: 60.50 m

Contractor Name:
Driller:
Assistant Driller:

Property: ROMAN CATHOLIC CHURCH 1 MARIST
PL PARRAMATTA 2150
GWMA:
GW Zone:

Standing Water Level: 6.200
Salinity:
Yield: 5.500

Site Details

Site Chosen By:

County
Form A: CUMBE
Licensed: CUMBERLA

Parish
CUMBE.18
FIELD OF M

Cadastre
1//1034092
Whole Lot 1//1034092

Region: 10 - Sydney South Coast
River Basin: 212 - HAWKESBURY RIVER
Area/District:

CMA Map: 9130-3N
Grid Zone: ?

Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source:

Northing: 6257213.0
Easting: 315129.0

Latitude: 33°48'32.9"S
Longitude: 151°00'09.8"E

GS Map: -

MGA Zone: 56

Coordinate Source: Google Earth

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PG-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Annulus	Concrete	-0.10	11.50	206			
1	1	Casing	Pvc Class 9	-0.50	29.50	140			suspended in, Screwed and Glued
1	1	Casing	Steel	-0.50	11.50	168	158		driven into, Welded

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
46.10	46.30	0.20	Unknown			5.00		00:25:00	4650.00
56.50	56.60	0.10	Unknown	6.20		0.20		00:25:00	5300.00

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	Fill	Fill	
1.00	3.00	2.00	Clay, brown	Clay	
3.00	5.50	2.50	Shale	Shale	
5.50	7.00	1.50	Sandstone, with Shale bedding	Sandstone	
7.00	22.00	15.00	Sandstone, grey	Sandstone	
22.00	23.30	1.30	Sandstone, soft	Sandstone	
23.30	46.10	22.80	Sandstone, grey	Sandstone	
46.10	46.30	0.20	Sandstone, fractured	Sandstone	
46.30	47.50	1.20	Sandstone, grey	Sandstone	
47.50	47.70	0.20	Sandstone, fractured	Sandstone	
47.70	56.50	8.80	Sandstone, grey	Sandstone	
56.50	56.60	0.10	Sandstone, fractured	Sandstone	
56.60	60.50	3.90	Sandstone, grey	Sandstone	

Remarks

20/04/2005: Form A Remarks:

Airlift tests at 60m = 5.5 Lps, 42m = 4.0 Lps. Water has a strange odour & is discoloured.
04/03/2010: Updated from original form A.

*** End of GW108611 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water Work Summary

GW110912

Licence: 10BL603583

Licence Status: ACTIVE

Authorised Purpose(s):
Intended Purpose(s): V1

Work Type:
Work Status:
Construct.Method:
Owner Type:

Commenced Date:
Completion Date: 20/01/2010

Final Depth: 10.00 m
Drilled Depth: 10.00 m

Contractor Name: Terratest Pty Ltd
Driller:
Assistant Driller:

Property: AVIS RENT A CAR SYSTEM PTY LTD
86 VICTORIA ROAD PARRAMATTA
2150 NSW

Standing Water Level: 7.000

GWMA:
GW Zone:

Salinity:
Yield:

Site Details

Site Chosen By:

County
Form A: CUMBE
Licensed: CUMBERLA

Parish
CUMBE.18
FIELD OF M

Cadastre
1/509643
Whole Lot 1/509643

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone: ?

Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source:

Northing: 6257285.0
Easting: 315997.0

Latitude: 33°48'31.1"S
Longitude: 151°00'43.6"E

GS Map: -

MGA Zone: 56

Coordinate Source:

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded
1	1	Opening	Screen	3.00	10.00	50		1	PVC Class 18, Screwed, A: 1.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
7.00	10.00	3.00	Unknown	7.00					

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.10	0.10	CONCRETE	Conglomerate	
0.10	0.50	0.40	FILL, SILTY CLAY, GRAVEL	Fill	
0.50	1.80	1.30	CLAY SANDY GREY RED	Clay Loam	
1.80	2.50	0.70	CLAY SANDY GREY BROWN	Clay Loam	
2.50	3.00	0.50	CLAY SANDY GREY	Clay Loam	
3.00	3.50	0.50	CLAY SANDY SOME SHALE FRAGMENTS	Clay Loam	
3.50	4.30	0.80	SHALE CLAY BROWN	Shale	
4.30	5.00	0.70	SHALE LOW STRENGTH, IRONSTONE, SANDSTONE	Shale	
5.00	5.20	0.20	SHALE LOW STRENGTH DARK GREY	Shale	
5.20	6.50	1.30	SHALE LOW STRENGTH BROWN SANDSTONE BANDS	Shale	
6.50	6.80	0.30	SANDSTONE LOW STRENGTH WHITE	Sandstone	
6.80	10.00	3.20	SANDSTONE MEDIUM STRENGTH WHITE	Sandstone	

Remarks

*** End of GW110912 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOWI does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water

Work Summary

GW110913

Licence: 10BL603583

Licence Status: ACTIVE

Authorised Purpose(s):
Intended Purpose(s): V1

Work Type:
Work Status:
Construct.Method:
Owner Type:

Commenced Date:
Completion Date: 20/01/2010

Final Depth: 10.00 m
Drilled Depth:

Contractor Name: Terratest Pty Ltd
Driller:
Assistant Driller:

Property: AVIS RENT A CAR SYSTEM PTY LTD
86 VICTORIA ROAD PARRAMATTA
2150 NSW

Standing Water Level: 7.000

GWMA:
GW Zone:

Salinity:
Yield:

Site Details

Site Chosen By:

County
Form A: CUMBE
Licensed: CUMBERLA

Parish
CUMBE.18
FIELD OF M

Cadastre
1/509643
Whole Lot 1/509643

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone: ?

Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source:

Northing: 6257267.0
Easting: 315992.0

Latitude: 33°48'31.7"S
Longitude: 151°00'43.3"E

GS Map: -

MGA Zone: 56

Coordinate Source:

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centrallisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Annulus	Waterworn/Rounded	0.00	0.00				
1	1	Opening	Screen	6.00	10.00	50		1	PVC Class 18, Screwed, A: 1.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
7.00	10.00	3.00	Unknown	7.00					

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.10	0.10	CONCRETE	Unknown	
0.10	0.20	0.10	CLAY SILTY RED BROWN	Unknown	
0.20	1.20	1.00	CLAY SANDY RED BROWN	Unknown	
1.20	2.00	0.80	CLAY SANDY RED	Unknown	
2.00	3.50	1.50	CLAY SANDY BROWN	Unknown	
3.50	4.50	1.00	CLAY SANDY BROWN/SHALE	Unknown	
4.50	4.90	0.40	SANDSTONE BROWN LOW STRENGTH	Unknown	
4.90	6.00	1.10	CLAY SANDY BROWN SHALE FRAGMENTS	Unknown	
6.00	6.20	0.20	SANDSTONE WEATHERED GREY WHITE	Unknown	
6.20	10.00	3.80	SANDSTONE WHITE	Unknown	

Remarks

*** End of GW110913 ***

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NSW Office of Water Work Summary

GW110914

Licence: 10BL603583

Licence Status: ACTIVE

 Authorised Purpose(s):
 Intended Purpose(s): V1

 Work Type:
 Work Status:
 Construct.Method:
 Owner Type:

 Commenced Date:
 Completion Date: 20/01/2010

 Final Depth: 6.00 m
 Drilled Depth: 6.00 m

 Contractor Name: Terratest Pty Ltd
 Driller:
 Assistant Driller:

 Property: AVIS RENT A CAR SYSTEM PTY LTD
 86 VICTORIA ROAD PARRAMATTA
 2150 NSW

Standing Water Level: 5.000

 GWMA:
 GW Zone:

 Salinity:
 Yield:

Site Details

Site Chosen By:

 County
 Form A: CUMBE
 Licensed: CUMBERLA

 Parish
 CUMBE.18
 FIELDOFM

 Cadastre
 1//509643
 Whole Lot 1//509643

 Region: 10 - Sydney South Coast
 River Basin: - Unknown
 Area/District:

 CMA Map:
 Grid Zone: ?

Scale:

 Elevation: 0.00 m (A.H.D.)
 Elevation Source:

 Northing: 6257260.0
 Easting: 315973.0

 Latitude: 33°48'31.9"S
 Longitude: 151°00'42.6"E

GS Map: -

MGA Zone: 56

Coordinate Source:

Construction

 Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure
 Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded
1	1	Opening	Screen	2.50	6.00	50		1	PVC Class 18, Screwed, A: 1.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
5.00	6.00	1.00	Unknown	5.00					

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	FILL, SILTY SAND BROWN	Fill	
0.20	0.40	0.20	FILL, SANDY CLAY RED GREY	Fill	
0.40	1.10	0.70	FILL, SANDY CLAY RED	Fill	
1.10	2.50	1.40	CLAY SANDY RED	Clay Loam	
2.50	3.20	0.70	CLAY RED	Clay Loam	
3.20	5.00	1.80	SILTSTONE, SHALE FRAGMENTS	Siltstone	
5.00	5.50	0.50	CLAY SANDY BROWN	Clay Loam	
5.50	6.00	0.50	SANDSTONE BROWN LOW STRENGTH	Sandstone	

Remarks

*** End of GW110914 ***

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APPENDIX C

LAND TITLES INFORMATION (SUPPLIED BY ADVANCED LEGAL SEARCHERS PTY LTD)

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)

ABN 82 147 943 842

P.O. Box 149
Yagoona NSW 2199

Telephone: +612 9644 1679
Mobile: 0412 169 809
Facsimile: +612 8076 3026
Email: alsearch@optusnet.com.au

23rd July, 2015

ALLIANCE GEOTECHNICAL
PO Box 1028,
ST MARYS NSW 1790

Attention: Benjamin Regan,

**RE: Arthur Phillip High School,
Macquarie Street,
Parramatta**

Note 1:	Lot 65 Section 17 DP 758829	(page 1)
Note 2:	Lot 413 DP 820541	(page 3)
Note 3:	Lot 64 Section 17 DP 758829	(page 4)
Note 4:	Lot 63A Section 17 DP 758829	(page 5)
Note 5:	Lot 63 Section 17 DP 758829	(page 6)
Note 6:	Lot 62 Section 17 DP 758829	(page 7)

Note 1:

Current Search

Folio Identifier 65/17/758829 (title attached)
Crown Plan 232 – 750 (plan attached)
Dated 20th July, 2015
Registered Proprietor:
MINISTER FOR EDUCATION AND TRAINING

Title Tree
Lot 65 Section 17 DP 758829

Folio Identifier 65/17/758829

Crown Land

Summary of proprietor(s)
Lot 65 Section 17 DP 758829

Year	Proprietor
	(Lot 65 Section 17 DP 758829)
2003 – todate	Minister for Education and Training
1990 - 2003	State of New South Wales
	(Allotment 65 Section 17 Town of Parramatta – Area 1 Rood 27 ½ Perches)
Prior – 1990	Crown Land
<i>(1945 – 1953)</i>	<i>(Special Lease 1945/1 Metropolitan, Parramatta Child Centre)</i>
<i>(1940 – 1990)</i>	<i>(Within Reserve 69063 from sale for Public School purposes)</i>
<i>(1936 – 1940)</i>	<i>(Reserve 66491 from sale (Reserve 66492 from lease generally) for future public requirements)</i>
<i>(1918 – 1940)</i>	<i>(Reserve from Occupation under Mining Reserve or Business Lease)</i>

Note 2:

Current Search

Folio Identifier 413/820541 (title attached)
DP 820541 (plan attached)
Dated 20th July, 2015
Registered Proprietor:
MINISTER FOR EDUCATION AND TRAINING

Title Tree Lot 413 DP 820541

Folio Identifier 413/820541

Crown Land

Summary of proprietor(s) Lot 413 DP 820541

Year	Proprietor
	(Lot 413 DP 820541)
2003 – todate	Minister for Education and Training
1990 – 2003	State of New South Wales
	(Part of Section 17 Town of Parramatta)
Prior – 1990	Crown Land
(1945 – 1953)	<i>(Special Lease 1945/1 Metropolitan, Parramatta Child Centre)</i>
(1940 – 1990)	<i>(Within Reserve 69063 from sale for Public School purposes)</i>
(1936 – 1940)	<i>(Reserve 66491 from sale (Reserve 66492 from lease generally) for future public requirements)</i>
(1918 – 1940)	<i>(Reserve from Occupation under Mining Reserve or Business Lease)</i>

Note 3:

Current Search

Folio Identifier 64/17/758829 (title attached)
Crown Plan 3225 – 3000 (plan attached)
Dated 20th July, 2015
Registered Proprietor:
MINISTER FOR EDUCATION AND TRAINING

Title Tree
Lot 64 Section 17 DP 758829

Folio Identifier 64/17/758829

Crown Land

Summary of proprietor(s)
Lot 64 Section 17 DP 758829

Year	Proprietor
	(Lot 64 Section 17 DP 758829)
2003 – todate	Minister for Education and Training
1990 - 2003	State of New South Wales
	(Allotment 64 Section 17 Town of Parramatta)
Prior – 1990	Crown Land
<i>(1940 – 1990)</i>	<i>(Within Reserve 69063 from sale for Public School purposes)</i>
<i>(1936 – 1940)</i>	<i>(Reserve 66491 from sale (Reserve 66492 from lease generally) for future public requirements)</i>
<i>(1925 – 1936)</i>	<i>(Resumed for Asylum for the Infirm Purposes)</i>
<i>(1918 – 1940)</i>	<i>(Reserve from Occupation under Mining Reserve or Business Lease)</i>

Note 4:

Current Search

Folio Identifier 63A/17/758829 (title attached)
Crown Plan 3225 – 3000 (plan attached)
Dated 20th July, 2015
Registered Proprietor:
MINISTER FOR EDUCATION AND TRAINING

Title Tree

Lot 63A Section 17 DP 758829

Folio Identifier 63A/17/758829

Crown Land

Summary of proprietor(s)

Lot 63A Section 17 DP 758829

Year	Proprietor
	(Lot 63A Section 17 DP 758829)
2003 – todate	Minister for Education and Training
1990 - 2003	State of New South Wales
	(Allotment 63A Section 17 Town of Parramatta)
1903 – 1990	Crown Land
<i>(1940 – 1990)</i>	<i>(Within Reserve 69063 from sale for Public School purposes)</i>
<i>(1936 – 1940)</i>	<i>(Reserve 66491 from sale (Reserve 66492 from lease generally) for future public requirements)</i>
<i>(1925 – 1936)</i>	<i>(Resumed for Asylum for the Infirm Purposes)</i>
<i>(1918 – 1940)</i>	<i>(Reserve from Occupation under Mining Reserve or Business Lease)</i>

Note 5:

Current Search

Folio Identifier 63/17/758829 (title attached)
Crown Plan 3225 – 3000 (plan attached)
Dated 20th July, 2015
Registered Proprietor:
MINISTER FOR EDUCATION AND TRAINING

Title Tree
Lot 63 Section 17 DP 758829

Folio Identifier 63/17/758829

Crown Land

Summary of proprietor(s)
Lot 63 Section 17 DP 758829

Year	Proprietor
	(Lot 63 Section 17 DP 758829)
2003 – todate	Minister for Education and Training
1990 - 2003	State of New South Wales
	(Allotment 63 Section 17 Town of Parramatta)
Prior – 1990	Crown Land
<i>(1940 – 1990)</i>	<i>(Within Reserve 69063 from sale for Public School purposes)</i>
<i>(1936 – 1940)</i>	<i>(Reserve 66491 from sale (Reserve 66492 from lease generally) for future public requirements)</i>
<i>(1925 – 1936)</i>	<i>(Resumed for Asylum for the Infirm Purposes)</i>
<i>(1918 – 1940)</i>	<i>(Reserve from Occupation under Mining Reserve or Business Lease)</i>

Note 6:

Current Search

Folio Identifier 62/17/758829 (title attached)

Crown Plan 3225 – 3000 (plan attached)

Dated 20th July, 2015

Registered Proprietor:

MINISTER FOR EDUCATION AND TRAINING

Title Tree

Lot 62 Section 17 DP 758829

Folio Identifier 62/17/758829

Crown Land

Summary of proprietor(s)

Lot 62 Section 17 DP 758829

Year	Proprietor
	(Lot 62 Section 17 DP 758829)
2003 – todate	Minister for Education and Training
1990 - 2003	State of New South Wales
	(Allotment 62 Section 17 Town of Parramatta)
Prior – 1990	Crown Land
<i>(1940 – 1990)</i>	<i>(Within Reserve 69063 from sale for Public School purposes)</i>
<i>(1936 – 1940)</i>	<i>(Reserve 66491 from sale (Reserve 66492 from lease generally) for future public requirements)</i>
<i>(1925 – 1936)</i>	<i>(Resumed for Asylum for the Infirm Purposes)</i>
<i>(1918 – 1940)</i>	<i>(Reserve from Occupation under Mining Reserve or Business Lease)</i>

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)

ABN 82 147 943 842

P.O. Box 149
Yagoona NSW 2199

Telephone: +612 9644 1679
Mobile: 0412 169 809
Facsimile: +612 8076 3026
Email: alsearch@optusnet.com.au

23rd July, 2015

ALLIANCE GEOTECHNICAL
PO Box 1028,
ST MARYS NSW 1790

Attention: Benjamin Regan,

**RE: Parramatta Public School,
Macquarie Street,
Parramatta**

Note 1:	Lot 1	DP 115296	(page 1)
Note 2:	Lot 2	DP 115296	(page 3)
Note 3:	Lot 3	DP 115296	(page 4)
Note 4:	Lot 414	DP 820542	(page 5)
Note 5:	Lot 23	DP 7809	(page 6)
Note 6:	Lot 24	DP 7809	(page 7)
Note 7:	Lot 25	DP 7809	(page 9)
Note 8:	Lot 26	DP 7809	(page 11)
Note 9:	Lot 27	DP 7809	(page 13)

Note 1:

Current Search

Folio Identifier 1/115296 (title attached)
DP 115296 (plan attached)
Dated 20th July, 2015
Registered Proprietor:
MINISTER FOR EDUCATION

Title Tree
Lot 1 DP 115296

Folio Identifier 1/115296

Certificate of Title Volume 612 Folio 245

Summary of proprietor(s)
Lot 1 DP 115296

Year	Proprietor
	(Lot 1 DP 115296)
1988 – todate	Minister for Education
	(Part of Dedicated Public School – Parish St John – CTVol 612 Fol 245)
1882 – 1988	The Honourable Francis Bathurst Suttor, minister for public instruction

Note 2:

Current Search

Folio Identifier 2/115296 (title attached)
DP 115296 (plan attached)
Dated 20th July, 2015
Registered Proprietor:
MINISTER FOR EDUCATION

Title Tree
Lot 2 DP 115296

Folio Identifier 2/115296

Certificate of Title Volume 484 Folio 84

Summary of proprietor(s)
Lot 2 DP 115296

Year	Proprietor
	(Lot 2 DP 115296)
1988 – todate	Minister for Education
	(Part of Dedicated Public School – Parish St John – CTVol 484 Fol 84)
1880 – 1988	The Council of Education, grantee

Note 3:

Current Search

Folio Identifier 3/115296 (title attached)

DP 115296 (plan attached)

Dated 20th July, 2015

Registered Proprietor:

MINISTER FOR EDUCATION

Title Tree
Lot 3 DP 115296

Folio Identifier 3/115296

Certificate of Title Volume 461 Folio 233

Summary of proprietor(s)
Lot 3 DP 115296

Year	Proprietor
	(Lot 3 DP 115296)
1988 – todate	Minister for Education
	(Part of Dedicated Public School – Parish St John – CTVol 461 Fol 233)
1877 – 1988	The Council of Education, grantee

Note 4:

Current Search

Folio Identifier 414/820542 (title attached)

DP 115296 (plan attached)

Dated 20th July, 2015

Registered Proprietor:

MINISTER FOR EDUCATION

Title Tree
Lot 414 DP 820542

Folio Identifier 414/820542

Crown Land

Summary of proprietor(s)
Lot 414 DP 820542

Year	Proprietor
	(Lot 414 DP 820542)
2003 – todate	Minister for Education
1990 – 2003	State of New South Wales
	(Part of Dedicated Public School – Areas 22 $\frac{3}{4}$ Perches & 2 Roods 33 $\frac{1}{4}$ Perches – Parish St John)
Prior – 1990	Crown Land
<i>(1891 – 1990)</i>	<i>(Part dedicated for Public School Area 2 Roods 33 $\frac{1}{4}$ Perches)</i>
<i>(1888 – 1990)</i>	<i>(Part dedicated for Public School Area 22 $\frac{3}{4}$ Perches)</i>

Note 5:

Current Search

Folio Identifier 23/7809 (title attached)

DP 7809 (plan attached)

Dated 20th July, 2015

Registered Proprietor:

MINISTER FOR EDUCATION

Title Tree Lot 23 DP 7809

Folio Identifier 23/7809

Certificate of Title Volume 2899 Folio 34

Certificate of Title Volume 2493 Folio 4

Summary of proprietor(s) Lot 23 DP 7809

Year	Proprietor
	(Lot 23 DP 7809)
1988 – todate	Minister for Education
	(Lot 23 DP 7809 – Area 1 Acre 0 Rood 29 $\frac{3}{4}$ Perches – CTVol 2899 Fol 34)
1918 – 1988	His Most Gracious Majesty King George the Fifth
	(Land in DP 68891 – Area 6 Acres 3 Roods – CTVol 2493 Fol 4)
1915 – 1918	William Richard Murray, merchant Thomas Davies Little John Henry Murray, merchant William Peter Nollen, builder Henry Mason
1914 – 1915	Fanny Edgeworth Webb, wife of merchant

Note 6:

Current Search

Folio Identifier 24/7809 (title attached)
DP 7809 (plan attached)
Dated 20th July, 2015
Registered Proprietor:
MINISTER FOR EDUCATION

Title Tree
Lot 24 DP 7809

Folio Identifier 24/7809

Certificate of Title Volume 3683 Folio 9

Certificate of Title Volume 3243 Folio 101

Certificate of Title Volume 2909 Folio 236

Certificate of Title Volume 2493 Folio 41

**Summary of proprietor(s)
Lot 24 DP 7809**

Year	Proprietor
	(Lot 24 DP 7809)
1988 – todate	Minister for Education
	(Lot 24 to 27 DP 7809 – Area 2 Roods 30 ½ Perches – CTVol 3683 Fol 9)
1925 – 1988	His Most Gracious Majesty King George the Fifth <i>(for the purposes of public instruction)</i>
	(Lot 24 DP 7809 – CTVol 3243 Fol 101)
1921 – 1925	War Service Homes Commissioner
	(Lot 24 DP 7809 and other lands – CTVol 2909 Fol 236)
1919 – 1921	William Richard Murray, merchant
	(Land in DP 68891 – Area 6 Acres 3 Roods – CTVol 2493 Fol 4)
1915 – 1919	William Richard Murray, merchant Thomas Davies Little John Henry Murray, merchant William Peter Nollen, builder Henry Mason
1914 – 1915	Fanny Edgeworth Webb, wife of merchant

Note 7:

Current Search

Folio Identifier 25/7809 (title attached)
DP 7809 (plan attached)
Dated 20th July, 2015
Registered Proprietor:
MINISTER FOR EDUCATION

Title Tree
Lot 25 DP 7809

Folio Identifier 25/7809

Certificate of Title Volume 3683 Folio 9

Certificate of Title Volume 2910 Folio 5

Certificate of Title Volume 2493 Folio 41

Summary of proprietor(s)
Lot 25 DP 7809

Year	Proprietor
	(Lot 25 DP 7809)
1988 – todate	Minister for Education
	(Lot 24 to 27 DP 7809 – Area 2 Roods 30 ½ Perches – CTVol 3683 Fol 9)
1925 – 1988	His Most Gracious Majesty King George the Fifth <i>(for the purposes of public instruction)</i>
	(Lot 25 DP 7809 and other lands – CTVol 2910 Fol 5)
1919 – 1925	John Henry Murray, merchant
	(Land in DP 68891 – Area 6 Acres 3 Roods – CTVol 2493 Fol 4)
1915 – 1919	William Richard Murray, merchant Thomas Davies Little John Henry Murray, merchant William Peter Nollen, builder Henry Mason
1914 – 1915	Fanny Edgeworth Webb, wife of merchant

Note 8:

Current Search

Folio Identifier 26/7809 (title attached)
DP 7809 (plan attached)
Dated 20th July, 2015
Registered Proprietor:
MINISTER FOR EDUCATION

Title Tree
Lot 26 DP 7809

Folio Identifier 26/7809

Certificate of Title Volume 3683 Folio 9

Certificate of Title Volume 2910 Folio 3

Certificate of Title Volume 2493 Folio 41

Summary of proprietor(s) Lot 26 DP 7809

Year	Proprietor
	(Lot 26 DP 7809)
1988 – todate	Minister for Education
	(Lot 24 to 27 DP 7809 – Area 2 Roods 30 ½ Perches – CTVol 3683 Fol 9)
1925 – 1988	His Most Gracious Majesty King George the Fifth <i>(for the purposes of public instruction)</i>
	(Lot 26 DP 7809 and other lands – CTVol 2910 Fol 3)
1919 – 1925	John Henry Murray, merchant
	(Land in DP 68891 – Area 6 Acres 3 Roods – CTVol 2493 Fol 4)
1915 – 1919	William Richard Murray, merchant Thomas Davies Little John Henry Murray, merchant William Peter Nollen, builder Henry Mason
1914 – 1915	Fanny Edgeworth Webb, wife of merchant

Note 9:

Current Search

Folio Identifier 27A/449406 (title attached)

DP 449406 (plan attached)

Dated 20th July, 2015

Registered Proprietor:

MINISTER FOR EDUCATION

Title Tree

Lot 27A DP 449406

Folio Identifier 27A/449406

Certificate of Title Volume 3683 Folio 9

Certificate of Title Volume 2909 Folio 237

Certificate of Title Volume 2493 Folio 41

**Summary of proprietor(s)
Lot 27A DP 449406**

Year	Proprietor
	(Lot 27A DP 449406)
1988 – todate	Minister for Education
	(Lot 24 to 27 DP 7809 – Area 2 Roods 30 ½ Perches – CTVol 3683 Fol 9)
1925 – 1988	His Most Gracious Majesty King George the Fifth <i>(for the purposes of public instruction)</i>
	(Lot 27 DP 7809 and other lands – CTVol 2909 Fol 237)
1919 – 1925	William Peter Nollen, builder
	(Land in DP 68891 – Area 6 Acres 3 Roods – CTVol 2493 Fol 4)
1915 – 1919	William Richard Murray, merchant Thomas Davies Little John Henry Murray, merchant William Peter Nollen, builder Henry Mason
1914 – 1915	Fanny Edgeworth Webb, wife of merchant

APPENDIX D

HISTORICAL AERIAL PHOTOGRAPHS

1930



1943



1951

