



***GeoEnviro Consultancy Pty Ltd***

Unit 5, 39-41 Fourth Avenue, Blacktown, NSW 2148, Australia  
PO Box 1543, Macquarie Centre, North Ryde, NSW 2113

ABN: 62 084 294 762

Tel: (02) 9679 8733

Fax: (02) 9679 8744

Email: [geoenviro@exemail.com.au](mailto:geoenviro@exemail.com.au)

## **Report**

### **Preliminary Environmental Site Assessment Proposed Redevelopment Armidale High School, Butler Street Armidale NSW**

Prepared for  
**NBRS Architecture**  
**Level 3, 4 Glen Street**  
**MILSONS POINT NSW 2061**

**Ref: JG17064C-r1**  
**October 2018**



***GeoEnviro Consultancy Pty Ltd***

Unit 5, 39-41 Fourth Avenue, Blacktown, NSW 2148, Australia  
PO Box 1543, Macquarie Centre, North Ryde, NSW 2113

ABN: 62 084 294 762

Tel: (02) 9679 8733

Fax: (02) 9679 8744

Email: [geoenviro@exemail.com.au](mailto:geoenviro@exemail.com.au)

12<sup>th</sup> October 2018

Our Ref: JG17064C-r1

NBRS Architecture  
Level 3, 4 Glen Street  
MILSONS POINT NSW 2061

Attention: Mr Andrew Duffin

Dear Sir,

**Re Preliminary Environmental Site Assessment Report  
Proposed Redevelopment  
Armidale High School, Butler Street, Armidale**

We are pleased to submit our Preliminary Environmental Site Assessment report for the Proposed Redevelopment for the above site.

This report should be read in conjunction with our geotechnical report (ref JG07064C-r2 dated October 2018) and attached Important Information about your Environmental Site Assessment Report.

Should you have any queries, please contact the undersigned.

Yours faithfully

**GeoEnviro Consultancy Pty Ltd**

Solern Liew CPEng NER  
Director

## TABLE OF CONTENTS

| <u>Section</u>                                         | <u>Page</u> |
|--------------------------------------------------------|-------------|
| <b>1. INTRODUCTION.....</b>                            | <b>1</b>    |
| <b>2. OBJECTIVES AND SCOPE OF WORK.....</b>            | <b>1</b>    |
| <b>3. SITE INFORMATION.....</b>                        | <b>2</b>    |
| 3.1 Site Locality and Description .....                | 2           |
| 3.2 Site Topography, Geological and Hydrogeology ..... | 2           |
| <b>4. SITE HISTORY, RECORDS AND DATA .....</b>         | <b>4</b>    |
| 4.1 Aerial Photographs.....                            | 4           |
| 4.2 Land Title Searches – Historic Landuse.....        | 5           |
| 4.3 NSW EPA Records .....                              | 5           |
| 4.4 Council Section 149 (2) Certificate.....           | 5           |
| <b>5. INVESTIGATION METHODOLOGY.....</b>               | <b>6</b>    |
| 5.1 Field Investigation .....                          | 6           |
| 5.2 Laboratory Analysis.....                           | 7           |
| <b>6. ASSESSMENT CRITERIA AND GUIDELINES.....</b>      | <b>8</b>    |
| 6.1 Assessment Criteria.....                           | 8           |
| 6.2 Waste Classification Guidelines .....              | 10          |
| <b>7. RESULTS OF THE INVESTIGATION .....</b>           | <b>12</b>   |
| 7.1 Subsurface Conditions .....                        | 12          |
| 7.2 Laboratory Test Results.....                       | 13          |
| 7.3 Quality Assurance/ Quality Control (QA/QC).....    | 15          |
| <b>8. ASSESSMENT AND RECOMMENDATIONS.....</b>          | <b>16</b>   |
| 8.1 Preliminary Contamination Assessment .....         | 16          |
| 8.2 Investigation/Remediation/Management Options ..... | 17          |
| 8.3 Waste Classification .....                         | 19          |
| <b>9. LIMITATIONS .....</b>                            | <b>20</b>   |

## **LIST OF DRAWINGS**

Drawing No 1 Borehole Location Plan

## **LIST OF TABLES**

|         |                                                             |
|---------|-------------------------------------------------------------|
| Table 1 | Analytical Program                                          |
| Table 2 | Summary of Analytical Results - pH and Heavy Metals         |
| Table 3 | Summary of Analytical Results – OCP                         |
| Table 4 | Summary of Analytical Results – PCB                         |
| Table 5 | Summary of Analytical Results – TRH and BTEX                |
| Table 6 | Summary of Analytical Results – PAH                         |
| Table 7 | Summary of Analytical Results – Asbestos                    |
| Table 8 | Summary of Analytical Results – (TCLP) Heavy Metals and PAH |

## **LIST OF APPENDICES**

|            |                                                                                             |
|------------|---------------------------------------------------------------------------------------------|
| Appendix A | Borehole Reports                                                                            |
| Appendix B | Sampling Quality Assurance Plan                                                             |
| Appendix C | Aerial Photos, Land Titles, EPA Searches, Groundwater Bores, Section 149                    |
| Appendix D | Laboratory Test Certificates – Geotechnical                                                 |
| Appendix E | Laboratory Test Certificates – Contamination and Salinity                                   |
| Appendix F | Unexpected Finds Protocol                                                                   |
| Appendix G | Important Information about your Environmental Site Assessment Report.<br>Explanatory Notes |

## **1. INTRODUCTION**

This report presents the results of our preliminary environmental site assessment for the proposed redevelopment of Armidale High School in Armidale, as shown on the attached Drawing No 1. The investigation was commissioned by Mr Andrew Duffin of NBRS Architecture following our fee proposal referenced PG17304A dated 27<sup>th</sup> July 2017.

This assessment was undertaken in conjunction with our geotechnical investigation report referenced in our report JG17064C-r2 dated 12<sup>th</sup> October 2018.

We understand that the department proposes to consolidate the students from the Duval High School to the Armidale High School and new school buildings up to 4 storeys high are proposed for Armidale High School to accommodate the additional students.

## **2. OBJECTIVES AND SCOPE OF WORK**

The objectives of this environmental site assessment were to;

- Review the site history and available site information from public records to assess the potential areas and contaminants of concern.
- Assess the subsurface soil contamination with limited chemical analysis including asbestos analysis and this is limited to the nominated borehole locations
- Provide comments on further remediation, management and /or investigation requirements (if any) considered suitable for the proposed redevelopment of the school, and
- Assess the waste classification of soils identified during our borehole investigation for offsite disposal

The scope of work for this environmental assessment consisted of:

- A review of available information on the site history from aerial photographs and historical titles search from NSW Land and Property Information (LPI),
- A search of records on previous notices issued by NSW EPA.
- A search of information on Groundwater Boreholes in the area from the NSW Natural Resource Atlas (NRA)

- A review of Armidale Regional Council's Section 149(2) Zoning Certificates
- An inspection of the site to identify apparent or suspected areas of contamination and observing visible signs of soil contamination from the boreholes in particular presence of fill and asbestos cement material (ACM).
- Soil sampling from the geotechnical boreholes and chemical analysis to detect the presence or otherwise of the contaminants of concern.

### **3. SITE INFORMATION**

#### **3.1 Site Locality and Description**

Armidale High School is situated on the north-western corner of Butler Street and Kentucky Street and south of the railway corridor in Armidale. The site is roughly L-shaped with an approximate 370m frontage to Butler Street and 630m frontage to Kentucky Street. Mann Street forms the northern boundary and Stephen Street and Barry Street form the western boundary. Total site area is about 18 hectares.

School buildings up to four-storey high occupy the eastern portion of the school premises with the remaining portions of the site consisting of playing fields and open space with a small dam on the south western corner.

The school is situated within a residential area with residential properties to north, west and south. The Armidale arboretum is located to the south of the school and industrial/commercial properties are situated about 500m north-west of the school.

#### **3.2 Site Topography, Geological and Hydrogeology**

Armidale High School is situated in the northern tablelands of Armidale. Ground surface within the school premises slopes down in a general direction to the north east at angles of between 3 and 6 degrees with some relatively steeper slopes of up to 12 degrees on the south eastern portion.

Based on Google Earth, the school building area is at about 1010m to 1021m above sea level with the highest point of the school at about 1030m above sea level on the south eastern corner and the lowest point of the school at about 1003m on the north eastern corner. The slope gradient is relatively gentler on the western portion of the site with ground surface levels ranging from 1006 to 1017m above sea level.

Ground surface within the school building area has been modified by cut and fill up to 3m to create the school building platforms, playing courts and car parks. Some benching of the playing fields/open space areas by cut and fill was also carried out.

The 1:1,000,000 Geology of New South Wales (Reference 2) indicates the site to be underlain by gravel, sand, clay, poorly consolidated conglomerate, sandstone and siltstone.

Groundwater is expected to flow west into Martins Gully which is situated about 2km west of the site. We expect permanent groundwater table to be at a significant depth (i.e. in excess of 3m from ground surface). Infiltration of surface water through subsurface ground is expected to be limited due to the impervious nature of residual soil.

Our search of the NSW Department Infrastructure, Planning and Natural Resources groundwater database for the region found no available data points within 1km from the site.

#### 4. SITE HISTORY, RECORDS AND DATA

A desktop study of site history involving a review of Council's Section 149 certificates, NSW EPA search, land title search, groundwater search and aerial photographs was carried out in order to establish previous landuse and to assess site contamination. Reference should be made to Appendix C for details of the searches.

The following is a summary of the historical and data searches;

##### 4.1 Aerial Photographs

The following is a summary of the observations made from the review of historical aerial photos;

| Year | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1962 | The Armidale High School premises was formed with the majority of the school buildings constructed towards the eastern portion of the property. An oval was constructed north of the school buildings with the remainder western portion of the property vacant. The railway line to the north and residential properties to the north and east were constructed. The southern property appeared to have been vacant land with some residential and industrial properties to the west. |
| 1970 | There was no significant change within the school premises or Subject Site since the 1960s with some minor market gardening towards the south-western corner of the property. The region and surrounding properties remained the same since the 1960s.                                                                                                                                                                                                                                 |
| 1979 | There was little to no change within Armidale High School, or the surrounding properties or region.                                                                                                                                                                                                                                                                                                                                                                                    |
| 1994 | <p>The school buildings towards the eastern portion of the property remained the same since the 1960s with some minor agricultural activities appeared to the west of the school buildings.</p> <p>There was a slight increase in residential properties to the south of the school with an increase in industrial activity about 500m north-west of the school premises.</p>                                                                                                          |

## 4.2 Land Title Searches – Historic Landuse

Description of historical information on the previous owners of the site was obtained from NSW Land & Property Information (LPI). The information can often be linked to possible land uses and provides an indication of potential contamination on the site.

The following is a summary of information obtained of current and previous proprietors.

| <b>Date of Acquisition and term held</b> | <b>Registered Proprietor(s) &amp; Occupations where available</b>                                                                                              | <b>Reference to Title at Acquisition and sale</b> |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| 08.03.1918<br>(1918 to 1995)             | Dedicated for Public High School Site                                                                                                                          | Government Gazette                                |
| 22.03.1918                               | Within Reserve No. 1477 from Occupation under any Miners Right or Business Licence                                                                             | Government Gazette                                |
| 21.07.1995<br>(1995 to Date)             | # Minister for Education and Training<br>(Acquired by compulsory acquisition (just terms compensation) act 1991, for the purposes of the Education Reform Act) | Government Gazette<br>Now<br>1/49/758032          |

## 4.3 NSW EPA Records

A search of NSW OEH contaminated land register and licensing register indicate the site to have no records kept under the Contaminated Land Management Act 1997 and Environmentally Hazardous Chemical Act 1985. Refer to Appendix C for details of the NSW EPA search.

## 4.4 Council Section 149 (2) Certificate

A copy of the Section 149 (2) certificate was obtained from Armidale Regional Council to determine conditions applicable to the site in relation to the Contaminated Land Management Act 1997 and Contaminated Land Management Amendment Act 2009. Reference may be made to the certificate attached in Appendix C.

The certificate indicates the following;

- The site is not within land declared to be an investigation area or remediation site under Part 3 of that Act.
- The site is not subject to an investigation order or a remediation order within the meaning of the Act
- The site is not the subject of a voluntary investigation proposal (or voluntary remediation proposal) the subject of the Environmental Protection Authority's agreement under Section 19 or 26 of that Act.
- The site is not the subject of a site audit statement within the meaning of Part 4 of that Act.

## **5. INVESTIGATION METHODOLOGY**

### **5.1 Field Investigation**

The field work for the investigation was carried out on the 4<sup>th</sup> and 5<sup>th</sup> November 2017 and consisted of drilling boreholes at nine nominated locations (BH 1 to BH 9) as shown on the attached Drawing No 1.

Prior to borehole drilling, underground services checks were carried out using available drawing provided by Dial-Before-You-Dig. An underground services locator equipped with an electromagnetic device was engaged as an extra precautionary measure to reduce risk of damage to underground services caused by boreholes drilling.

The boreholes were drilled using a truck mounted Edson 3000 drill rig equipped for site investigation purposes. The boreholes were drilled using continuous flight augers attached to a V-bit through topsoil, fill and into natural soil and in some boreholes into sandstone bedrock using a Tungsten Carbide (TC) bit to depths varying from 2.3m to 7.0m below existing ground surface.

To assess the strength of the subsurface sandy soil, Standard Penetration Tests (SPT) were carried out in the boreholes. The SPT tests involved driving a split tube steel spoon into the ground using a standard weight (ie 63.5kg) hammer and measuring the penetration resistance in number of blow counts per 150mm penetration. Hand penetrometer tests were carried out the SPT split tube clayey samples in order to augment the SPT test results.

The boreholes were observed for groundwater during and upon completion of the borehole drilling.

The site investigation was carried out in general accordance with our Work Methodology Statement (File JG17061A-L1 Rev 0 dated 28<sup>th</sup> September 2017) monitored on a full-time basis by our geotechnical engineer who was responsible for locating the boreholes, carrying out insitu field testing and recording the subsurface profiles encountered. Upon completion of the investigation, the boreholes were backfilled with drilling spoil. Details of the subsurface profiles are summarised on the Borehole Reports in Appendix A of this report.

## **5.2 Laboratory Analysis**

Four soil samples were taken from the boreholes for laboratory analysis by Envirolab Services Pty Ltd, a NATA accredited laboratory to aid assessment of soil contamination and waste classification. The soil samples were analysed for contaminants of concern consisting of;

- Heavy Metals - Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Mercury (Hg), Lead (Pb), Nickel (Ni) and Zinc (Zn)
- Organochlorine Pesticides (OCP).
- Polychlorinated Biphenyls (PCB)
- Total Recoverable Hydrocarbons (TRH)
- Benzene, Toluene, Ethyl Benzene and Xylene (BTEX)
- Polycyclic Aromatic Hydrocarbon (PAH)
- TCLP – heavy metals and PAH
- pH.

The analytical program is presented in Table 1. Laboratory results for soil samples are summarised in Tables 2 to 8. The soil analysis was performed by Envirolab Services Pty Ltd, a laboratory accredited by the National Association of Testing Authorities (NATA). The analytical results and methods employed are presented in the Laboratory Test Report in Appendix E.

## **6. ASSESSMENT CRITERIA AND GUIDELINES.**

### **6.1 Assessment Criteria**

The results of laboratory analyses for this investigation were compared with published Australian contamination assessment criteria. These Criteria were originally presented in the Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites, November 1992 (ANZECC/NHMRC Guidelines, Reference 2). The OEH endorsed the use of these guidelines for the assessment of contaminated sites.

More recent guidelines such as those published by the OEH and National Environmental Health Forum (NEHF) (Reference 4) are commonly used to assess contaminant concentrations. The NEHF criteria which was recently updated by the National Environment Protection Council Service Corporation (NEPC) in the National Environmental Protection (Assessment of Contaminated Sites) Measure (NEPM) – Schedule B1 (Reference 5) includes health-based soil investigation levels (HBILs) and this was adopted by OEH in May 2013.

HBILs are scientifically based, generic assessment criteria designed to be used in the first stage (Tier 1 or ‘screening’) of an assessment of potential risks to human health from chronic exposure to contaminants. They are intentionally conservative and are based on a reasonable worst-case scenario

For the purpose of assessing the contamination status of the site, the criteria for the public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths, HBILs ‘C’ has been adopted as the Site Criteria. The criteria for the most sensitive landuse, that being HBIL A residential with garden/accessible soil, is also included in the assessment for comparison.

The more recent updates to the NEPM criteria (Reference 5) have included Health Screening Levels (HSL) developed by the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) leading to the adoption of health criteria for TRH, BTEX and PAH. The HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation and direct contact pathways.

The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures and they apply to different soil types and depths below surface up to 4 m depth.

For the purpose of assessing the contamination status of the site for TRH, BTEX and PAH, the HSL A and B (Low to high density residential) have been adopted.

The NEPC also includes EIL criteria for the protection of species based on 95% survival and this criteria is based on average background concentrations (ABC) for individual sites and added contaminant levels (ACL) calculated from survival rates for various species to contaminant exposures in different settings. For ecological levels for TPH, BTEX and PAH, the NEPC has provided ecological screening level (ESL) for the assessment. The EIL and ESL criteria have been included in the relevant tables as a sensitivity measure for the protection of ecological diversity within the site.

The NEPM 2013 guidelines (Reference 7) permit the presence of foreign matter within the fill to be retained within the site subject to compliant of the fill material to the Site Criteria and aesthetically acceptable (eg malodorous soils, discoloured chemical deposits, stained soil, large monolithic deposits/large inert foreign matter, putrescible refuse and animal remains). Though the guidelines do not outline specific trigger values, we consider fill containing greater than 5% by weight of foreign matter to be aesthetically unacceptable, therefore the insitu fill is within acceptable limits.

The results of laboratory analysis of individual samples have been directly compared with the Criteria. The relevant criteria are presented in the summary table of results (Table 2 to 8).

## 6.2 Waste Classification Guidelines

For off-site disposal of fill, contaminated material and surplus soil excavated as part of the proposed development works are regulated by the provision of the Protection of the Environment Operations Act (POEO Act 1997) and associated regulations and guidelines including the OEH guideline on Classifying Waste (Reference 14).

There are two types of chemical contaminants concentrations used to classify waste as follows;

- Specific contaminant concentration (SCC)
- Leachable concentration of any chemical contaminant using the toxicity characteristics leaching procedure (TCLP).

Classifying waste based on SCC alone is based on the following thresholds (ie CT1 & CT2);

| Analytes                                            | Maximum values of specific contaminant concentration (SCC) for classification without TCLP |                        |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------|
|                                                     | General Solid Waste                                                                        | Restricted Solid Waste |
|                                                     | CT1 (mg/kg)                                                                                | CT2 (mg/kg)            |
| Pb                                                  | 100                                                                                        | 400                    |
| Cd                                                  | 20                                                                                         | 80                     |
| Cr (IV)                                             | 100                                                                                        | 400                    |
| Ni                                                  | 40                                                                                         | 160                    |
| As                                                  | 100                                                                                        | 400                    |
| Hg                                                  | 4                                                                                          | 16                     |
| OCP                                                 | NA                                                                                         | NA                     |
| PCB                                                 | NA                                                                                         | NA                     |
| Benzo(a)pyrene                                      | 0.8                                                                                        | 3.2                    |
| PAH                                                 | NA                                                                                         | NA                     |
| TRH C <sub>6</sub> -C <sub>9</sub> <sup>(a)</sup>   | NA                                                                                         | NA                     |
| TRH C <sub>10</sub> -C <sub>36</sub> <sup>(a)</sup> | NA                                                                                         | NA                     |
| Benzene                                             | 10                                                                                         | 40                     |
| Toluene                                             | 288                                                                                        | 1152                   |
| Xylenes                                             | 1000                                                                                       | 4000                   |

Note: TCLP – Leachable Concentration  
ND – Not Detected

CT – Total Concentration Criteria  
NA – Not Available

Classifying waste based on both SCC and TCLP is based on the following thresholds (ie TCLP1/TCLP2 and SCC1/SCC2);

| Analytes                                            | Waste Classification |       |                        |       |
|-----------------------------------------------------|----------------------|-------|------------------------|-------|
|                                                     | General Solid Waste  |       | Restricted Solid Waste |       |
|                                                     | TCLP1                | SCC1  | TCLP2                  | SCC2  |
| Pb                                                  | 5                    | 1500  | 20                     | 6000  |
| Cd                                                  | 1                    | 100   | 4                      | 400   |
| Cr                                                  | 5                    | 1900  | 20                     | 7600  |
| Ni                                                  | 2                    | 1050  | 8                      | 4200  |
| As                                                  | 5                    | 500   | 20                     | 2000  |
| Hg                                                  | 0.2                  | 50    | 20                     | 200   |
| OCP                                                 | NA                   | NA    | NA                     | NA    |
| PCB                                                 | NA                   | <50   | NA                     | <50   |
| Benzo(a)pyrene                                      | 0.04                 | 10    | 0.16                   | 23    |
| PAH                                                 | NA                   | 200   | NA                     | 800   |
| TRH C <sub>6</sub> -C <sub>9</sub> <sup>(a)</sup>   | NA                   | 650   | NA                     | 2600  |
| TRH C <sub>10</sub> -C <sub>36</sub> <sup>(a)</sup> | NA                   | 10000 | NA                     | 40000 |
| Benzene                                             | 0.5                  | 18    | 2                      | 72    |
| Ethyl Benzene                                       | 30                   | 1080  | 120                    | 4320  |
| Toluene                                             | 14.4                 | 518   | 57.6                   | 2073  |
| Xylenes                                             | 50                   | 1800  | 200                    | 7200  |

Note: TC – Total Concentration (mg/kg)      LP – Leachable Concentration (mg/L)  
TCLP – Leachable Concentration Criteria      SCC – Total Concentration Criteria  
ND – Not Detected      NA – Not Available

In this study, the waste was classified based on both SCC alone.

## **7. RESULTS OF THE INVESTIGATION**

### **7.1 Subsurface Conditions**

Reference should be made to the attached Borehole Reports in Appendix A for subsurface profiles encountered in the boreholes. The following is a summary of the subsurface profiles encountered in the boreholes during the investigation;

#### Topsoil and Topsoil/Fill

Topsoil and Topsoil/Fill were encountered on the surface in all boreholes consisting predominantly of Clayey Silt of low liquid limit. The thickness of the topsoil was found to have thickness of 200mm to 400mm.

#### Fill

Fill was encountered beneath the topsoil/fill in BH 1, 5 and 9 comprising of low to medium plasticity Silty Clay and Gravelly Silty Clay. The fill was found to have thickness ranging from 0.2m to 1.4m and generally assessed to be dry to moist. The fill was assessed to be poorly compacted.

#### Natural Soil

Underlying the topsoil and fill, natural soil was found in all boreholes at depths ranging from 0.2m to 1.4m. The natural soil was found to consist predominantly of medium to high plasticity Silty Clay and Gravelly Silty Clay with the inclusion of gravel and sand. Some low to medium plasticity Silty Clay was encountered in some boreholes and in BH 7 at a depth of 1.4m below existing ground surface, dense Gravelly Clay with ironstone cobbles were encountered. Based on the SPT and hand penetrometer test results, the natural clayey soil was generally found to be very stiff and dry to moist in the upper profiles and becoming hard and dry at lower depths.

With the exception of BH 7, interbedded Siltstone and clay was encountered in all boreholes at depths ranging from 2.2m to 3.8m below existing ground surface and this stratum was assessed to be extremely low strength (ie for siltstone) with soil-like properties or of hard consistency (ie for soil).

### Bedrock

Extremely low to very low strength siltstone was encountered in BH 2 to 5 at depths ranging from 4.0m to 6.0m below existing ground surface. Low to medium strength sandstone was encountered in BH 1, 6, 8 and 9 at depths ranging from 2.7m to 3.8m below existing ground surface.

### Groundwater

Groundwater was not encountered in any of the boreholes during or shortly after completion of the site investigation

## **7.2 Laboratory Test Results**

Reference should be made to Table 1 for sampling schedule and Drawing No 1 for sampling location plan. The following is a summary of the laboratory test results and our assessment;

### Heavy Metals

A total of four individual samples (BH 1 [0.0-0.2m], BH 4 [0.2-0.4m], BH 5 [0.8-1.0m] and BH 8 [0.2-0.4m]) were analysed for a range of heavy metals consisting of As, Cd, Cr, Cu, Pb, Hg, Ni and Zn. All individual samples analysed were found to have concentrations of heavy metals of concern to be within the Site Criteria. The results are summarised in Table 2.

These samples were also analysed for leachable concentration (ie TCLP) and all samples encountered negligible concentrations or concentrations below laboratory detection limits. The TCLP results are summarised in Table 8.

### Organochlorine Pesticides (OCP)

A total of four individual samples (BH 1 [0.0-0.2m], BH 4 [0.2-0.4m], BH 5 [0.8-1.0m] and BH 8 [0.2-0.4m]) were analysed for a range of organochlorine pesticides.

All concentrations of OCP were found to have negligible concentrations below detection limits and therefore within the Site Criteria. The results are summarised in Table 3.

### Polychlorinated Biphenyls (PCB)

A total of four individual samples (BH 1 [0.0-0.2m], BH 4 [0.2-0.4m], BH 5 [0.8-1.0m] and BH 8 [0.2-0.4m]) were analysed for a range of Polychlorinated Biphenyls

All concentrations of PCB were found to be below detection limits and therefore within the Site Criteria. The results are summarised in Table 4.

### Total Recoverable Hydrocarbons (TRH)

A total of four individual samples (BH 1 [0.0-0.2m], BH 4 [0.2-0.4m], BH 5 [0.8-1.0m] and BH 8 [0.2-0.4m]) were analysed for TRH.

All concentrations of TRH were found to be below detection limits and therefore within the Site Criteria. The results are summarised in Table 5.

### Polycyclic Aromatic Hydrocarbons (PAH)

A total of four individual samples (BH 1 [0.0-0.2m], BH 4 [0.2-0.4m], BH 5 [0.8-1.0m] and BH 8 [0.2-0.4m]) were analysed for PAH. All concentrations of PAH were found to be below detection limits and therefore within the Site Criteria except in BH 8 [0.2-0.4m] which was found to have concentration of Benzo(a)pyrene TEQ of 3mg/kg, equal to the Site Criteria.

The slightly elevated concentrations of Benzo(a)pyrene TEQ in BH 8 is likely to be due to the leaching of PAH from the asphaltic driveway and does not constitute a contamination “hot-spot”. The results are summarised in Table 6.

These samples were also analysed for leachable concentration (ie TCLP) and all samples encountered negligible concentrations or concentrations below laboratory detection limits. The TCLP results are summarised in Table 8.

### Asbestos

A total of four individual samples (BH 1 [0.0-0.2m], BH 4 [0.2-0.4m], BH 5 [0.8-1.0m] and BH 8 [0.2-0.4m]) were analysed for the presence of Asbestos. All soil samples analysed did not detect respirable asbestos fibres. The results are summarised Table 7.

### **7.3 Quality Assurance/ Quality Control (QA/QC)**

#### Chain of Custody Forms and Preservation

The fieldwork was carried out in accordance with standard written procedures which included collection of samples in new glass jars, preservation of samples in ice chests and transportation of samples to the contract laboratory under chain of custody documentation.

#### Laboratory QA

EnviroLab Services carried out internal QA/QC procedures which normally includes one or more of the following;

- Preparation and analysis of duplicate and triplicate samples to assess precision of laboratory results,
- A spike and duplicate spike is prepared for each sample batch. This involves spiking a sample with a known concentration of contaminant to verify the absence of matrix effects and to assess precision,
- Analysis of sample batch as reagent blanks to monitor reagent purity and as an overall procedural blank. Reagent blank will also be run after samples with a high concentration to prevent carry over.
- A surrogate is added to all samples to monitor sample matrix effects throughout all analytical stages by calculating the % recovery at the completion of the analysis.

The laboratory control results are included in the laboratory test reports in Appendix D.

#### QA/QC Assessment

The QA/QC indicators either all complied with the required standards or showed variations that would have no significant effect on the quality or interpretation of the data. It is therefore assessed that for the purposes of this analysis, the QA/QC results are adequate and the quality of the data is acceptable for use in this contamination assessment.

## **8. ASSESSMENT AND RECOMMENDATIONS**

### **8.1 Preliminary Contamination Assessment**

Based on a review of available historical records, the site has been owned and occupied by the Government and Minister for Education and dedicated as a public high school since 1918. Historical aerial photographs indicate the majority of the school buildings to have been constructed since the 1962 with the remainder of the site being predominantly vacant.

The borehole investigation indicates the site to be generally underlain by natural ground consisting of topsoil overlying natural Silty Clay and Gravelly Clay overlying Siltstone and Sandstone. Relatively thick gravelly clayey fill was encountered in BH 5 to a depth of 1.4m and there were no obvious signs of foreign inclusion or building debris including asbestos (ACM). Some minor fill less than 300mm thick was encountered in BH 1 and BH 9.

Limited soil sampling was taken from geotechnical boreholes at four locations (ie BH 1, 4, 5 and 8) and the samples were taken to Envirolab Services for laboratory analysis for a range of potential contaminants of concern such as Heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn), Organochlorine pesticides, Polychlorinated Biphenyls, Total Recoverable Hydrocarbons, Benzene, Toluene, Ethyl Benzene and Xylene, Polycyclic Aromatic Hydrocarbons and asbestos.

The laboratory test results indicate the soil samples from the selected boreholes to have concentrations of contaminants of concern within the Site Criteria. The slightly elevated concentrations of Benzo(a)pyrene TEQ in BH 8 is likely to be due to the leaching of PAH from the asphaltic driveway and is not likely to constitute a contamination “hot-spot”.

## **8.2 Investigation/Remediation/Management Options**

The current preliminary contamination assessment did not encounter obvious signs of gross ground contamination, however contamination may still exist within the school premises.

### PAH Contamination

To address the elevated concentrations of PAH encountered in BH 8, additional investigation should be carried out should the redevelopment of the school involve removal of the asphaltic driveway and construction of school buildings. This would involve supervision and inspection of this area for any obvious signs of contamination (eg odour, staining and discolouration), soil sampling and laboratory analysis of this area to confirm presence or otherwise of contaminants (in particular hydrocarbon products) and remediation if required.

The PAH contaminated material if confirmed by additional testing should be remediated by excavation of the PAH contaminated soil and disposed off-site to a NSW EPA approved landfill. Validation sampling and laboratory testing should be carried out on the remediated area to ensure the underlying soil is clean of contaminants of concern within the Site Criteria and the affected area is adequately remediated.

### Possible Asbestos and Rubbish Impacted Fill

Though buried rubbish fill and asbestos impacted fill was not encountered in our borehole investigation, it may still exist as such occurrence are common to school premises in particular in open space and playing fields.

Should asbestos and rubbish impacted fill be encountered during construction, site remediation to clean up the site will be required. All rubbish impacted soil where encountered should be remediated by excavation and disposal off site to a landfill and this should include classifying of waste in accordance to NSW EPA 2014 guidelines “Part 1 – Classifying Waste”.

Asbestos impacted fill where encountered should be adequately remediated in accordance to the NEPM 2013 guidelines. The NEPM 2013 guidelines outline the preferred hierarchy of options for site clean-up and/or management as follows;

- I. On-site remediation of the contaminated material for re-use within the site.
- II. Excavation and disposal of material off-site to an approved landfill.
- III. On-site encapsulation and containment with suitable capping layer.

The preferred remediation strategy was determined based on the following considerations;

- Human health issues; dust suppression should be implemented during remediation works – particularly for asbestos.
- Site remediation supervision and validation; all methods, whether treatment or disposal will require validation by experienced consultant and occupational hygienist prior to being considered suitable.
- Capping of the site involves providing a physical barrier between site users and the underlying impacted soil. For asbestos containing fill to be left onsite, a mechanism would need to be implemented to ensure that future exposure to site users or other persons does not occur. This would likely include implementation of a long term management plan to ensure the cap remains in place and that any works beneath the cap are undertaken using appropriate health and safety and environmental controls. Notification on the S149 certificate of the presence of capped asbestos containing soils may also be required. A mechanism to ensure the management plan is legally enforceable would also be required. Approval may also be required from the respective authorities for leaving contaminated soil on site

#### Other Contaminants

During the entire construction period, the site should be regularly monitored for any other contamination by an experienced environmental consultants and should contamination be encountered, all works should ceased and the Unexpected Finds Protocol as outlined in Appendix F should be initiated.

### **8.3 Waste Classification**

For off-site disposal of surplus fill to a landfill, the material to be excavated from sites is regulated by the provision of the Protection of the Environment Operations Act (POEO Act 1997) and associated regulations and guidelines including the NSW EPA guideline on classifying waste (Reference 13).

Based on the laboratory test results, our waste classifications for the on-site material are as follows;

- Clayey Silt topsoil and topsoil/fill - General Solid Waste (Non putrescibles).
- Silty Clay and Gravelly Silty Clay fill - General Solid Waste (Non putrescibles).
- Natural Silty Clay, Gravelly Silty Clay, Siltstone and Sandstone - Virgin Natural Excavated Material (VENM).

Should buried rubbish fill containing Asbestos be encountered during the construction stage, we recommend all works to cease immediately and the attached “Unexpected Asbestos Finds Protocol” be initiated. All asbestos impacted soil would be classified as “Special Wastes – Asbestos” in accordance to the NSW EPA guidelines.

## 9. LIMITATIONS

The interpretation and recommendations submitted in this report are based on a limited number of boreholes. There is no investigation which is thorough enough to determine all site conditions and anomalies, no matter how comprehensive the investigation program is as site data is derived from extrapolation of limited test locations. The nature and extent of variations between test locations may not become evident until construction.

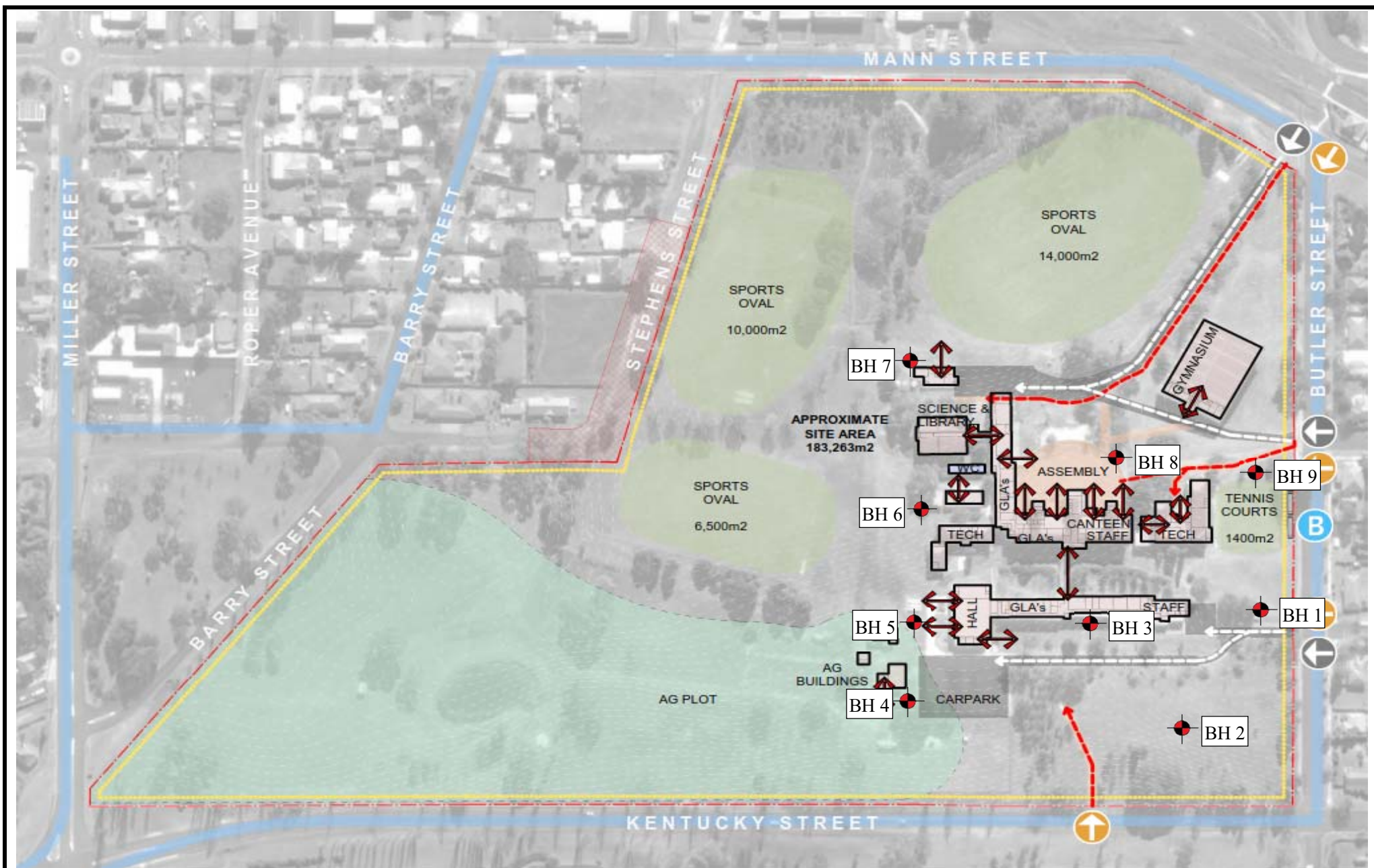
Groundwater conditions are only briefly examined in this investigation. The groundwater conditions may vary seasonally or as a consequence of construction activities on or adjacent to the site.

In view of the above, the subsurface soil and rock conditions between the test locations may be found to be different or interpreted to be different from those expected. If such differences appear to exist, we recommend that this office be contacted without delay.

The statements presented in these documents are intended to advise you of what should be your realistic expectations of this report, and to present you with recommendations on how to minimise the risks associated with the ground works for this project. The document is not intended to reduce the level of responsibility accepted by GeoEnviro Consultancy Pty Ltd, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing. Attached in Appendix G are documents entitled “Important Information about Your Environmental Site Assessment” and Explanatory Notes in conjunction with which this report must be read, as it details important limitations regarding the investigation undertaken and this report.

## REFERENCES

1. 1:1,000,000 Geology of New South Wales– Geological Series Sheet 2
2. Australian & New Zealand Guidelines for the Assessment and Management of Contaminated Sites, Australian and New Zealand Conservation Council and National Health and Medical Research Council, 1992.
3. Assessment of Orchard and Market Garden Contamination - Contaminated Sites Discussion Paper, NSW EPA 1999.
4. Health Based Soil Investigation Levels, National Environmental Health Forum Monographs Soil Series No. 1 – 1996
5. National Environment Protection (Assessment of Site Contamination) Measure 1999(including updated Schedule B1 – 2013
6. Guidelines for Assessment Service Station Sites – NSW EPA 1994
7. Guidelines for the NSW Auditor Scheme, NSW EPA
8. Department of Land and Water Conservation – “Site Investigation for Urban Salinity”.2002
9. Salinity Code of Practice – Western Sydney Regional Organisation of Councils Ltd – 2002
10. What do all the numbers mean? A guide for the interpretation of soil test results. – Department of Conservation and Land Management, 1992
11. Australian Standard, AS 2159-2009 “Piling – Design and Installation”
12. Australian Standard, AS 3600 -2009 “Concrete Structures”
13. Australian Standard, AS 3798 - 2007“Bulk Earthworks for Commercial and Residential Site”
14. Part 1 – Classifying Waste – 2014, NSW DEC
15. Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 – ANZECC.
16. Australian Standard, AS 3798 - 2007“Bulk Earthworks for Commercial and Residential Site”



**Legend**

 Borehole



**GeoEnviro Consultancy**

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

|                |                |
|----------------|----------------|
| Drawn By: AT   | Date: 20/11/17 |
| Checked By: SL | Date: 20/11/17 |
| Revision By:   | Date:          |

Scale: Not to Scale

A3

**NBRS Architecture**  
**Armidale High School**  
**Borehole Location Plan**

Project No: JG17064A

Drawing No: 1

| Sample | Depths<br>(m) | Sample<br>Date | Sample<br>Type | Analysis |              |    |    |    |    |    |    |     |     |     |      |     |          |      |
|--------|---------------|----------------|----------------|----------|--------------|----|----|----|----|----|----|-----|-----|-----|------|-----|----------|------|
|        |               |                |                | pH       | Heavy Metals |    |    |    |    |    |    | OCP | PCB | TRH | BTEX | PAH | Asbestos | TCLP |
|        |               |                |                |          | As           | Cd | Cr | Cu | Pb | Hg | Ni | Zn  |     |     |      |     |          |      |
| BH 1   | 0.00-0.20     | 4/11/2017      | Soil           | 0        | 0            | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0    | 0   | 0        | 0    |
| BH 4   | 0.20-0.40     | 4/11/2017      | Soil           | 0        | 0            | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0    | 0   | 0        | 0    |
| BH 5   | 0.80-1.00     | 4/11/2017      | Soil           | 0        | 0            | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0    | 0   | 0        | 0    |
| BH 8   | 0.20-0.40     | 4/11/2017      | Soil           | 0        | 0            | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0    | 0   | 0        | 0    |

Note: 0 denotes tested



**GeoEnviro  
Consultancy**

**TABLE 1**  
**Analytical Program**

NBRS Architecture  
Proposed School Buildings  
Armidale High School

| Sample                    | Depths<br>(m) | pH   | Arsenic    | Cadmium   | Chromium        | Copper       | Lead        | Mercury   | Nickel      | Zinc         |
|---------------------------|---------------|------|------------|-----------|-----------------|--------------|-------------|-----------|-------------|--------------|
| BH 1                      | 0.00-0.20     | 7.10 | <4         | <0.4      | 53              | 15           | 12          | <0.1      | 36          | 24           |
| BH 4                      | 0.20-0.40     | 7.90 | <4         | <0.4      | 50              | 24           | 9           | <0.1      | 42          | 44           |
| BH 5                      | 0.80-1.00     | 7.50 | <4         | <0.4      | 69              | 18           | 10          | <0.1      | 23          | 24           |
| BH 8                      | 0.20-0.40     | 7.50 | <4         | <0.4      | 60              | 13           | 9           | <0.1      | 29          | 16           |
| <b>HBILs 'A' Criteria</b> |               |      | <b>100</b> | <b>20</b> | <b>100 (VI)</b> | <b>600</b>   | <b>300</b>  | <b>40</b> | <b>400</b>  | <b>7400</b>  |
| <b>HBILs 'C' Criteria</b> |               |      | <b>300</b> | <b>90</b> | <b>300 (VI)</b> | <b>17000</b> | <b>600</b>  | <b>80</b> | <b>1200</b> | <b>30000</b> |
| <b>EIL Criteria*</b>      |               |      | <b>104</b> | <b>NA</b> | <b>248</b>      | <b>207</b>   | <b>1110</b> | <b>NA</b> | <b>202</b>  | <b>153</b>   |

#### EIL Derivation

|                        |            |           |            |            |             |           |            |            |
|------------------------|------------|-----------|------------|------------|-------------|-----------|------------|------------|
| <b>ABC<sup>4</sup></b> | <b>4</b>   | <b>NA</b> | <b>58</b>  | <b>17</b>  | <b>10</b>   | <b>NA</b> | <b>32</b>  | <b>23</b>  |
| <b>ACL<sup>5</sup></b> | <b>100</b> | <b>NA</b> | <b>190</b> | <b>190</b> | <b>1100</b> | <b>NA</b> | <b>170</b> | <b>130</b> |

#### Notes

- 1) All results are expressed as mg/kg and pH (units).
  - 2) Figures in bold italics exceed the EIL Criteria
  - 3) Figures in bold italics and underlined exceed the HBIL 'A' Criteria
  - 4) Ambient Background Concentrations
  - 5) Added Contaminant Limits
- \* EIL = ABC+ACL



#### TABLE 2 Summary of Analytical Results - Heavy Metals

NBRS Architecture  
Proposed School Buildings  
Armidale High School

| Sample             | Depths (m) | HCB  | alpha-BHC | gamma-BHC | beta-BHC | Heptachlor | delta-BHC | Aldrin | Heptachlor Epoxide | gamma-Chlordane | alpha-chlordane | Endosulfan I | pp-DDE | Dieldrin | Endrin | pp-DDD | Endosulfan II | pp-DDT | Endrin Aldehyde | Endosulfan Sulphate | Methoxychlor | Total OCP |
|--------------------|------------|------|-----------|-----------|----------|------------|-----------|--------|--------------------|-----------------|-----------------|--------------|--------|----------|--------|--------|---------------|--------|-----------------|---------------------|--------------|-----------|
| BH 1               | 0.00-0.20  | <0.1 | <0.1      | <0.1      | <0.1     | <0.1       | <0.1      | <0.1   | <0.1               | <0.1            | <0.1            | <0.1         | <0.1   | <0.1     | <0.1   | <0.1   | <0.1          | <0.1   | <0.1            | <0.1                | <0.1         | ND        |
| BH 4               | 0.20-0.40  | <0.1 | <0.1      | <0.1      | <0.1     | <0.1       | <0.1      | <0.1   | <0.1               | <0.1            | <0.1            | <0.1         | <0.1   | <0.1     | <0.1   | <0.1   | <0.1          | <0.1   | <0.1            | <0.1                | <0.1         | ND        |
| BH 5               | 0.80-1.00  | <0.1 | <0.1      | <0.1      | <0.1     | <0.1       | <0.1      | <0.1   | <0.1               | <0.1            | <0.1            | <0.1         | <0.1   | <0.1     | <0.1   | <0.1   | <0.1          | <0.1   | <0.1            | <0.1                | <0.1         | ND        |
| BH 8               | 0.20-0.40  | <0.1 | <0.1      | <0.1      | <0.1     | <0.1       | <0.1      | <0.1   | <0.1               | <0.1            | <0.1            | <0.1         | <0.1   | <0.1     | <0.1   | <0.1   | <0.1          | <0.1   | <0.1            | <0.1                | <0.1         | ND        |
| HBILs 'A' Criteria |            | 10   | 6         |           |          | 6          |           | 6      |                    | 50              | 270             | 240          | 6      | 10       | 240    |        | 240           |        |                 | 300                 |              |           |
| HBILs 'C' Criteria |            | 10   | 10        |           |          | 10         |           | 10     |                    | 70              | 340             | 400          | 10     | 20       | 400    |        | 400           |        |                 | 400                 |              |           |

Notes

1) All results are expressed as mg/kg and pH (units).

2) Figures in bold italics exceed the HBILs 'A' Criteria



**TABLE 3**  
**Summary of Analytical Results - OCP**

NBRS Architecture

Proposed School Buildings

Armidale High School

| Sample                    | Depths (m) | Arochlor 1016 | Arochlor 1221 | Arochlor 1232 | Arochlor 1242 | Arochlor 1248 | Arochlor 1254 | Arochlor 1260 | Total PCB |
|---------------------------|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-----------|
| BH 1                      | 0.00-0.20  | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | ND        |
| BH 4                      | 0.20-0.40  | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | ND        |
| BH 5                      | 0.80-1.00  | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | ND        |
| BH 8                      | 0.20-0.40  | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | ND        |
| <b>HBILs 'A' Criteria</b> |            |               |               |               |               |               |               |               | <b>1</b>  |
| <b>HBILs 'C' Criteria</b> |            |               |               |               |               |               |               |               | <b>1</b>  |

Notes

- 1) All results are expressed as mg/kg and pH (units).
- 2) Figures in bold italics exceed the HBILs 'A' Criteria



**TABLE 4**  
**Summary of Analytical Results - PCB**

NBRS Architecture  
Proposed School Buildings  
Armidale High School

| Sample                            | Depths<br>(m) | C <sub>6</sub> -C <sub>9</sub> | C <sub>10</sub> -C <sub>14</sub> | C <sub>15</sub> -C <sub>28</sub> | C <sub>29</sub> -C <sub>36</sub> | C <sub>10</sub> -C <sub>36</sub> | F1 <sup>(4)</sup><br>C <sub>6</sub> -C <sub>10</sub> | F2 <sup>(5)</sup><br>>C <sub>10</sub> -C <sub>16</sub> | F3<br>C <sub>16</sub> -C <sub>34</sub> | F4<br>C <sub>34</sub> -C <sub>40</sub> | Volatile Organic Compounds (VOC) |         |              |            |          |             |
|-----------------------------------|---------------|--------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|------------------------------------------------------|--------------------------------------------------------|----------------------------------------|----------------------------------------|----------------------------------|---------|--------------|------------|----------|-------------|
|                                   |               |                                |                                  |                                  |                                  |                                  |                                                      |                                                        |                                        |                                        | Benzene                          | Toluene | Ethylbenzene | m+p-xylene | o-Xylene | Naphthalene |
| BH 1                              | 0.00-0.20     | <25                            | <50                              | <100                             | <100                             | <250                             | <25                                                  | <50                                                    | <100                                   | <100                                   | <0.2                             | <0.5    | <1           | <2         | <1       | <1          |
| BH 4                              | 0.20-0.40     | <25                            | <50                              | <100                             | <100                             | <250                             | <25                                                  | <50                                                    | <100                                   | <100                                   | <0.2                             | <0.5    | <1           | <2         | <1       | <1          |
| BH 5                              | 0.80-1.00     | <25                            | <50                              | <100                             | <100                             | <250                             | <25                                                  | <50                                                    | <100                                   | <100                                   | <0.2                             | <0.5    | <1           | <2         | <1       | <1          |
| BH 8                              | 0.20-0.40     | <25                            | <50                              | <100                             | <100                             | <250                             | <25                                                  | <50                                                    | <100                                   | <100                                   | <0.2                             | <0.5    | <1           | <2         | <1       | <1          |
| NSW DEC (1994)                    |               | 65                             |                                  |                                  |                                  | 1000                             |                                                      |                                                        |                                        |                                        | 1                                | 1.4     | 3.1          | 14         |          |             |
| HSLs 'A and B' Criteria<br>(CLAY) |               |                                |                                  |                                  |                                  |                                  | 50                                                   | 280                                                    |                                        |                                        | 0.7                              | 480     | 480          | 110        |          | 5           |
|                                   |               |                                |                                  |                                  |                                  |                                  | 90                                                   |                                                        |                                        |                                        | 1                                |         |              | 310        |          |             |
|                                   |               |                                |                                  |                                  |                                  |                                  | 150                                                  |                                                        |                                        |                                        | 2                                |         |              |            |          |             |
|                                   |               |                                |                                  |                                  |                                  |                                  | 290                                                  |                                                        |                                        |                                        | 3                                |         |              |            |          |             |
| ESL Criteria                      |               |                                |                                  |                                  |                                  |                                  | 180                                                  | 120                                                    | 1300                                   | 5600                                   | 65                               | 105     | 125          | 45         |          |             |

Notes

- 1) All results are expressed as mg/kg unless otherwise specified
- 2) Figures in bold exceed the NSW DEC criteria
- 3) ND Not detected
- 4) F1 is C<sub>6</sub>-C<sub>10</sub> minus the sum of the BTEX concentrations
- 5) F2 is >C<sub>10</sub>-C<sub>16</sub> Minus Napthalene
- 6) Figures in bold italics exceed the ESL Criteria
- 7) Figures in bold italics that have been underlined exceed the HSLs 'A and B' Criteria



**TABLE 5**  
**Summary of Analytical Results - TRH and VOC**

NBRS Architecture  
Proposed School Buildings  
Armidale High School

| Sample                    | Depths (m) | Naphthalene | Acenaphthylene | Acenaphthene | Fluorene | Phenanthrene | Anthracene | Fluoranthene | Pyrene | Benzo(a)anthracene | Chrysene | Benzo(b+k)fluoranthene | Benzo(a)pyrene | Indeno(1,2,3-c,d)pyrene | Dibenzo(a,h)anthracene | Benzo(g,h,i)perylene | Benzo(a)pyrene TEQ | Total PAHs |
|---------------------------|------------|-------------|----------------|--------------|----------|--------------|------------|--------------|--------|--------------------|----------|------------------------|----------------|-------------------------|------------------------|----------------------|--------------------|------------|
| BH 1                      | 0.00-0.20  | <0.1        | <0.1           | <0.1         | <0.1     | <0.1         | <0.1       | <0.1         | <0.1   | <0.1               | <0.1     | <0.2                   | <0.05          | <0.1                    | <0.1                   | <0.1                 | <0.5               | ND         |
| BH 4                      | 0.20-0.40  | <0.1        | <0.1           | <0.1         | <0.1     | 0.3          | <0.1       | 0.7          | 0.7    | 0.3                | 0.4      | 0.6                    | 0.3            | 0.2                     | <0.1                   | 0.2                  | <0.5               | 3.7        |
| BH 5                      | 0.80-1.00  | <0.1        | <0.1           | <0.1         | <0.1     | <0.1         | <0.1       | <0.1         | <0.1   | <0.1               | <0.1     | <0.2                   | <0.05          | <0.1                    | <0.1                   | <0.1                 | <0.5               | ND         |
| BH 8                      | 0.20-0.40  | 0.1         | 0.3            | 0.2          | 0.4      | 5.2          | 1.5        | 6.4          | 5.5    | 2.2                | 2.1      | 3.4                    | <b>2.1</b>     | 1.1                     | 0.2                    | 1.3                  | 3                  | 35         |
| <b>HBILs 'A' Criteria</b> |            | <b>3</b>    |                |              |          |              |            |              |        |                    |          |                        |                |                         |                        |                      | <b>3*</b>          | <b>300</b> |
| <b>HBILs 'C' Criteria</b> |            |             |                |              |          |              |            |              |        |                    |          |                        |                |                         |                        |                      | <b>3*</b>          | <b>300</b> |
| <b>ESL Criteria</b>       |            |             |                |              |          |              |            |              |        |                    |          |                        |                | <b>0.7</b>              |                        |                      |                    |            |

Notes

1) All results are expressed as mg/kg

2) Figures in bold italics exceed the ESL Criteria

3) Figures in bold italics that have been underlined exceed the HBIL 'A' Criteria

\* B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, given below, and summing these products

| PAH Species             | TEF  |
|-------------------------|------|
| Benzo(a)anthracene      | 0.1  |
| Benzo(a)pyrene          | 1    |
| Benzo(b+j)fluoranthene  | 0.1  |
| Benzo(k)fluoranthene    | 0.1  |
| Benzo(g,h,i)perylene    | 0.01 |
| Chrysene                | 0.01 |
| Dibenzo(a,h)anthracene  | 1    |
| Indeno(1,2,3-c,d)pyrene | 0.1  |



**GeoEnviro  
Consultancy**

**TABLE 6  
Summary of Analytical Results - PAH**

NBRS Architecture  
Proposed School Buildings  
Armidale High School

| Sample                    | Depths (m) | Asbestos                           |
|---------------------------|------------|------------------------------------|
| BH 1                      | 0.00-0.20  | ND                                 |
| BH 4                      | 0.20-0.40  | ND                                 |
| BH 5                      | 0.80-1.00  | ND                                 |
| BH 8                      | 0.20-0.40  | ND                                 |
| <b>HBILs 'A' Criteria</b> |            | <b>0.01% / 0.001% <sup>1</sup></b> |
| <b>HBILs 'C' Criteria</b> |            | <b>0.02% / 0.001% <sup>1</sup></b> |

Note: ND = Not detected

Measured in %w/w

1) Bonded Asbestos Contaminant Material / Fibrous Asbestos and Asbestos Fines

2) Figures in bold italics exceed the HBILs 'A' Criteria



**GeoEnviro  
Consultancy**

## **TABLE 7**

### **Summary of Analytical Results - Asbestos**

NBRS Architecture

Proposed School Buildings

Armidale High School

| Sample | Depths<br>(m) | Arsenic | Cadmium | Chromium | Lead  | Mercury | Nickel | PAH   |
|--------|---------------|---------|---------|----------|-------|---------|--------|-------|
| BH 1   | 0.00-0.20     | <0.05   | <0.01   | <0.01    | <0.03 | <0.0005 | 0.03   | ND    |
| BH 4   | 0.20-0.40     | <0.05   | <0.01   | <0.01    | <0.03 | <0.0005 | <0.02  | ND    |
| BH 5   | 0.80-1.00     | <0.05   | <0.01   | <0.01    | <0.03 | <0.0005 | <0.02  | ND    |
| BH 8   | 0.20-0.40     | <0.05   | <0.01   | <0.01    | <0.03 | <0.0005 | <0.02  | 0.003 |

Notes

1) All results are expressed as mg/L



**TABLE 8**

**Summary of Analytical Results - (TCLP) Heavy Metals an**

NBRS Architecture

Proposed School Buildings

Armidale High School

## **APPENDIX A**

### **Borehole Reports**



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Borehole Report

Borehole no: 1

Client: NBRs Architecture

Job no: JG17064A

Project: Proposed School Buildings

Date: 4/11/17

Location: Armidale High School

Logged by: SG

Drill Model and Mounting: Edson 3000

Slope: 90°

R.L. Surface: -

Hole Diameter: 100mm

Bearing: Vertical

Datum: AHD

| Method    | Support | Water | Notes: Samples, Tests, etc | Depth(m) | Classification Symbol | Unified Soil Classification | Material Description<br>Soil Type, Plasticity or Particle Characteristic, colour, secondary and minor component                 | Moisture Content | Consistency/Density Index | Hand Penetrometer kPa | Structure and Additional Observations         |
|-----------|---------|-------|----------------------------|----------|-----------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-----------------------|-----------------------------------------------|
| V - B I T | N I L   | D R Y | DG                         |          |                       |                             | Topsoil: Clayey Silt: low liquid limit, brown                                                                                   | D                |                           |                       |                                               |
|           |         |       |                            |          |                       |                             | Fill: Silty Clay: low plasticity, brown with fine grained gravel                                                                | D                |                           |                       |                                               |
|           |         |       |                            |          |                       |                             | Topsoil : Clayey Silt: low liquid limit, brown grey                                                                             | D                |                           |                       |                                               |
|           |         |       |                            | 1.0      |                       | CL-CI                       | Silty Clay: low to medium plasticity, brown with trace of fine grained gravel                                                   | D                |                           |                       | Fill?                                         |
|           |         |       | 6,10,14<br>N=24            | 2.0      |                       | CI                          | Silty Clay: medium plasticity, brown with fine grained gravel and fine to coarse grained sand                                   |                  | H                         | >600                  |                                               |
| T C       |         |       |                            |          |                       | CI                          | Interbedded Siltstone and Clay: medium plasticity extremely weathered and extremely low strength siltstone, grey and grey brown | D                | H                         |                       | Soil-like Properties                          |
|           |         |       | 17/120mm<br>N>17           | 3.0      |                       |                             | Sandstone: fine grained, extremely weathered, low strength, grey brown                                                          |                  |                           |                       | V-bit refusal at 3.2m<br>SPT refusal at 3.12m |
|           |         |       |                            | 4.0      |                       |                             | End of BH 1 at 4.0m                                                                                                             |                  |                           |                       | TC bit refusal at 4.0m                        |
|           |         |       |                            | 5.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                               |
|           |         |       |                            | 6.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                               |
|           |         |       |                            | 7.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                               |
|           |         |       |                            | 8.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                               |



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Borehole Report

Borehole no: 2

Client: NBRs Architecture

Job no: JG17064A

Project: Proposed School Buildings

Date: 4/11/17

Location: Armidale High School

Logged by: SG

Drill Model and Mounting: Edson 3000

Slope: 90°

R.L. Surface: -

Hole Diameter: 100mm

Bearing: Vertical

Datum: AHD

| Method    | Support | Water | Notes: Samples, Tests, etc | Depth(m) | Classification Symbol | Unified Soil Classification | Material Description<br>Soil Type, Plasticity or Particle Characteristic, colour, secondary and minor component                 | Moisture Content | Consistency/Density Index | Hand Penetrometer kPa | Structure and Additional Observations |
|-----------|---------|-------|----------------------------|----------|-----------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-----------------------|---------------------------------------|
| V - B I T | N I L   | D R Y |                            |          |                       |                             | Topsoil: Clayey Silt: low liquid limit, brown                                                                                   |                  |                           |                       |                                       |
|           |         |       |                            |          |                       | CI                          | Gravelly Silty Clay: medium to high plasticity, brown and red brown with ironstone gravel and coarse grained sand               | M                |                           |                       | Fill?                                 |
|           |         |       | 4,4,5<br>N=9               | 1.0      |                       |                             |                                                                                                                                 |                  | H                         | 450                   |                                       |
|           |         |       |                            |          |                       | CI                          | Silty Clay: medium plasticity, brown and grey with fine to coarse grained sand                                                  | M                | H                         | 490<br>520            |                                       |
|           |         |       | 4,7,11<br>N=18             | 2.0      |                       | CI-CH                       | Silty Clay: medium to high plasticity, brown grey with ironstone gravel bands                                                   | D-M              |                           |                       |                                       |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  | H                         | 490<br>540            |                                       |
|           |         |       | 10,12,18<br>N=30           | 3.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            |          |                       | CI                          | Interbedded Siltstone and Clay: medium plasticity extremely weathered and extremely low strength siltstone, grey and grey brown | D                | H                         | >600                  | Soil-like properties                  |
|           |         |       |                            | 4.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       | Slow drilling                         |
|           |         |       | 7,15,22<br>N=37            | 5.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            |          |                       |                             | Siltstone: extremely weathered and extremely low to very low strength, grey and pale grey                                       |                  | H                         | >600                  |                                       |
|           |         |       |                            | 6.0      |                       |                             | End of BH 2 at 6.0m                                                                                                             |                  |                           |                       |                                       |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            | 7.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            | 8.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Borehole Report

Borehole no: 3

Client: NBRs Architecture

Job no: JG17064A

Project: Proposed School Buildings

Date: 4/11/17

Location: Armidale High School

Logged by: SG

Drill Model and Mounting: Edson 3000

Slope: 90°

R.L. Surface: -

Hole Diameter: 100mm

Bearing: Vertical

Datum: AHD

| Method    | Support | Water | Notes: Samples, Tests, etc | Depth(m) | Classification Symbol | Unified Soil Classification | Material Description<br>Soil Type, Plasticity or Particle Characteristic, colour, secondary and minor component                 | Moisture Content | Consistency/Density Index | Hand Penetrometer kPa | Structure and Additional Observations |
|-----------|---------|-------|----------------------------|----------|-----------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-----------------------|---------------------------------------|
| V - B I T | N I L   | D R Y |                            |          |                       |                             | Topsoil: Clayey Silt: low liquid limit, brown                                                                                   | D                |                           |                       |                                       |
|           |         |       |                            |          |                       | CH                          | Gravelly Silty Clay: high plasticity, brown with fine to medium grained gravel                                                  | D-M              |                           |                       | Fill?                                 |
|           |         |       | 4,7,14<br>N=21             | 1.0      |                       | CI-CH                       | Silty Clay: medium to high plasticity, grey and brown with trace of ironstone gravel bands                                      | D                | H                         | >600                  |                                       |
|           |         |       |                            | 2.0      |                       | CI                          | Silty Clay: medium plasticity, grey with trace of fine grained sand and ironstone gravel bands                                  |                  |                           |                       |                                       |
|           |         |       | 6,13,19<br>N=32            | 3.0      |                       | CI                          | Interbedded Siltstone and Clay: medium plasticity extremely weathered and extremely low strength siltstone, grey and grey brown | D                | H                         | >600                  | Soil-like properties                  |
|           |         |       | 6,21,30<br>N=51            | 4.0      |                       |                             | Siltstone: extremely weathered and extremely low strength, grey and pale grey                                                   |                  | H                         | >600                  |                                       |
|           |         |       |                            | 5.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            | 6.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            | 7.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            | 8.0      |                       |                             | End of BH 3 at 7.0m                                                                                                             |                  |                           |                       |                                       |



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Borehole Report

Borehole no: 4

Client: NBR Architecture

Job no: JG17064A

Project: Proposed School Buildings

Date: 4/11/17

Location: Armidale High School

Logged by: SG

Drill Model and Mounting: Edson 3000

Slope: 90°

R.L. Surface: -

Hole Diameter: 100mm

Bearing: Vertical

Datum: AHD

| Method    | Support | Water | Notes: Samples, Tests, etc | Depth(m) | Classification Symbol | Unified Soil Classification | Material Description<br>Soil Type, Plasticity or Particle Characteristic, colour, secondary and minor component                 | Moisture Content | Consistency/Density Index | Hand Penetrometer kPa | Structure and Additional Observations |
|-----------|---------|-------|----------------------------|----------|-----------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-----------------------|---------------------------------------|
| V - B I T | N I L   | D R Y |                            |          |                       |                             | Topsoil: Clayey Silt: low liquid limit, brown                                                                                   | D                |                           |                       |                                       |
|           |         |       | DG                         |          |                       | CI                          | Silty Clay: medium plasticity, dark brown                                                                                       | D                |                           |                       | Fill?                                 |
|           |         |       |                            | 1.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       | 3,7,10<br>N=17             |          |                       |                             |                                                                                                                                 | H                |                           | >600                  |                                       |
|           |         |       |                            | 2.0      |                       | CI-CH                       | Silty Clay: medium to high plasticity, brown with some gravel                                                                   |                  |                           |                       |                                       |
|           |         |       |                            |          |                       |                             | As above but grey and brown with trace of fine grained gravel bands                                                             |                  |                           |                       |                                       |
|           |         |       | 6,9,15<br>N=24             |          |                       |                             |                                                                                                                                 | H                |                           | >600                  |                                       |
|           |         |       |                            | 3.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            | 4.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       | 5,10,16<br>N=26            |          |                       | CI                          | Interbedded Siltstone and Clay: medium plasticity extremely weathered and extremely low strength siltstone, grey and grey brown | D                |                           |                       | Soil-like properties                  |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       | Slow drilling                         |
|           |         |       |                            | 5.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            | 6.0      |                       |                             | Siltstone: extremely weathered and extremely low to very low strength, grey and pale grey                                       |                  |                           |                       |                                       |
|           |         |       | 5,10,16<br>N=26            |          |                       |                             |                                                                                                                                 | H                |                           | >600                  |                                       |
|           |         |       |                            | 7.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            | 8.0      |                       |                             | End of BH 4 at 6.0m                                                                                                             |                  |                           |                       |                                       |



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Borehole Report

Borehole no: 5

Client: NBRS Architecture

Job no: JG17064A

Project: Proposed School Buildings

Date: 4/11/17

Location: Armidale High School

Logged by: SG

Drill Model and Mounting: Edson 3000

Slope: 90°

R.L. Surface: -

Hole Diameter: 100mm

Bearing: Vertical

Datum: AHD

| Method    | Support | Water | Notes: Samples, Tests, etc | Depth(m) | Classification Symbol | Unified Soil Classification | Material Description<br>Soil Type, Plasticity or Particle Characteristic, colour, secondary and minor component                 | Moisture Content | Consistency/Density Index | Hand Penetrometer kPa | Structure and Additional Observations |
|-----------|---------|-------|----------------------------|----------|-----------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-----------------------|---------------------------------------|
| V - B I T | N I L   | D R Y |                            |          |                       |                             | Topsoil/Fill: Clayey Silt, low liquid limit, brown with gravel                                                                  | D                |                           |                       |                                       |
|           |         |       |                            |          |                       |                             | Fill: Gravelly Silty Clay: medium plasticity, brown                                                                             | D                |                           |                       |                                       |
|           |         |       | DG                         | 1.0      |                       |                             |                                                                                                                                 |                  |                           |                       | Appeared poorly compacted             |
|           |         |       | 3,4,7<br>N=11              |          |                       |                             |                                                                                                                                 |                  | H                         | >600                  |                                       |
|           |         |       |                            |          |                       | CI                          | Silty Clay: medium plasticity, brown dark brown                                                                                 | D-M              | H                         | 480                   |                                       |
|           |         |       |                            | 2.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            |          |                       | CI-CH                       | As above but medium to high plasticity grey brown with trace of fine grained gravel and sand                                    | D                |                           |                       |                                       |
|           |         |       | 3,7,11<br>N=18             | 3.0      |                       |                             |                                                                                                                                 |                  | H                         | >600                  |                                       |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            |          |                       | CI                          | Interbedded Siltstone and Clay: medium plasticity extremely weathered and extremely low strength siltstone, grey and grey brown | D                | H                         | >600                  | Soil- like properties                 |
|           |         |       | 6,10,17<br>N=27            | 4.0      |                       |                             |                                                                                                                                 |                  |                           |                       | Slow drilling                         |
|           |         |       |                            | 5.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            | 6.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |
|           |         |       |                            | 7.0      |                       |                             | Siltstone: extremely weathered and extremely low to very low strength, grey and pale grey                                       |                  |                           |                       |                                       |
|           |         |       |                            |          |                       |                             | End of BH 5 at 7.0m                                                                                                             |                  |                           |                       |                                       |
|           |         |       |                            | 8.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                       |



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Borehole Report

Borehole no: 6

Client: NBRs Architecture

Job no: JG17064A

Project: Proposed School Buildings

Date: 4/11/17

Location: Armidale High School

Logged by: SG

Drill Model and Mounting: Edson 3000

Slope: 90°

R.L. Surface: -

Hole Diameter: 100mm

Bearing: Vertical

Datum: AHD

| Method    | Support | Water | Notes: Samples, Tests, etc | Depth(m) | Classification Symbol | Unified Soil Classification                                                                                                     | Material Description<br>Soil Type, Plasticity or Particle Characteristic, colour, secondary and minor component | Moisture Content | Consistency/Density Index | Hand Penetrometer kPa | Structure and Additional Observations                                  |
|-----------|---------|-------|----------------------------|----------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-----------------------|------------------------------------------------------------------------|
| V - B I T | N I L   | D R Y | 6,10,13<br>N=23            | 1.0      | CH                    | Topsoil: Clayey Silt: low liquid limit, brown                                                                                   | As above but brown with fine grained gravel and medium to coarse grained sand                                   | D                |                           |                       |                                                                        |
|           |         |       |                            | 2.0      | CL-CI                 | Silty Clay: high plasticity, brown dark brown and red                                                                           |                                                                                                                 | D                |                           |                       |                                                                        |
|           |         |       |                            | 3.0      |                       | Silty Clay: low to medium plasticity, grey/pale brown with fine grained sand                                                    |                                                                                                                 |                  | H                         | >600                  |                                                                        |
|           |         |       |                            | 4.0      |                       | Interbedded Siltstone and Clay: medium plasticity extremely weathered and extremely low strength siltstone, grey and grey brown |                                                                                                                 |                  |                           |                       | Soil-like properties<br>SPT bouncing at 2.76m<br>V-bit refusal at 3.3m |
| TC        |         |       |                            | 4.0      |                       | Sandstone: fine grained, extremely weathered, low to medium strength, grey brown                                                |                                                                                                                 |                  |                           |                       | TC-bit refusal at 4.0m                                                 |
|           |         |       |                            | 5.0      |                       | End of BH 6 at 4.0m                                                                                                             |                                                                                                                 |                  |                           |                       |                                                                        |
|           |         |       |                            | 6.0      |                       |                                                                                                                                 |                                                                                                                 |                  |                           |                       |                                                                        |
|           |         |       |                            | 7.0      |                       |                                                                                                                                 |                                                                                                                 |                  |                           |                       |                                                                        |
|           |         |       |                            | 8.0      |                       |                                                                                                                                 |                                                                                                                 |                  |                           |                       |                                                                        |



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Borehole Report

Borehole no: 7

Client: NBR Architecture

Job no: JG17064A

Project: Proposed School Buildings

Date: 4/11/17

Location: Armidale High School

Logged by: SG

Drill Model and Mounting: Edson 3000

Slope: 90°

R.L. Surface: -

Hole Diameter: 100mm

Bearing: Vertical

Datum: AHD

| Method    | Support | Water | Notes: Samples, Tests, etc | Depth(m) | Classification Symbol | Unified Soil Classification | Material Description<br>Soil Type, Plasticity or Particle Characteristic, colour, secondary and minor component | Moisture Content | Consistency/Density Index | Hand Penetrometer kPa | Structure and Additional Observations          |
|-----------|---------|-------|----------------------------|----------|-----------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-----------------------|------------------------------------------------|
| V - B I T | N I L   | D R Y | 4,11,20<br>/60mm<br>N>31   | 0.0      |                       |                             | Topsoil: Clayey Silt: low liquid limit, brown                                                                   |                  |                           |                       |                                                |
|           |         |       |                            | 0.5      |                       | CH                          | Silty Clay: high plasticity, brown and red                                                                      |                  |                           |                       |                                                |
|           |         |       |                            | 1.0      |                       | CI                          | Silty Clay: medium plasticity, brown                                                                            |                  |                           |                       |                                                |
|           |         |       |                            | 1.5      |                       |                             | Gravelly Clay with ironstone cobbles , red brown                                                                |                  |                           |                       | SPT bouncing at 1.36m<br>V-bit refusal at 1.6m |
| TC        |         |       |                            | 2.0      |                       |                             | Siltstone/Sandstone: fine grained, low strength extremely weathered , grey brown and dark red                   |                  |                           |                       | TC-bit refusal at 2.3m                         |
|           |         |       |                            | 3.0      |                       |                             | End of BH 7 at 2.3m                                                                                             |                  |                           |                       |                                                |
|           |         |       |                            | 4.0      |                       |                             |                                                                                                                 |                  |                           |                       |                                                |
|           |         |       |                            | 5.0      |                       |                             |                                                                                                                 |                  |                           |                       |                                                |
|           |         |       |                            | 6.0      |                       |                             |                                                                                                                 |                  |                           |                       |                                                |
|           |         |       |                            | 7.0      |                       |                             |                                                                                                                 |                  |                           |                       |                                                |
|           |         |       |                            | 8.0      |                       |                             |                                                                                                                 |                  |                           |                       |                                                |



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Borehole Report

Borehole no: 8

Client: NBRs Architecture

Job no: JG17064A

Project: Proposed School Buildings

Date: 4/11/17

Location: Armidale High School

Logged by: SG

Drill Model and Mounting: Edson 3000

Slope: 90°

R.L. Surface: -

Hole Diameter: 100mm

Bearing: Vertical

Datum: AHD

| Method    | Support | Water | Notes: Samples, Tests, etc | Depth(m) | Classification Symbol | Unified Soil Classification | Material Description<br>Soil Type, Plasticity or Particle Characteristic, colour, secondary and minor component                 | Moisture Content | Consistency/Density Index | Hand Penetrometer kPa | Structure and Additional Observations         |
|-----------|---------|-------|----------------------------|----------|-----------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-----------------------|-----------------------------------------------|
| V - B I T | N I L   | D R Y | DG                         |          |                       | CI                          | Topsoil: Clayey Silt: low liquid limit, brown                                                                                   | D                |                           |                       |                                               |
|           |         |       |                            |          |                       | -CH                         | Silty Clay: medium to high plasticity, brown                                                                                    | D-M              |                           |                       |                                               |
|           |         |       |                            | 1.0      |                       |                             | As above but with fine grained gravel                                                                                           | M                | VSt                       | 350                   |                                               |
|           |         |       | 5,6,8<br>N=14              |          |                       |                             |                                                                                                                                 |                  | H                         | 410                   |                                               |
| T C       |         |       |                            | 2.0      |                       | CL-CI                       | Gravelly Silty Clay: low to medium plasticity, brown with fine to medium grained gravel                                         | D-M              |                           |                       |                                               |
|           |         |       | 5,11,15<br>N=26            | 3.0      |                       |                             |                                                                                                                                 |                  | H                         | 590                   |                                               |
|           |         |       |                            |          |                       | CI                          | Interbedded Siltstone and Clay: medium plasticity extremely weathered and extremely low strength siltstone, grey and grey brown | D                |                           |                       | Soil-like properties<br>V-bit refusal at 3.7m |
|           |         |       |                            | 4.0      |                       |                             | Sandstone: brown, low to medium strength, distinctly weatheredm grey brown                                                      |                  |                           |                       |                                               |
|           |         |       |                            |          |                       |                             | End of BH 8 at 4.6m                                                                                                             |                  |                           |                       | TC-bit refusal at 4.6m                        |
|           |         |       |                            | 5.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                               |
|           |         |       |                            | 6.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                               |
|           |         |       |                            | 7.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                               |
|           |         |       |                            | 8.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                               |



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Borehole Report

Borehole no: 9

Client: NBRs Architecture

Job no: JG17064A

Project: Proposed School Buildings

Date: 4/11/17

Location: Armidale High School

Logged by: SG

Drill Model and Mounting: Edson 3000

Slope: 90°

R.L. Surface: -

Hole Diameter: 100mm

Bearing: Vertical

Datum: AHD

| Method    | Support | Water | Notes: Samples, Tests, etc | Depth(m) | Classification Symbol | Unified Soil Classification | Material Description<br>Soil Type, Plasticity or Particle Characteristic, colour, secondary and minor component                 | Moisture Content | Consistency/Density Index | Hand Penetrometer kPa | Structure and Additional Observations             |
|-----------|---------|-------|----------------------------|----------|-----------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-----------------------|---------------------------------------------------|
| V - B I T | N I L   | D R Y | 3,5,7<br>N=12              | 1.0      |                       |                             | Topsoil/Fill: Clayey Silt: low liquid limit, brown                                                                              | D-M              |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             | Fill: Silty Clay: low to medium plasticity, dark brown                                                                          | M                |                           |                       |                                                   |
|           |         |       |                            |          |                       | CI                          | Silty Clay: medium to high plasticity, brown with fine ironstone gravel                                                         | M                | VSt                       | 220<br>290            |                                                   |
|           |         |       |                            |          |                       | -CH                         |                                                                                                                                 |                  |                           |                       |                                                   |
| T C       |         |       | 10,18<br>/ 30mm<br>N>18    | 2.0      |                       | CI                          | Interbedded Siltstone and Clay: medium plasticity extremely weathered and extremely low strength siltstone, grey and grey brown | D                |                           |                       | Soil-like properties<br><br>V-bit refusal at 2.7m |
|           |         |       |                            |          |                       |                             | Sandstone: brown, low to medium strength, distinctly weathered, grey brown                                                      |                  |                           |                       | SPT bouncing at 2.68m                             |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       | End of BH 9 at 3.6m         |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            | 4.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            | 5.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            | 6.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            | 7.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            | 8.0      |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |
|           |         |       |                            |          |                       |                             |                                                                                                                                 |                  |                           |                       |                                                   |

## **APPENDIX B**

### **Sampling Quality Assurance Plan**

## **SAMPLING LOCATION AND RECORDING**

The position of all sampling points shall be approximated with reference to site features and boundaries and recorded on a site plan. All sampling locations shall be labelled with a unique number with prefix as follows;

- BH - Boreholes including hand auger boreholes
- TP – Test pit excavation

Soil types shall be recorded in accordance with the geotechnical classifications detailed in AS1726-1993 Geotechnical Site Investigations. A field log shall record the following but not limited to the following information;

- Profile type – fill, natural, bedrock etc
- Depths of profile type
- Soil classification including composition, properties and characteristics.
- Groundwater conditions.
- Depths of samples collected.
- Unusual or unexpected conditions including odour, colour etc.

## **SOIL SAMPLING**

Sampling equipment used shall be in sound working order and free of oil leaks. Soil samples recovered from the testpits were collected directly from an undisturbed lump of soil from the backhoe bucket. Care was taken to ensure that cross contamination between samples do not occur

Immediately after collection, samples were placed in new jars and stored in cooled conditions while in the field and in transit to the laboratory.

Field personnel will be responsible for the labelling of all sample containers. Labelling shall be completed using permanent markers. Each sample shall be labelled with the following information;

- Project Number
- Sample Identification Number.
- Sampling depth.

## **SAMPLE CUSTODY**

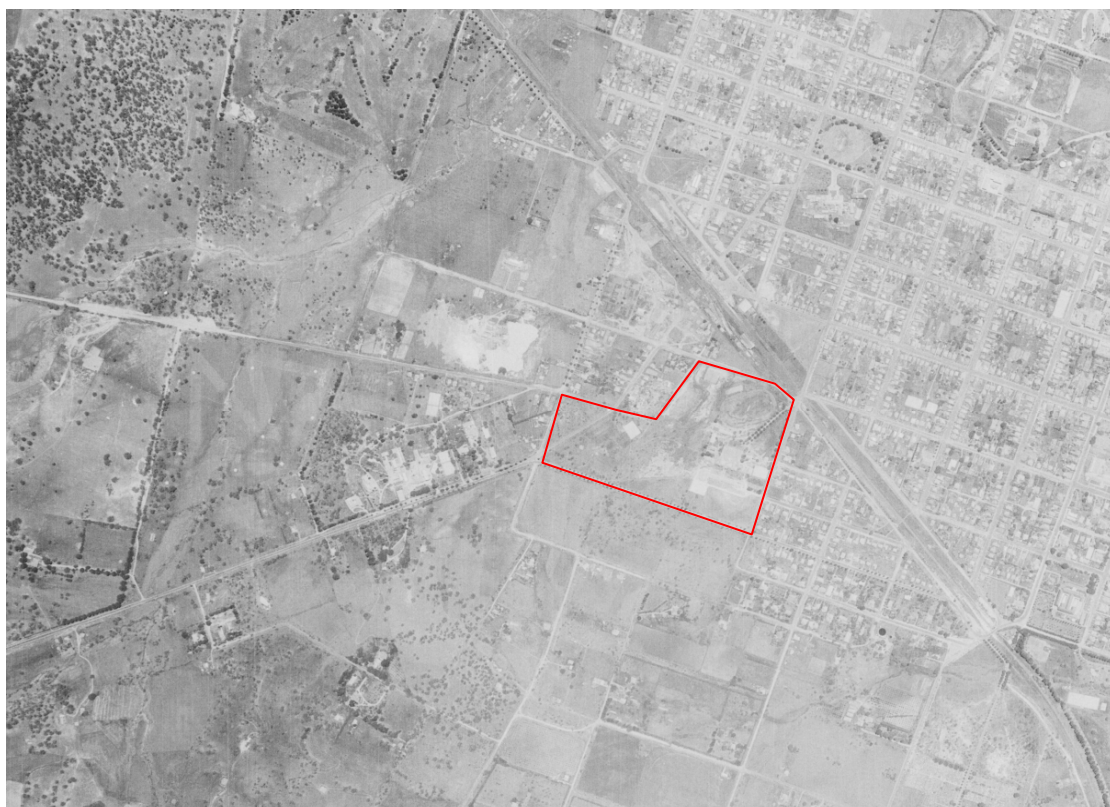
A Laboratory Test Request & Chain of Custody (COC) form shall be completed for each sample set collected. The form is maintained as a record of sample collection, transfer, shipment and receipt by the laboratory. When physical possession of samples is transferred, both the individual relinquishing the samples and the individual receiving them shall sign, date and record the time on the COC.

Any samples damage shall be reported to the field personnel so that resampling could take place.

## **APPENDIX C**

Aerial Photos, Land Titles, EPA Searches, Groundwater Bores & Section 149(2)

## **Aerial Photos**



1962



1970



1979



1994

## **Land Title Searches**

# Cadastral Records Enquiry Report

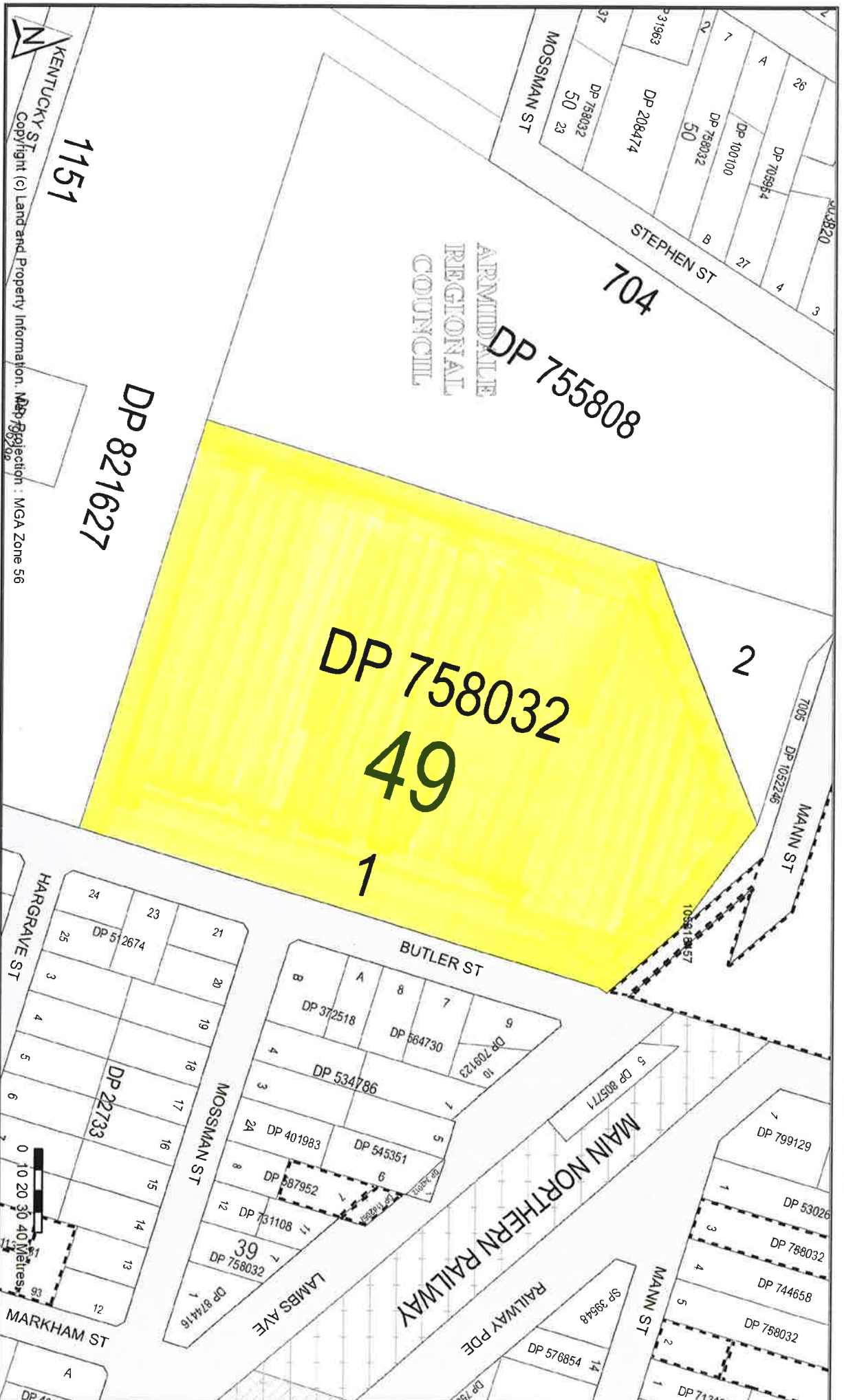
Locality : ARMIDALE

Requested Parcel : Lot 1 Section 49 DP 758032

Parish : ARMIDALE

Identified Parcel : Lot 1 Section 49 DP 758032

County : SANDON



Copyright (c) Land and Property Information. Map Projection : MGA Zone 56



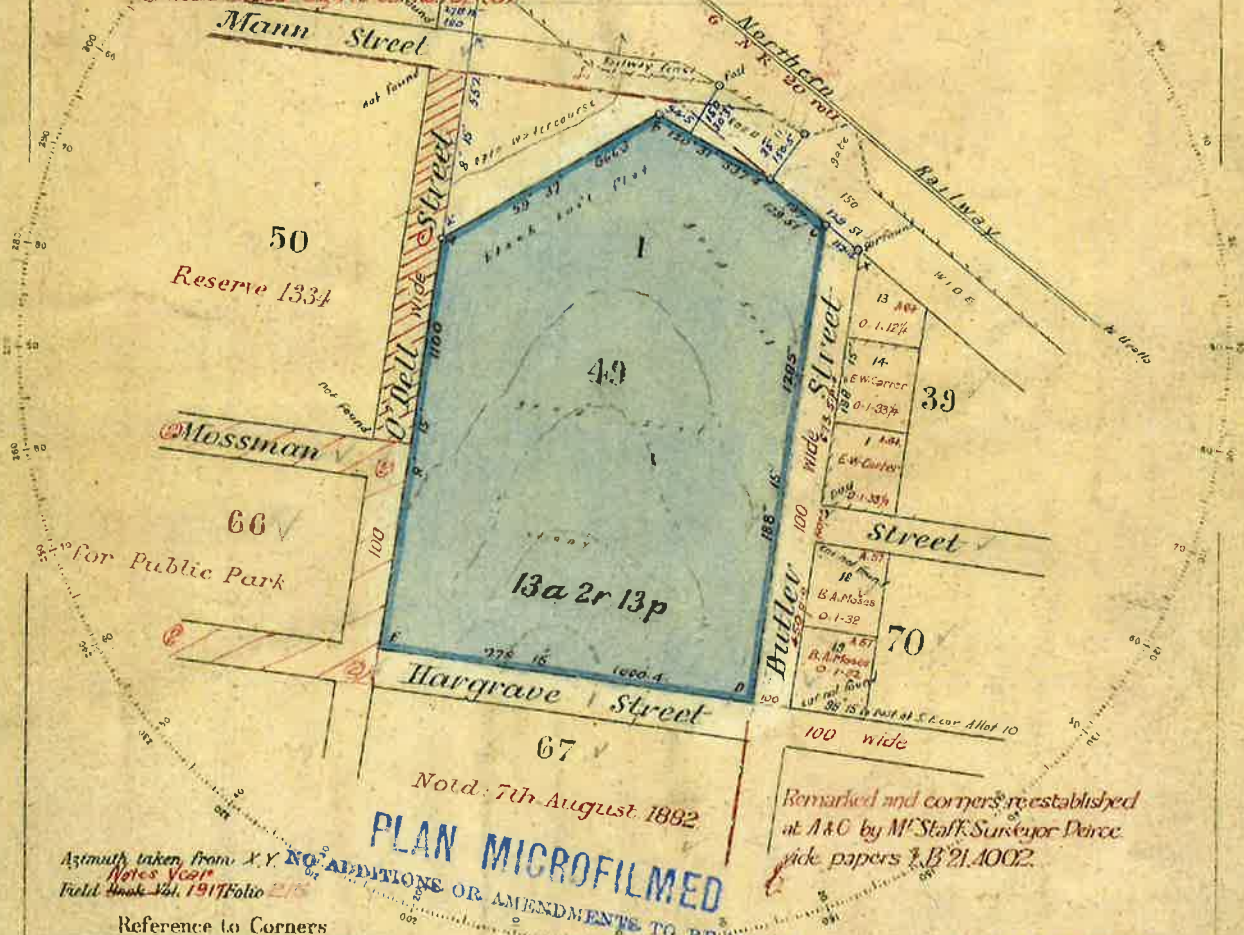
**ARMIDALE**  
**MUNICIPALITY**  
*Within City boundaries renotified 8<sup>th</sup> November 1918*  
**PLAN OF ALLOTMENT 1 OF SECTION 49**  
**CITY OF ARMIDALE**  
**County of Sandon Parish of Armidale**  
**LAND DISTRICT OF ARMIDALE LAND BOARD DISTRICT OF ARMIDALE**  
**Resumed Area N<sup>o</sup> Pastoral Holding, Eastern Division.**

Applied for under the

Section of the Crown Lands Act of 1 by

*Within Sandon Gold Field  
Proclaimed 8<sup>th</sup> July 1907*

*Measured for High School Site*  
*Within City Boundaries of Armidale, Noid 20<sup>th</sup> March 1885.*  
*Municipal* *Procla. 17<sup>th</sup> Novr 1863*  
*Towns Police Act Bound* *3<sup>rd</sup> October 1854*  
*Reserve 1334 for Public Park, Noid 7<sup>th</sup> 1882, also Reserves for Public Park & Plantations, Ms 01.166, Ind. 3, 4, 7, 8*  
*Medicated for High School Site 8<sup>th</sup> March 1918*  
*Within R. 1477 for Occ. under Army M.R. & S.L. Noid 22<sup>nd</sup> March 1918*  
*① Road closed by Alteration of Design Gaz 6/2/30*  
*② Road closed 3/4/10/63, Rd 67/37*



*Azimuth taken from X.Y. Notes Year*  
*Field Book Vol. 1917 Folio 216*

Reference to Corners

| Corner | bearing | From | Links | ft on tree |
|--------|---------|------|-------|------------|
| A      | Stake   |      | 49    | 1          |
| B      | Stake   |      | 49    | 1          |
| C      | Stake   |      | 49    | 1          |
| D      | Stake   |      | 49    | 1          |
| E      | Stake   |      | 49    | 1          |

Value of Improvements

Reference to Traverse

| Line | bearing | Distance |
|------|---------|----------|
|      |         |          |
|      |         |          |
|      |         |          |
|      |         |          |

I hereby certify that I in person made and on the 17<sup>th</sup> October 1917 completed the survey represented on this plan on which are written the bearings and lengths of the lines measured by me and I declare that the survey has been executed in accordance with the regulations published for the guidance of Licensed Surveyors and the practice of the Department of Lands.

*Wm. W. W. W.*  
Licensed Surveyor

Transmitted to the District Surveyor with my letter of 30<sup>th</sup> October 1917, 25

Voucher N<sup>o</sup> 725 Passed *11-16-1917*  
Calculation Book N<sup>o</sup> 243 folio 16 *11-17*  
Checked and Charted *11-17*  
Examined *28<sup>th</sup> Nov 1917*  
Plan approved *11-17*

Scale 4 Chains to an Inch

A. 93.1354

[5197]

Department of Lands,  
Sydney, 8th March, 1918.NOTIFICATION OF DEDICATION OF LANDS FOR PUBLIC PURPOSES UNDER THE CROWN LANDS  
CONSOLIDATION ACT, 1918.

**A**N abstract of the intended dedication of the various areas of Crown Land described in the Schedule hereto, for the public purposes therein mentioned, having been duly laid before both Houses of Parliament of the State of New South Wales, in accordance with the provisions of the 24th section of the Crown Lands Consolidation Act, 1918, it is hereby notified that the various areas of Crown Lands hereinbefore mentioned, and as more particularly described in the Schedule hereto, are hereby dedicated for the respective public purposes specified in connection therewith.

[Ms. 1918-797]

W. G. ASHFORD, Minister for Lands.

## SCHEDULE.

List No. 1 of 1918.

| Place.                                      | County.         | Portion. | Allotment.                                           | Section. | Locality.                   | Area.                                                                                | Purpose of Intended Dedication. | No. of Papers.      | Cat. No. of Plan. |
|---------------------------------------------|-----------------|----------|------------------------------------------------------|----------|-----------------------------|--------------------------------------------------------------------------------------|---------------------------------|---------------------|-------------------|
| Adamstown ...                               | Northumberland. | ...      | ...                                                  | ...      | Parish of Newcastle ...     | a. r. p.<br>0 0 18                                                                   | Public Road ...                 | Rds.<br>1917-98-2   | R. 13154-1608     |
| Adamstown and Hamilton.                     | Northumberland. | ...      | ...                                                  | ...      | Parish of Newcastle ...     | 1 2 30                                                                               | Public Road ...                 | do                  | R. 19118-1603     |
| Armidale ...                                | Sandon          | ...      | 1                                                    | 49       | City of Armidale ...        | 13 2 18                                                                              | Public High School Site         | Ms.<br>1917-942     | A. 23-1354        |
| Baryngall ...                               | Drake           | 147      | ...                                                  | ...      | Parish of Yulgilbar ...     | 1 1 25                                                                               | Public School Site              | 9855                | D. 1298-1713      |
| Beckom ...                                  | Bourke          | ...      | 2 to 5, and land south of and adjoining allotment 2. | 7        | Village of Beckom ...       | 1 0 19½                                                                              | Public School Site (Addition).  | 801                 | B-ekom 10         |
| Cocked Hat Creek, near Cockle Creek.        | Northumberland. | ...      | ...                                                  | ...      | Parish of Kaitiaki ...      | 9 8 10                                                                               | Public Road ...                 | Rds.<br>1916-570-11 | Ms. 2083 Md.      |
| Coonabarabran ...                           | Gowan           | ...      | ...                                                  | ...      | Parish of Coonabarabran ... | 0 8 10                                                                               | Public Road ...                 | 541-6               | R. 18924-1608     |
| Findon Creek ...                            | Rose            | 80       | ...                                                  | ...      | Parish of Findon ...        | 3 0 0                                                                                | Public School Site              | Ms.<br>1918-813     | R. 7778-1760      |
| Gallymont (near) ...                        | Bathurst        | ...      | ...                                                  | ...      | Parish of Somers ...        | 1 2 0<br>(being the surface land of such area and 100 feet below same, and no more). | Public Road ...                 | Rds.<br>1914-721-18 | R. 13137-1603     |
| Glenariff ...                               | Cowper          | 2        | ...                                                  | ...      | Parish of Huntly ...        | 5 0 0                                                                                | Public School Site              | Ms.<br>1917-849     | C. 404-1608       |
| Grubben ...                                 | Mitchell        | 159      | ...                                                  | ...      | Parish of Edgehill ...      | 2 0 0                                                                                | Public School Site              | 1918-181            | M. 2097-1608      |
| Hogarth's Range ...                         | Richmond        | ...      | ...                                                  | ...      | Parish of Mongerrie ...     | 5 0 0                                                                                | Public Road ...                 | Rds.<br>1916-284    | R. 12966-1608     |
| Holbrook ...                                | Goulburn        | ...      | ...                                                  | ...      | Parish of Holbrook ...      | 81 0 0                                                                               | Public Road ...                 | 1916-64-5           | R. 18000-1603     |
| Kitchener ...                               | Northumberland. | ...      | ...                                                  | 17       | Village of Kitchener ...    | 5 8 14                                                                               | Public School Site              | Ms.<br>1917-8812    | Kitchener 9       |
| Lake Vale ...                               | King            | 214      | ...                                                  | ...      | Parish of Mundoonan ...     | 2 0 0                                                                                | Public School Site              | 9032                | K. 8502-1608      |
| Milvaia ...                                 | Bland           | 147      | ...                                                  | ...      | Parish of Geraldra ...      | 1 0 0                                                                                | Public School Site              | 9030                | L. 6034-1608      |
| New Lambton ...                             | Northumberland. | ...      | ...                                                  | ...      | Parish of Newcastle ...     | 0 0 32                                                                               | Public Road ...                 | Rds.<br>1917-98-2   | R. 13151-1608     |
| New Lambton ...                             | Northumberland. | ...      | ...                                                  | ...      | Parish of Newcastle ...     | 0 0 32                                                                               | Public Road ...                 | 98-2                | R. 13152-1608     |
| New Lambton ...                             | Northumberland. | ...      | ...                                                  | ...      | Parish of Newcastle ...     | 4 2 32                                                                               | Public Road ...                 | 98-3                | R. 13110-1608     |
| Paul's Ferry road ...                       | Northumberland. | ...      | ...                                                  | ...      | Parish of Narara ...        | 1 3 0                                                                                | Public Road ...                 | 1918-446-25         | R. 12906-1608     |
| Pokalare ...                                | Demarba         | 47       | ...                                                  | ...      | Parish of Kamilaroi ...     | 3 3 3                                                                                | Public School Site              | Ms.<br>1917-9829    | R. 2009-1609      |
| Rocky River ...                             | Sandon          | 534      | ...                                                  | ...      | Parish of Uralia ...        | 0 0 39½                                                                              | Public School Site (Addition).  | Ms.<br>1918-76      | S. 4272-1600      |
| Sydney (Newtown road and Cleveland-street). | Cumberland      | ...      | ...                                                  | ...      | City of Sydney ...          | 0 0 6½                                                                               | Public Road ...                 | 1917-8770           | C. 14-2068        |
| The Briars ...                              | King            | 183      | ...                                                  | ...      | Parish of Mundoonan ...     | 3 0 0                                                                                | Public School Site              | 9081                | K. 8801-1608      |
| Waratah ...                                 | Northumberland. | ...      | ...                                                  | ...      | Parish of Newcastle ...     | 0 0 23                                                                               | Public Road ...                 | Rds.<br>1917-98-2   | R. 13150-1608     |
| Waratah ...                                 | Northumberland. | ...      | ...                                                  | ...      | Parish of Newcastle ...     | 1 2 30                                                                               | Public Road ...                 | 427-4               | R. 13213-1608     |
| Werombi ...                                 | Camden          | ...      | ...                                                  | ...      | Parish of Werombi ...       | 0 2 0                                                                                | Public Road ...                 | 1916-419-13         | R. 18054-1608     |
| Wollar ...                                  | Phillip         | ...      | ...                                                  | ...      | Parish of Wollar ...        | 2 0 0                                                                                | Public Road ...                 | 1917-192-4          | R. 18284-1608     |
| Yaven Creek ...                             | Wynyard         | 97       | ...                                                  | ...      | Parish of Mate ...          | 2 0 0                                                                                | Public School Site              | Ms.<br>1917-7412    | W. 5284-2119      |

[5881]

Western Land Board Office,  
Sydney, 8th March, 1918.DETERMINATION OF RENTAL OF LEASE ISSUED UNDER THE PROVISIONS OF THE  
WESTERN LANDS ACTS.

**I**T is hereby notified that, in pursuance of the provisions of section 19 of the "Western Lands Act of 1901," the Commissioners constituting the Western Land Board have determined the Rental of the Lease specified in the following Schedule at the rate per acre and for the period therein mentioned.

C. J. McMASTER, Chief Commissioner.  
HUGH LANGWELL, Commissioner.  
S. W. MOORE, Commissioner.

## SCHEDULE.

| No. of Western Lands Lease. | No. and Class of Lease under Crown Lands Act, or Western Lands Act. | Name of Registered Holder. | Area.            | Annual Rental per Acre. | Total Annual Rental. | Period for which rent has been determined. |               |
|-----------------------------|---------------------------------------------------------------------|----------------------------|------------------|-------------------------|----------------------|--------------------------------------------|---------------|
|                             |                                                                     |                            |                  |                         |                      | From                                       | To            |
| 2079                        | New lease,—section 33                                               | Edward Frederick Smith     | Acres.<br>20,480 | d.<br>100               | £ s. d.<br>8 10 8    | 1 July, 1916                               | 31 June, 1920 |

## NOTICES TO APPLICANTS FOR LEASES FOR MINING, &amp;c.—continued.

RENTS are due and owing, &amp;c.—continued.

| No.                                                | Name.                               | Portion No.               | Locality.      |                           | Area.              | Application No.                                         |
|----------------------------------------------------|-------------------------------------|---------------------------|----------------|---------------------------|--------------------|---------------------------------------------------------|
|                                                    |                                     |                           | County.        | Parish.                   |                    |                                                         |
| MINERAL LEASES (COAL AND SHALE), MINING ACT, 1906. |                                     |                           |                |                           |                    |                                                         |
| 326                                                | The Great Northern Coal Co., Ltd.   | 20                        | Northumberland | Actlalong                 | a. r. p.<br>40 0 0 | East Maitland<br>52-91                                  |
| 404                                                | E. Kelly and another                | ML 21,<br>22.             | do             | Awaba and Mulbring.       | 258 2 30           | Newcastle<br>118-164                                    |
| MINING PURPOSES LEASES, MINING ACT, 1906.          |                                     |                           |                |                           |                    |                                                         |
| 86                                                 | G. Young                            | SB                        | Drake          | West Fairfield            | 0 0 27             | Drake 1-81                                              |
| 123                                                | Bourke's Hill Tin Sluicing Co. N.L. | ML 88                     | Gough          | Scone                     | 2 0 0              | Emmaville 10-178                                        |
| 133                                                | J. M. Dodd                          | GL 60                     | Clarendon      | South Gundagai            | 0 0 12             | Gundagai 4-66                                           |
| 164                                                | G. Markham                          | ML 478                    | Hardinge       | Swinton                   | 0 2 21             | Tingha 15-347                                           |
| 160                                                | The Edith Mining Co. Ltd.           | " 24                      | Clive          | Rockvale                  | 10 0 0             | Torrington 2-85                                         |
| 204                                                | The Great Northern Coal Co. Ltd.    | " 40,<br>58, 54, &<br>66. | Northumberland | Cessnock                  | 38 1 20            | East Maitland<br>87-126, 38-127,<br>80-128, and 40-120. |
| DREDGING LEASES, MINING ACT, 1906.                 |                                     |                           |                |                           |                    |                                                         |
| 188                                                | W. A. Lamb and another              | PML 15                    | Goulburn       | Vautier                   | 81 1 35            | Germanton 1-10                                          |
| 278                                                | L. R. Litchfield                    | ML 5                      | Hardinge       | Swinton                   | 9 8 27             | Tingha 90-898                                           |
| 304                                                | A. J. Welman                        | " 41                      | do             | Swinton and Cope's Creek. | 44 1 14            | " 105-486                                               |
| 307                                                | A. T. Brissett                      | " 8                       | do             | Swinton                   | 27 1 29            | " 101-437                                               |
| 326                                                | C. D. Fraser                        | GL 72                     | Dampier        | Gulph and Norri-gundah.   | 22 3 20            | Norrigundah<br>5-57                                     |
| 327                                                | A. J. Wolman                        | ML 36                     | Hardinge       | Cope's Creek              | 23 0 16            | Tingha 109-445                                          |
| 328                                                | J. Tonking                          | GL 170                    | Wynyard        | Adelong                   | 9 8 23             | Adelong 12-135                                          |

J. C. L. FITZPATRICK, Secretary for Mines.

[5570]

Department of Mines,  
Sydney, 22nd March, 1918.

## REVOCATION OF RESERVE No. 883, AND PART OF GENERAL RESERVATION MADE UNDER SECTION 26, MINING ACT, 1874, AND RESERVATION OF AN AREA FROM OCCUPATION UNDER ANY MINER'S RIGHT OR BUSINESS LICENSE, PARISH ARMIDALE, COUNTY SANDON, IN LIEU THEREOF.

HIS Excellency the Governor, with the advice of the Executive Council, on the recommendation of the Minister, directs it to be notified that, in pursuance of the provisions of section 14 (3) Mining Act, 1906, Reserve No. 333, made under section 26, Mining Act, 1874, notified 14th October, 1892, in the first Schedule hereunder described; and so much of General Reservation, under the said section and Act, notified 12th February, 1901, which is embraced in the second Schedule, shall be revoked, and they are hereby revoked accordingly; and that the land in the third Schedule hereunder described shall be and it is hereby exempted from occupation under any miner's right or business license in lieu thereof.

[Ms. 1918-1,548-149]

J. C. L. FITZPATRICK, Minister for Mines.

| Land District.   | Division. | Reserve No.                                                                                                                         | Purpose.                                                                                        | Date of Notification. | County. | Parish.  | Holding. | Area.                 | Part revoked.                                              | Papers No.      |
|------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------|---------|----------|----------|-----------------------|------------------------------------------------------------|-----------------|
| FIRST SCHEDULE.  |           |                                                                                                                                     |                                                                                                 |                       |         |          |          |                       |                                                            |                 |
|                  |           | 883                                                                                                                                 | From occupation for mining purposes under any miner's right or business license.                | 16 Oct., 1892         | Sandon  | Armidale |          | Acres, 9,300 (about). | The whole                                                  | Ms. 1918-1,102. |
| SECOND SCHEDULE. |           |                                                                                                                                     |                                                                                                 |                       |         |          |          |                       |                                                            |                 |
|                  |           | General reserve covering all lands reserved for public purposes (within any city, town, or village) within a proclaimed gold-field. | From occupation for residence or business purposes under any miner's right or business license. | 12 Feb., 1901         | Sandon  | Armidale |          |                       | Those parts within the boundaries of the city of Armidale. | Ms. 1918-1,102. |

## THIRD SCHEDULE.

## EASTERN DIVISION.

## LAND DISTRICT OF ARMIDALE, DUMASQU SHIRE.

## DESCRIPTION.

No. 1,477. County of Sandon, parish of Armidale. The Crown Lands within the boundaries of the city and suburban lands of Armidale.

[5560]

Department of Mines,  
Sydney, 22nd March, 1918.

## RESERVE FROM ALIENATION FOR MINING OR MINING PURPOSES, PARISH OF WAMBAT, COUNTY OF HARDEN.

HIS Excellency the Governor, with the advice of the Executive Council, on the recommendation of the Minister, and with the concurrence of the Secretary for Lands, directs it to be notified that, in pursuance of the provisions of section 106 of the Mining Act, 1906, the Crown Lands hereunder described shall be exempted from alienation and reserved for mining or mining purposes, and they are hereby exempted from alienation and reserved for mining or mining purposes accordingly.

[1918-1,810-140 Misc.]

J. C. L. FITZPATRICK, Minister for Mines.

## EASTERN DIVISION.

## LAND DISTRICT OF YOUNG, AND DEMONDVILLE SHIRE.

No. 1,476 (M.). County of Harden, parish of Wambat, containing an area of about 75 acres; The Crown Lands bounded by portions 81, 434, 471, and 432, and E. 1,048 (M) for mining or mining purposes, notified 7th October, 1907.

*Parish of Wallangulla: Lightning Ridge Public School*

Allotment 2, section 6, D.P. 758612 of 1.335 hectares — Reserved (R46340) for Public School purposes. *Government Gazette*, 22nd February 1911.

Allotment 1, section 6, D.P. 758612 of 8094 square metres — Dedicated for Public School site. *Government Gazette*, 12th July 1911.

Lot 80, D.P. 820480 of 6071 square metres — Reserved (R46340) for Public School site (addition). *Government Gazette*, 22nd February 1974.

*Parish of Weilmoringle: Weilmoringle Public School*

Lot 4, D.P. 752007 of 8094 square metres — Dedicated for Public School purposes. *Government Gazette* 18th May 1962.

Lot 6, D.P. 752007 of 1.032 hectares — Reserved (R86470) for Public School purposes. *Government Gazette*, 20th October 1967.

Lot 7, D.P. 752007 of 1948 square metres — Reserved (R86816) for Public School purposes. *Government Gazette*, 2nd August 1968.

**EDUCATION REFORM ACT 1990****Land Acquisition (Just Terms Compensation) Act 1991****Notice of Compulsory Acquisition of Land for Public School**

THE Minister for Education and Training, with the approval of His Excellency the Governor, declares by delegate that the land described in the Schedule below is acquired by compulsory process under the provisions of the Land Acquisition (Just Terms Compensation) Act 1991, for the purposes of the Education Reform Act.

Dated at Sydney, this 10th day of July 1995.

JOHN AQUILINA, M.P.,  
Minister for Education and Training.

**SCHEDULE***Parish of Armidale: Armidale High School*

Allotments 1 and 2, section 49, D.P. 758032 of 5.942 hectares — Dedicated for Public High School site, Lot 704, D.P. 755808 of 4.378 hectares — Dedicated for Public School purposes (addition) and Lot 1151, D.P. 821627 of 4.562 hectares — Dedicated for Public High School (addition). *Government Gazette*, 8th March 1918.

Allotment 1, section 161, D.P. 758032 of 3.121 hectares — Dedicated for Public School purposes. *Government Gazette*, 28th November 1924.

*Parish of Armidale: Ben Venue Public School*

Lot 758, D.P. 755808 of 1.619 hectares — Dedicated for Public School site. *Government Gazette*, 1st November 1929.

*Parish of Armidale: Drummond Memorial Public School*

Allotments 10–15, Section 59, D.P. 758032 of 1.138 hectares — Dedicated for Public School site. *Government Gazette*, 19th January 1884.

Allotments 17 — 19 section 59, D.P. 758032 of 5691 square metres — Dedicated for Public School site (addition). *Government Gazette*, 26th October 1928.

Allotments 1–5, and 20 section 59, D.P. 758032 of 1.214 hectares and Lot 1153, D.P. 820551 of 728.4 square metres — Dedicated for Public School. *Government Gazette*, 21st April, 1950.

*Parish of Armidale: Armidale City Public School*

Allotment 7, section 30, D.P. 758032 of 3288 square metres — Dedicated for Public School site. *Government Gazette*, 19th January 1884.

Allotment 3, section 30, D.P. 758032 of 2023 square metres — Dedicated for Public School site. *Government Gazette* 19th January 1895.

Allotment 4, section 30, D.P. 758032 of 1012 square metres — Dedicated for Public School site. *Government Gazette*, 9th January 1897.

Lot 1146, D.P. 821025 of 671.1 square metres — Dedicated for Public School site. *Government Gazette*, 8th October 1898.

Allotment 8, section 30, D.P. 758032 of 2049 square metres — Dedicated for Public School. *Government Gazette*, 17th November 1939.

Allotment 9, section 30, D.P. 758032 of 1555 square metres — Dedicated for Public School site. *Government Gazette*, 1st October 1954.

Allotment 6, section 30, D.P. 758032 of 7221 square metres — Dedicated for Public School. *Government Gazette*, 30th September 1960.

**EDUCATION REFORM ACT 1990****Land Acquisition (Just Terms Compensation) Act 1991****Notice of Compulsory Acquisition of Land for Public School**

THE Minister for Education and Training, with the approval of His Excellency the Governor, declares by delegate that the land described in the Schedule below is acquired by compulsory process under the provisions of the Land Acquisition (Just Terms Compensation) Act 1991, for the purposes of the Education Reform Act.

Dated at Sydney, this 10th day of July 1995.

JOHN AQUILINA, M.P.,  
Minister for Education and Training.

**SCHEDULE***Parish of Euabalong: Euabalong Public School*

Allotments 1–5, section 1, D.P. 758393 of 1.012 hectares — Dedicated for Public School. *Government Gazette*, 11th June 1889.

Lot 1, D.P. 725397 of 809.6 square metres — Dedicated for Public School (addition). *Government Gazette* 18th September 1953.

SEARCH DATE

23/11/2017 4:14PM

FOLIO: 1/49/758032

First Title(s): 1/49/758032

Prior Title(s): CROWN LAND

| Recorded   | Number   | Type of Instrument   | C.T. Issue                     |
|------------|----------|----------------------|--------------------------------|
| 13/6/1991  | DP758032 | DEPOSITED PLAN       | FOLIO CREATED<br>CT NOT ISSUED |
| 8/8/1995   | 0441923  | DEPARTMENTAL DEALING |                                |
| 24/8/1995  | 0431053  | DEPARTMENTAL DEALING | EDITION 1                      |
| 13/11/2012 | AH362192 | DEPARTMENTAL DEALING |                                |

\*\*\* END OF SEARCH \*\*\*

PSH-GROLLY-JG17064A

PRINTED ON 23/11/2017

Any entries preceded by an asterix do not appear on the current edition of the certificate of title.

Warning: the information appearing under notations has not been formally recorded on the Register.

Hazlett Information Services hereby certifies that the information contained in this document has been provided electronically by the Registrar-General in accordance with Section 96B(2) of the Real Property Act 1900.

Level 4, 122 Castlereagh Street, Sydney 2000 - DX 1078 SYDNEY

PHONE: (02) 9261 5211 FAX: (02) 9264 7752

www.hazlett.com.au



NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/49/758032

| SEARCH DATE | TIME    | EDITION NO | DATE      |
|-------------|---------|------------|-----------|
| 23/11/2017  | 4:14 PM | 1          | 24/8/1995 |

LAND

LOT 1 OF SECTION 49 IN DEPOSITED PLAN 758032  
AT ARMIDALE  
LOCAL GOVERNMENT AREA ARMIDALE REGIONAL  
PARISH OF ARMIDALE COUNTY OF SANDON  
(FORMERLY KNOWN AS ALLOTMENT 1 OF SECTION 49)  
TITLE DIAGRAM CROWN PLAN 93.1354

FIRST SCHEDULE

MINISTER FOR EDUCATION AND TRAINING (DD 0431053)

SECOND SCHEDULE (1 NOTIFICATION)

\* 1 DEDICATED FOR PUBLIC HIGH SCHOOL SITE GOV. GAZ. 8.3.1918 FOL 1273

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*

PSH-GROLLY-JG17064A

PRINTED ON 23/11/2017

Any entries preceded by an asterisk do not appear on the current edition of the certificate of title.  
Warning: the information appearing under notations has not been formally recorded on the Register.  
Hazlett Information Services hereby certifies that the information contained in this document has been provided electronically by the Registrar-General in accordance with Section 96B(2) of the Real Property Act 1900.  
Level 4, 122 Castlereagh Street, Sydney 2000 - DX 1078 SYDNEY  
PHONE: (02) 9261 5211 FAX: (02) 9264 7752  
www.hazlett.com.au



## **EPA Searches**

[Home](#) [Contaminated land](#) [Record of notices](#)

Search results

Your search for:LGA: Armidale Dumaresq Council

Matched 22 notices relating to 6 sites.

[Search Again](#)

[Refine Search](#)

| Suburb    | Address                                      | Site Name                                               | Notices related to this site |
|-----------|----------------------------------------------|---------------------------------------------------------|------------------------------|
| ARMIDALE  | 132 Niagara STREET                           | <a href="#">Former Mobil Depot</a>                      | 4 former                     |
| ARMIDALE  | Corner of Beardy Street and Allingham STREET | <a href="#">Gasworks and portion of Harris Park</a>     | 2 current                    |
| ARMIDALE  | Martin STREET                                | <a href="#">Martin Street Estate</a>                    | 6 former                     |
| ARMIDALE  | Lot 3 Martin STREET                          | <a href="#">Martin Street Estate, Lot 3</a>             | 2 former                     |
| ARMIDALE  | adjoining Martin STREET                      | <a href="#">RTA land adjoining Martin Street estate</a> | 6 former                     |
| TILBUSTER | Beethoven LANE                               | <a href="#">Tilbuster Park Estate</a>                   | 2 former                     |

Page 1 of 1

20 November 2017

For business and industry ( ) ^

For local government ( ) ^

Contact us

- ☎ 131 555 (tel:131555)
- 💻 Online (<http://www.epa.nsw.gov.au/about-us/contact-us/feedback/feedback-form>)
- ✉ [info@epa.nsw.gov.au](mailto:info@epa.nsw.gov.au) (mailto:info@epa.nsw.gov.au)
- 🏠 EPA Office Locations (<http://www.epa.nsw.gov.au/about-us/contact-us/locations>)

[Accessibility \(http://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/help-index\)](http://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/help-index)  
[Disclaimer \(http://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/disclaimer\)](http://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/disclaimer)  
[Privacy \(http://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/privacy\)](http://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/privacy)  
[Copyright \(http://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/copyright\)](http://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/copyright)

Find us on     <https://www.epa.nsw.gov.au>

## **Groundwater Bores**

[home](#) · [help](#) · [login](#) · [contact](#) · [customise](#)

**All Groundwater**  
[find a site](#)

[All Groundwater Map](#)

bandwidth ☒ high ☐ low

[glossary and metadata](#)

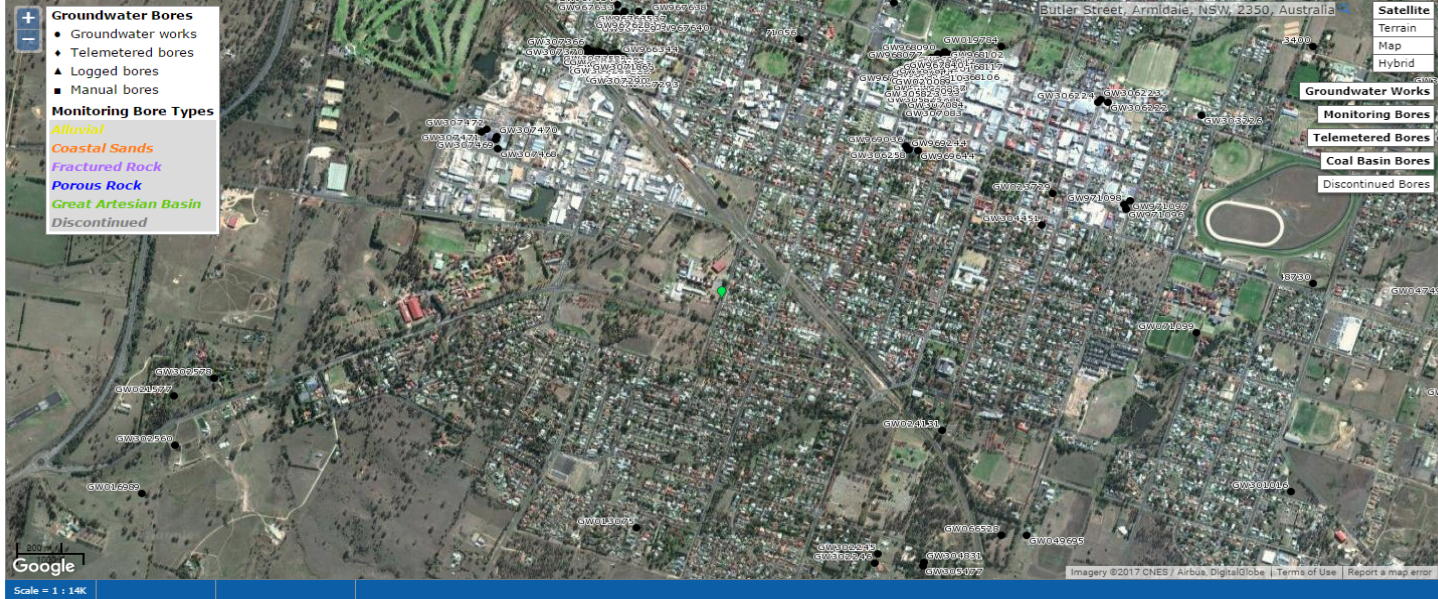
[bookmark this page](#)

All Groundwater

## All Groundwater Map

All data times are Eastern Standard Time

[Map](#)
[Info](#)



**Section 149(2)**

## PLANNING CERTIFICATE

Issued under Section 149 of the *Environmental Planning and Assessment Act 1979*, as amended.

### CERTIFICATE DETAILS

Certificate Number

A-149(2):5573

Certificate Issue Date:

28 September 2017

Your Reference:

JG17064A:18109

### PROPERTY DETAILS

Property Details:

158-182 Butler Street ARMIDALE NSW 2350

Legal Description:

Lot 1151 DP 821627, Lot 1 DP 196298, Lot 704 DP 755808, Lot 2 Sec 49 DP 758032, Lot 1 Sec 161 DP 758032, Lot 1 Sec 49 DP 758032,

---

### Notes:

1. This Certificate reflects the circumstances applicable at the date of issue of the document.
2. Where a 149 Certificate is issued by Council relating to a lot/s within a Strata Plan, the information supplied on the Certificate will provide answers that are relevant to the entire Strata Plan.

## **1 Names of relevant planning instruments and DCPs**

(1) The names of:

*(a) each environmental planning instrument that applies to the carrying out of development on the land, and*

Armidale Dumaresq Local Environmental Plan 2012.

Refer to Annexure 1 for a list of State Environmental Planning Policies (SEPPs).

*(b) each proposed environmental planning instrument\* that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved);*

*\* In this clause, proposed environmental planning instrument includes a planning proposal for a LEP or a draft environmental planning instrument.*

Refer to Annexure 1 for list of any Draft State Environmental Planning Policies (SEPPs).

*(c) The name of each development control plan that applies to the carrying out of development on the land.*

Armidale Dumaresq Development Control Plan 2012.

A copy of the Armidale Dumaresq Development Control Plan 2012 is available from Council's web site – [www.armidale.nsw.gov.au/planning-development-armidale](http://www.armidale.nsw.gov.au/planning-development-armidale), or alternatively, can be printed on payment of a standard charge.

## **2 Zoning and land use under relevant LEPs**

*For each environmental planning instrument or proposed environmental planning instrument referred to in Clause 1 (other than a SEPP or proposed SEPP), that includes the land in any zone (however described):*

*(a) the identity of the zone, whether by reference to a name (such as "Residential Zone" or "Heritage Conservation Area") or by reference to a number (such as "Zone R1 General Residential");*

Current Zone under Armidale Dumaresq Local Environmental Plan 2012:

R1 General Residential;

*(b) the purposes for which the instrument provides that development may be carried out within the zone without the need for development consent;*

See Part 2 of the Armidale Dumaresq Local Environmental Plan 2012. Other provisions in the Armidale Dumaresq Local Environmental Plan 2012 may also be relevant. A full copy of the Armidale Dumaresq Local Environmental Plan 2012 is available from the NSW Government's legislation web site –

<http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+589+2012+cd+0+N> or Council's web site – [www.armidale.nsw.gov.au](http://www.armidale.nsw.gov.au). A hard copy is also available from Council on payment of a standard printing charge.

*(c) the purposes for which the instrument provides that development may not be carried out within the zone except with development consent;*

See response to 2(b) above

*(d) the purposes for which the instrument provides that development is prohibited within the zone,*  
See response to 2(b) above

(e) *whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed,*

The minimum land dimension for the erection of a dwelling-house on the land is 500 square metres. Also, see other provisions in Part 4 of the Armidale Dumaresq Local Environmental Plan 2012.

(f) *whether the land includes or comprises critical habitat;*

No

(g) *whether the land is in a conservation area (however described);*

No

(h) *whether an item of environmental heritage (however described) is situated on the land.*

Yes – Information on the heritage Item/s is available from the NSW State Heritage website, [www.heritage.nsw.gov.au](http://www.heritage.nsw.gov.au)

## **2A Zoning and land use under *State Environmental Planning Policy (Sydney Region Growth Centres) 2006*.**

This section does not apply to land in the *Armidale Dumaresq Local Government Area*.

### **3(1) *Complying development***

The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*

(a) *General Housing Code*

The land IS NOT land on which complying development may be carried out under Clause 1.19 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

Refer to Part 3(2) below.

(b) *Rural Housing Code*

The land IS NOT land on which complying development may currently be carried out unless complying development is carried out on the part of the lot to which Clause 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008* does not apply.

Refer to Part 3(2) below.

(c) *Housing Alterations Code*

(d) *General Development Code*

(e) *Commercial and Industrial Alterations Code*

(f) *Subdivisions Code*

(g) *Demolition Code*

(h) *Fire Safety Code*

The land IS NOT land on which complying development may be carried out under Clause 1.19 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

Refer to Part 3(2) below.

(i) *Commercial and Industrial Code*

The land IS land on which complying development may currently be carried out under the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008* having regard to the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4) and 1.19 of the Policy.

Refer to Part 3(2) below.

### **3(2) Complying development**

If complying development may not be carried out on all or part of the land because of the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*, the reasons why it may not be carried out are provided below. The following restrictions may apply to all or part of the land and Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

(a) *General Housing Code*

(b) *Rural Housing Code*

*NOTE: For the purposes of the Rural Housing Code under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008, complying development may be carried out on the part of the lot to which this clause may not apply.*

The land is on land that comprises, or on which there is, a building item of the environmental heritage that is identified as such an item in an environmental planning instrument.

(c) *Housing Alterations Code*

(d) *General Development Code*

(e) *Commercial and Industrial Alterations Code*

(f) *Subdivision Code*

(g) *Demolition Code*

(h) *Fire Safety Code*

The land is on land that comprises, or on which there is, a building item of the environmental heritage that is identified as such an item in an environmental planning instrument.

(i) *Commercial and Industrial Code*

The land is on land that comprises, or on which there is, a building item of the environmental heritage that is identified as such an item in an environmental planning instrument.

#### **4 Coastal protection**

##### **4A Certain information relating to beaches and coasts**

##### **4B Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works**

This section does not apply to land in the *Armidale Dumaresq Local Government Area*.

#### **5 Mine subsidence**

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

No

#### **6 Road widening and road realignment**

Whether or not the land is affected by any road widening or road realignment under:

(a) *Division 2 of Part 3 of the Roads Act 1993, or*

Not Applicable

(b) *any environmental planning instrument, or*

No

(c) *any resolution of the council.*

Armidale Dumaresq Council resolved on 25 September 2000 to require the dedication of splay corners for properties including allotments at the corner of road intersections in the former City areas where such splays do not already exist. These splays (extending 3m x 3m from the relevant corner boundary for minor roads or 5m x 5m from the relevant corner boundary for major roads) would be sought in connection with future subdivision activity or other significant development of relevant lands.

Council also resolved on 25 September 2000 to require the dedication of road widening (usually to a depth of 3 metres) in connection with future subdivision activity or other significant development of allotments fronting roads with a road reserve width of less than 20 metres and no dedicated pedestrian footpath strip. This typically applies to mid-block roads in the central area of Armidale.

For further details please contact Council.

#### **7 Council and other public authority policies on hazard risk restrictions**

Whether or not the land is affected by a policy that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding)

(a) *adopted by the council, or*

Council has adopted by resolution a Chapter in Development Control Plan on contaminated land which may restrict the development of the land. The relevant policy is implemented when zoning, development or land use changes are proposed on lands which have been used or affected by certain activities. While Council records do provide information about contamination of some land in the local government area, Council does not have sufficient information about previous uses of this land to determine whether the land may be contaminated. Consideration of Council's adopted DCP and the application of provisions under relevant State legislation is warranted.

Council has adopted geotechnical hazard mapping in Development Control Plan 2012, Chapter 2.6, which indicates that the land is potentially affected by Spring Activity. Investigation and possible precautionary works will be required in the event of development of the land.

Council has adopted geotechnical hazard mapping in Development Control Plan 2012, Chapter 2.6, which indicates that the land is potentially affected by Slope Instability. Investigation and possible precautionary works will be required in the event of development of the land.

(b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the Council that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk.

See Question 11 - Bushfire prone land.

**7A Flood related development controls information**

- (1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.
- (2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.
- (3) Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006.

No

**8 Land reserved for acquisition**

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in Clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the Act.

No

**9 Contributions plans**

The name of each contributions plan applying to the land.

DSP ARMIDALE WATER DSP ARMIDALE SEWER DSP ARMIDALE WATER DSP ARMIDALE SEWER DSP ARMIDALE WATER DSP ARMIDALE SEWER DSP ARMIDALE WATER DSP ARMIDALE SEWER DSP ARMIDALE WATER DSP ARMIDALE SEWER

Note: The Armidale Dumaresq Water Supply and Sewerage Development Servicing Plan also applies to development of land in the urban area of Armidale and surrounding localities.

**9A Biodiversity certified land**

If the land is biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995), a statement to that effect.

No

**10 Biobanking Agreements**

If the land is land to which a biobanking agreement under Part 7A of the Threatened Species Conservation Act 1995 relates, a statement to that effect (but only if the Council has been notified of the existence of the Agreement by the Director-General of the Department of Environment, Climate Change and Water).

No

**11 Bush fire prone land**

If any of the land is bush fire prone land (as defined in the Act), a statement that all or, as the case may be, some of the land is bush fire prone land.

If none of the land is bush fire prone land, a statement to that effect.

None of the land is identified in the certified Bush Fire Prone Land map.

**12 *Property vegetation plans***

If the land is land to which a property vegetation plan under the Native Vegetation Act 2003 applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

No

**13 *Orders under Trees (Disputes Between Neighbours) Act 2006***

Whether an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

Council has not been notified of any order under the Trees (Disputes Between Neighbours) Act 2006.

**14 Directions under Part 3A**

If there is a direction by the Minister in force under section 75P (2) (cl) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect, a statement to that effect identifying the provision that does not have effect.

No

**15 Site compatibility certificates and conditions for seniors housing**

If the land is land to which *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004* applies:

- (a) a statement of whether there is a current site compatibility certificate (of which the council is aware), issued under clause 25 of that Policy in respect of proposed development on the land and, if there is a certificate, the statement is to include:
  - (i) the period for which the certificate is current, and
  - (ii) that a copy may be obtained from the Department of Planning and Environment, and
- (b) a statement setting out any terms of a kind referred to in clause 18 (2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

No

**16 Site compatibility certificates for infrastructure**

A statement of whether there is a valid site compatibility certificate (of which the council is aware), issued under clause 19 of *State Environmental Planning Policy (Infrastructure) 2007* in respect of proposed development on the land and, if there is a certificate, the statement is to include:

- (a) the period for which the certificate is valid, and
- (b) that a copy may be obtained from the Department of Planning and Environment.

No

**17 Site compatibility certificates and conditions for affordable rental housing**

- (1) A statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:
  - (a) the period for which the certificate is current, and
  - (b) that a copy may be obtained from the head office of the Department of Planning and Environment.
- (2) A statement setting out any terms of a kind referred to in clause 17 (1) or 37 (1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009* that have been imposed as a condition of consent to a development application in respect of the land.

No

**18 Paper subdivision information**

- (1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.
- (2) The date of any subdivision order that applies to the land.
- (3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

Not Applicable

**19 Site verification certificates**

A statement of whether there is a current site verification certificate, of which the council is aware, in respect of the land and, if there is a certificate, the statement is to include:

(a) the matter certified by the certificate, and

**Note.** A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land—see Division 3 of Part 4AA of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.

(b) the date on which the certificate ceases to be current (if any), and

(c) that a copy may be obtained from the head office of the Department of Planning and Infrastructure.

Not Applicable

**20 Loose-fill asbestos insulation**

If the land includes any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division, a statement to that effect.

Not Applicable

**Matters arising under the Contaminated Land Management Act 1997**

Note. The following matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

- (a) *that the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,*

No

- (b) *that the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,*

No

- (c) *that the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,*

No

- (d) *that the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,*

No

- (e) *that the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.*

No

**Matters arising under the Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009**

Note. Section 26 of the *Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009* provides that a planning certificate must include advice about any exemption under section 23 or authorisation under section 24 of that Act if the council is provided with a copy of the exemption or authorisation by the Co-ordinator General under that Act.

Not Applicable

- The above information has been taken from Council records; however, Council cannot accept responsibility for any omission or inaccuracy.
- Prospective purchasers should consult their legal advisers concerning any easements or restrictions on the title of the property.
- Council does not incur any liability in respect of advice provided in good faith pursuant to s149(5) in accordance with s149(6) of the *Environmental Planning and Assessment Act 1979*, as amended.
- Information on any outstanding notices or orders pertaining to this property can be obtained through a Certificate available from Council pursuant to s121ZP of the *Environmental Planning Assessment Act 1979* and s735A of the *Local Government Act 1993*.

Yours sincerely



**John Goodall**  
**Manager Development Assessment**

---

*Any request for further information in connection with the above should be marked for the attention of:*  
**Planning and Environment**  
**Armidale Regional Council**  
**Telephone: 1300 136 833**  
**Email: [council@armidale.nsw.gov.au](mailto:council@armidale.nsw.gov.au)**

**Is your property energy efficient? Further information on energy efficient domestic building design and ratings can be obtained from the following internet sites:**

**[www.nathers.gov.au](http://www.nathers.gov.au)**

**[www.basix.nsw.gov.au](http://www.basix.nsw.gov.au)**

**[www.yourhome.gov.au](http://www.yourhome.gov.au)**

**If the home you are buying has a solid fuel heater, talk to Council about efficient operation, or alternative non-polluting forms of heating.**

## ANNEXURE 1

### STATE ENVIRONMENTAL PLANNING POLICIES APPLYING TO ARMIDALE DUMARESQ LOCAL GOVERNMENT AREA

#### **SEPP No. 1 - Development Standards**

Makes development standards more flexible. It allows councils to approve a development proposal that does not comply with a set standard where this can be shown to be unreasonable or unnecessary.

#### **SEPP No. 15 - Rural Land-Sharing Communities**

Makes multiple occupancy permissible, with council consent, in rural and non-urban zones, subject to a list of criteria in clause 9(1) of the policy. Multiple occupancy is defined as the collective management and sharing of unsubdivided land, facilities and resources. The policy encourages a community-based environmentally-sensitive approach to rural settlement, and enables the pooling of resources to develop opportunities for communal rural living. SEPP 15 Guide provides guidance to intending applicants.

#### **SEPP No. 21 - Caravan Parks**

Ensures that where caravan parks or camping grounds are permitted under an environmental planning instrument, movable dwellings, as defined in the Local Government Act 1993, are also permitted. The specific kinds of movable dwellings allowed under the Local Government Act in caravan parks and camping grounds are subject to the provisions of the Caravan Parks Regulation. The policy ensures that development consent is required for new caravan parks and camping grounds and for additional long-term sites in existing caravan parks. It also enables, with the council's consent, long-term sites in caravan parks to be subdivided by leases of up to 20 years.

#### **SEPP No. 30 - Intensive Agriculture**

Requires development consent for cattle feedlots having a capacity of 50 or more cattle or piggeries having a capacity of 200 or more pigs. The policy sets out information and public notification requirements to ensure there are effective planning control over this export-driven rural industry. The policy does not alter if, and where, such development is permitted, or the functions of the consent authority.

#### **SEPP No. 32 - Urban Consolidation (Redevelopment of Urban Land)**

States the Government's intention to ensure that urban consolidation objectives are met in all urban areas throughout the State. The policy: focuses on the redevelopment of urban land that is no longer required for the purpose it is currently zoned or used encourages local councils to pursue their own urban consolidation strategies to help implement the aims and objectives of the policy. Councils will continue to be responsible for the majority of rezonings. The policy sets out guidelines for the Minister to follow when considering whether to initiate a regional environmental plan (REP) to make particular sites available for consolidated urban redevelopment. Where a site is rezoned by an REP, the Minister will be the consent authority.

#### **SEPP No. 33 - Hazardous and Offensive Development**

Provides new definitions for 'hazardous industry', 'hazardous storage establishment', 'offensive industry' and 'offensive storage establishment'. The definitions apply to all planning instruments, existing and future. The new definitions enable decisions to approve or refuse a development to be based on the merit of proposal. The consent authority must carefully consider the specifics of the case, the location and the way in which the proposed activity is to be carried out. The policy also requires specified matters to be considered for proposals that are 'potentially hazardous' or 'potentially offensive' as defined in the policy. For example, any application to carry out a potentially hazardous or potentially offensive development is to be advertised for public comment, and applications to carry out potentially hazardous development must be supported by a preliminary hazard analysis (PHA). The policy does not change the role of councils as consent authorities, land zoning, or the designated development provisions of the Environmental Planning and Assessment Act 1979.

#### **SEPP No. 36 - Manufactured Home Estates**

Helps establish well-designed and properly serviced manufactured home estates (MHEs) in suitable locations. Affordability and security of tenure for residents are important aspects. The policy applies to Gosford, Wyong and all local government areas outside the Sydney Region. To enable the immediate development of estates, the policy allows MHEs to be located on certain land where caravan parks are permitted. There are however, criteria that a

proposal must satisfy before the local council can approved development. The policy also permits, with consent, the subdivision of estates either by community title or by leases of up to 20 years. A section 117 direction issued in conjunction with the policy guides councils in preparing local environmental plans for MHEs, enabling them to be excluded from the policy.

#### **SEPP No. 44 - Koala Habitat Protection**

Encourages the conservation and management of natural vegetation areas that provide habitat for koalas to ensure permanent free-living populations will be maintained over their present range. The policy applies to 107 local government areas. Local councils cannot approve development in an area affected by the policy without an investigation of core koala habitat. The policy provides the state-wide approach needed to enable appropriate development to continue, while ensuring there is ongoing protection of koalas and their habitat.

#### **SEPP No. 50 - Canal Estates**

Bans new canal estates from the date of gazettal, to ensure coastal and aquatic environments are not affected by these developments.

#### **SEPP No. 55 - Remediation of Land**

Introduces state-wide planning controls for the remediation of contaminated land. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed. The policy makes remediation permissible across the State, defines when consent is required, requires all remediation to comply with standards, ensures land is investigated if contamination is suspected, and requires councils to be notified of all remediation proposals. To assist councils and developers, the Department, in conjunction with the Environment Protection Authority, has prepared Managing Land Contamination: Planning Guidelines.

#### **SEPP No 62 - Sustainable Aquaculture**

Provides for natural water-based water aquaculture in the form of Oyster aquaculture.

#### **SEPP No. 64 - Advertising and Signage**

Aims to improve the amenity of urban and natural settings by managing the impact of outdoor advertising. The policy responds to growing concerns from the community, the advertising industry and local government that existing controls and guidelines were not effective. SEPP No. 64 offers the comprehensive provisions and consistent approach needed. SEPP 64 – Advertising and Signage: Explanatory Information should be read in conjunction with the policy.

#### **SEPP No. 65 – Design Quality of Residential Flat Development**

This SEPP highlights 10 design quality principles to guide architects designing residential flats and to assist councils in assessing these developments.

The principles relate to key design issues such as:

- the context for design – the locality and streetscape
- scale, form and density of the building
- measures to achieve resource, energy and water efficiency
- landscape design to create useful outdoor spaces for residents
- safety and security, including ensuring public areas are safe, visible and well lit at night.

Aims to improve the design quality of flats of three or more storeys with four or more dwellings. The policy sets out a series of design principles for local councils or other consent authorities to consider when assessing development proposals for flats. It also creates a role for special design review panels and registered architects in the design and approval.

**SEPP – Housing for Seniors or People with a Disability 2004**

Aims to increase the supply and choice of housing for older people or people with a disability. Such housing is permitted, with council consent, wherever houses, flats, hospitals or certain 'special uses' are permitted in or adjoining urban areas, except for some environmentally sensitive lands. The policy contains development standards and matters a council and the Department of Planning must consider when determining development applications. For example, future residents must have reasonable access to services they require, taking into account convenience, affordability and the type and scale of housing. Relevant Government Circulars should be read in conjunction with this Policy.

**SEPP Building Sustainability Index: BASIX 2004**

This SEPP operates in conjunction with Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004 to ensure the effective introduction of BASIX in NSW. The SEPP ensures consistency in the implementation of BASIX throughout the State by overriding competing provisions in other environmental planning instruments and development control plans, and specifying that SEPP 1 does not apply in relation to any development standard arising under BASIX. The draft SEPP was exhibited together with draft Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004.

**SEPP (Major Development) 2005**

Defines major infrastructure projects and other projects of state significance which are determined by the Minister and identifies development for which Joint Regional Planning Panels are to exercise specified consent authority functions.

**SEPP (Infrastructure) 2007**

Provides a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process. The SEPP supports greater flexibility in the location of infrastructure and service facilities along with improved regulatory certainty and efficiency.

**SEPP (Mining, Petroleum Production and Extractive Industries) 2007**

Provides for the management and development of mineral, petroleum and extractive material resources.

**SEPP (Temporary Structures) 2007**

Provides for the erection of temporary structures and the use of places of public entertainment while protecting public safety and local amenity. Note the name of this policy was changed from SEPP (Temporary Structures and Places of Public Entertainment) 2007 to SEPP (Temporary Structures) 2007 effective 26.10.2009.

**SEPP (Rural Lands) 2008**

The aims of this policy are:

- to facilitate the orderly and economic use and development of rural lands for rural and related purposes,
- to identify the Rural Planning Principles and the Rural Subdivision Principles so as to assist in the proper management, development and protection of rural lands for the purpose of promoting the social, economic and environmental welfare of the State,
- to implement measures designed to reduce land use conflicts,
- to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations,
- to amend provisions of other environmental planning instruments relating to concessional lots in rural subdivisions.

**SEPP (Exempt and Complying Development Codes) 2008**

This policy aims to provide streamlined assessment processes for development that complies with specified development standards by:

- providing exempt and complying development codes that have State-wide application, and
- identifying types of development that are of minimal environmental impact that may be carried out without the need for development consent, and
- identifying types of complying development that may be carried out in accordance with a complying development certificate as defined in the *Environmental Planning and Assessment Act 1979*, and
- enabling the progressive extension of the types of development in this Policy, and
- providing transitional arrangements for the introduction of the State-wide codes, including the amendment of other environmental planning instruments.

**SEPP (Affordable Rental Housing) 2009**

This Policy aims to provide a consistent planning regime for the provision of affordable rental housing in the State and provides development standards for such housing, which are permissible with consent in residential zones.

**SEPP (State and Regional Development) 2011**

This Policy identifies classes of regional development (to be determined by Joint Regional Planning Panels) and classes of development that are considered to be State significant development, State significant infrastructure and critical State significant infrastructure (to be determined by the Minister or Minister's delegate).

**SCHEDULE OF DRAFT STATE ENVIRONMENTAL PLANNING POLICIES OF WHICH COUNCIL HAS BEEN MADE AWARE AT DATE OF ISSUE OF CERTIFICATE**

*Note: The NSW Department of Planning has issued Circular PS 08-013 to Councils on 13 November 2008. From 1 March 2009, Councils are directed not to consider draft environmental planning instruments that were exhibited prior to 1 March 2006 and not yet gazetted for the purpose of assessing development applications under Section 79C(a)(ii) of the Environmental Planning and Assessment Act 1979.*

## PLANNING CERTIFICATE

Issued under Section 149 of the *Environmental Planning and Assessment Act 1979*, as amended.

### CERTIFICATE DETAILS

Certificate Number

A-149(2):5574

Certificate Issue Date:

28 September 2017

Your Reference:

JG17064A:18109

### PROPERTY DETAILS

Property Details:

56-72 Crest Road ARMIDALE NSW 2350

Legal Description:

Lot 1 DP 598870, Lot 2 DP 598870,

---

#### Notes:

1. This Certificate reflects the circumstances applicable at the date of issue of the document.
2. Where a 149 Certificate is issued by Council relating to a lot/s within a Strata Plan, the information supplied on the Certificate will provide answers that are relevant to the entire Strata Plan.

## **1 Names of relevant planning instruments and DCPs**

(1) The names of:

*(a) each environmental planning instrument that applies to the carrying out of development on the land, and*

Armidale Dumaresq Local Environmental Plan 2012.

Refer to Annexure 1 for a list of State Environmental Planning Policies (SEPPs).

*(b) each proposed environmental planning instrument\* that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved);*

*\* In this clause, proposed environmental planning instrument includes a planning proposal for a LEP or a draft environmental planning instrument.*

Refer to Annexure 1 for list of any Draft State Environmental Planning Policies (SEPPs).

*(c) The name of each development control plan that applies to the carrying out of development on the land.*

Armidale Dumaresq Development Control Plan 2012.

A copy of the Armidale Dumaresq Development Control Plan 2012 is available from Council's web site – [www.armidale.nsw.gov.au/planning-development-armidale](http://www.armidale.nsw.gov.au/planning-development-armidale), or alternatively, can be printed on payment of a standard charge.

## **2 Zoning and land use under relevant LEPs**

*For each environmental planning instrument or proposed environmental planning instrument referred to in Clause 1 (other than a SEPP or proposed SEPP), that includes the land in any zone (however described):*

*(a) the identity of the zone, whether by reference to a name (such as "Residential Zone" or "Heritage Conservation Area") or by reference to a number (such as "Zone R1 General Residential");*

Current Zone under Armidale Dumaresq Local Environmental Plan 2012:

R1 General Residential;

*(b) the purposes for which the instrument provides that development may be carried out within the zone without the need for development consent;*

See Part 2 of the Armidale Dumaresq Local Environmental Plan 2012. Other provisions in the Armidale Dumaresq Local Environmental Plan 2012 may also be relevant. A full copy of the Armidale Dumaresq Local Environmental Plan 2012 is available from the NSW Government's legislation web site –

<http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+589+2012+cd+0+N> or Council's web site – [www.armidale.nsw.gov.au](http://www.armidale.nsw.gov.au). A hard copy is also available from Council on payment of a standard printing charge.

*(c) the purposes for which the instrument provides that development may not be carried out within the zone except with development consent;*

See response to 2(b) above

*(d) the purposes for which the instrument provides that development is prohibited within the zone,*  
See response to 2(b) above

(e) *whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed,*

The minimum land dimension for the erection of a dwelling-house on the land is 500 square metres. Also, see other provisions in Part 4 of the Armidale Dumaresq Local Environmental Plan 2012.

(f) *whether the land includes or comprises critical habitat;*

No

(g) *whether the land is in a conservation area (however described);*

No

(h) *whether an item of environmental heritage (however described) is situated on the land.*

No

## **2A Zoning and land use under *State Environmental Planning Policy (Sydney Region Growth Centres) 2006*.**

This section does not apply to land in the *Armidale Dumaresq Local Government Area*.

### **3(1) *Complying development***

The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*

(a) *General Housing Code*

The land IS land on which complying development may be carried out under Clause 1.19 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

(b) *Rural Housing Code*

The land IS land on which complying development may be carried out under Clause 1.19 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

(c) *Housing Alterations Code*

(d) *General Development Code*

(e) *Commercial and Industrial Alterations Code*

(f) *Subdivisions Code*

(g) *Demolition Code*

(h) *Fire Safety Code*

The land IS land on which complying development may be carried out under Clause 1.19 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

(i) *Commercial and Industrial Code*

The land IS land on which complying development may currently be carried out under the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008* having regard to the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4) and 1.19 of the Policy.

Refer to Part 3(2) below.

### **3(2) Complying development**

If complying development may not be carried out on all or part of the land because of the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*, the reasons why it may not be carried out are provided below. The following restrictions may apply to all or part of the land and Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

(a) *General Housing Code*

(b) *Rural Housing Code*

*NOTE: For the purposes of the Rural Housing Code under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008, complying development may be carried out on the part of the lot to which this clause may not apply.*

Not Applicable

(c) *Housing Alterations Code*

(d) *General Development Code*

(e) *Commercial and Industrial Alterations Code*

(f) *Subdivision Code*

(g) *Demolition Code*

(h) *Fire Safety Code*

Not Applicable

(i) *Commercial and Industrial Code*

Not Applicable

## **4 Coastal protection**

### **4A Certain information relating to beaches and coasts**

### **4B Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works**

This section does not apply to land in the *Armidale Dumaresq Local Government Area*.

## **5 Mine subsidence**

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

No

## **6 Road widening and road realignment**

Whether or not the land is affected by any road widening or road realignment under:

(a) *Division 2 of Part 3 of the Roads Act 1993, or*

Not Applicable

(b) *any environmental planning instrument, or*

No

(c) *any resolution of the council.*

Armidale Dumaresq Council resolved on 25 September 2000 to require the dedication of splay corners for properties including allotments at the corner of road intersections in the former City areas where such splays do not already exist. These splays (extending 3m x 3m from the relevant corner boundary for minor roads or 5m x 5m from the relevant corner boundary for major roads) would be sought in connection with future subdivision activity or other significant development of relevant lands.

Council also resolved on 25 September 2000 to require the dedication of road widening (usually to a depth of 3 metres) in connection with future subdivision activity or other significant development of allotments fronting roads with a road reserve width of less than 20 metres and no dedicated pedestrian footpath strip. This typically applies to mid-block roads in the central area of Armidale.

For further details please contact Council.

#### **7 Council and other public authority policies on hazard risk restrictions**

Whether or not the land is affected by a policy that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding)

##### ***(a) adopted by the council, or***

Council has adopted by resolution a Chapter in Development Control Plan on contaminated land which may restrict the development of the land. The relevant policy is implemented when zoning, development or land use changes are proposed on lands which have been used or affected by certain activities. While Council records do provide information about contamination of some land in the local government area, Council does not have sufficient information about previous uses of this land to determine whether the land may be contaminated. Consideration of Council's adopted DCP and the application of provisions under relevant State legislation is warranted.

Council has adopted geotechnical hazard mapping in Development Control Plan 2012, Chapter 2.6, which indicates that the land is potentially affected by Spring Activity. Investigation and possible precautionary works will be required in the event of development of the land.

Council has adopted geotechnical hazard mapping in Development Control Plan 2012, Chapter 2.6, which indicates that the land is potentially affected by Slope Instability. Investigation and possible precautionary works will be required in the event of development of the land.

(b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the Council that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk.

See Question 11 - Bushfire prone land.

**7A Flood related development controls information**

- (1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.
- (2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.
- (3) Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006.

No

**8 Land reserved for acquisition**

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in Clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the Act.

No

**9 Contributions plans**

The name of each contributions plan applying to the land.

DSP ARMIDALE WATER DSP ARMIDALE SEWER DSP ARMIDALE WATER DSP ARMIDALE SEWER

Note: The Armidale Dumaresq Water Supply and Sewerage Development Servicing Plan also applies to development of land in the urban area of Armidale and surrounding localities.

**9A Biodiversity certified land**

If the land is biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995), a statement to that effect.

No

**10 Biobanking Agreements**

If the land is land to which a biobanking agreement under Part 7A of the Threatened Species Conservation Act 1995 relates, a statement to that effect (but only if the Council has been notified of the existence of the Agreement by the Director-General of the Department of Environment, Climate Change and Water).

No

**11 Bush fire prone land**

If any of the land is bush fire prone land (as defined in the Act), a statement that all or, as the case may be, some of the land is bush fire prone land.

If none of the land is bush fire prone land, a statement to that effect.

None of the land is identified in the certified Bush Fire Prone Land map.

**12 *Property vegetation plans***

If the land is land to which a property vegetation plan under the Native Vegetation Act 2003 applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

No

**13 *Orders under Trees (Disputes Between Neighbours) Act 2006***

Whether an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

Council has not been notified of any order under the Trees (Disputes Between Neighbours) Act 2006.

**14 Directions under Part 3A**

If there is a direction by the Minister in force under section 75P (2) (cl) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect, a statement to that effect identifying the provision that does not have effect.

No

**15 Site compatibility certificates and conditions for seniors housing**

If the land is land to which *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004* applies:

- (a) a statement of whether there is a current site compatibility certificate (of which the council is aware), issued under clause 25 of that Policy in respect of proposed development on the land and, if there is a certificate, the statement is to include:
  - (i) the period for which the certificate is current, and
  - (ii) that a copy may be obtained from the Department of Planning and Environment, and
- (b) a statement setting out any terms of a kind referred to in clause 18 (2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

No

**16 Site compatibility certificates for infrastructure**

A statement of whether there is a valid site compatibility certificate (of which the council is aware), issued under clause 19 of *State Environmental Planning Policy (Infrastructure) 2007* in respect of proposed development on the land and, if there is a certificate, the statement is to include:

- (a) the period for which the certificate is valid, and
- (b) that a copy may be obtained from the Department of Planning and Environment.

No

**17 Site compatibility certificates and conditions for affordable rental housing**

- (1) A statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:
  - (a) the period for which the certificate is current, and
  - (b) that a copy may be obtained from the head office of the Department of Planning and Environment.
- (2) A statement setting out any terms of a kind referred to in clause 17 (1) or 37 (1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009* that have been imposed as a condition of consent to a development application in respect of the land.

No

**18 Paper subdivision information**

- (1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.
- (2) The date of any subdivision order that applies to the land.
- (3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

Not Applicable

**19 Site verification certificates**

A statement of whether there is a current site verification certificate, of which the council is aware, in respect of the land and, if there is a certificate, the statement is to include:

(a) the matter certified by the certificate, and

**Note.** A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land—see Division 3 of Part 4AA of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.

(b) the date on which the certificate ceases to be current (if any), and

(c) that a copy may be obtained from the head office of the Department of Planning and Infrastructure.

Not Applicable

**20 Loose-fill asbestos insulation**

If the land includes any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division, a statement to that effect.

Not Applicable

**Matters arising under the Contaminated Land Management Act 1997**

Note. The following matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

- (a) *that the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,*

No

- (b) *that the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,*

No

- (c) *that the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,*

No

- (d) *that the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,*

No

- (e) *that the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.*

No

**Matters arising under the Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009**

Note. Section 26 of the *Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009* provides that a planning certificate must include advice about any exemption under section 23 or authorisation under section 24 of that Act if the council is provided with a copy of the exemption or authorisation by the Co-ordinator General under that Act.

Not Applicable

- The above information has been taken from Council records; however, Council cannot accept responsibility for any omission or inaccuracy.
- Prospective purchasers should consult their legal advisers concerning any easements or restrictions on the title of the property.
- Council does not incur any liability in respect of advice provided in good faith pursuant to s149(5) in accordance with s149(6) of the *Environmental Planning and Assessment Act 1979*, as amended.
- Information on any outstanding notices or orders pertaining to this property can be obtained through a Certificate available from Council pursuant to s121ZP of the *Environmental Planning Assessment Act 1979* and s735A of the *Local Government Act 1993*.

Yours sincerely



**John Goodall**  
**Manager Development Assessment**

---

*Any request for further information in connection with the above should be marked for the attention of:*  
**Planning and Environment**  
**Armidale Regional Council**  
**Telephone: 1300 136 833**  
**Email: [council@armidale.nsw.gov.au](mailto:council@armidale.nsw.gov.au)**

**Is your property energy efficient? Further information on energy efficient domestic building design and ratings can be obtained from the following internet sites:**

**[www.nathers.gov.au](http://www.nathers.gov.au)**

**[www.basix.nsw.gov.au](http://www.basix.nsw.gov.au)**

**[www.yourhome.gov.au](http://www.yourhome.gov.au)**

**If the home you are buying has a solid fuel heater, talk to Council about efficient operation, or alternative non-polluting forms of heating.**

## ANNEXURE 1

### STATE ENVIRONMENTAL PLANNING POLICIES APPLYING TO ARMIDALE DUMARESQ LOCAL GOVERNMENT AREA

#### **SEPP No. 1 - Development Standards**

Makes development standards more flexible. It allows councils to approve a development proposal that does not comply with a set standard where this can be shown to be unreasonable or unnecessary.

#### **SEPP No. 15 - Rural Land-Sharing Communities**

Makes multiple occupancy permissible, with council consent, in rural and non-urban zones, subject to a list of criteria in clause 9(1) of the policy. Multiple occupancy is defined as the collective management and sharing of unsubdivided land, facilities and resources. The policy encourages a community-based environmentally-sensitive approach to rural settlement, and enables the pooling of resources to develop opportunities for communal rural living. SEPP 15 Guide provides guidance to intending applicants.

#### **SEPP No. 21 - Caravan Parks**

Ensures that where caravan parks or camping grounds are permitted under an environmental planning instrument, movable dwellings, as defined in the Local Government Act 1993, are also permitted. The specific kinds of movable dwellings allowed under the Local Government Act in caravan parks and camping grounds are subject to the provisions of the Caravan Parks Regulation. The policy ensures that development consent is required for new caravan parks and camping grounds and for additional long-term sites in existing caravan parks. It also enables, with the council's consent, long-term sites in caravan parks to be subdivided by leases of up to 20 years.

#### **SEPP No. 30 - Intensive Agriculture**

Requires development consent for cattle feedlots having a capacity of 50 or more cattle or piggeries having a capacity of 200 or more pigs. The policy sets out information and public notification requirements to ensure there are effective planning control over this export-driven rural industry. The policy does not alter if, and where, such development is permitted, or the functions of the consent authority.

#### **SEPP No. 32 - Urban Consolidation (Redevelopment of Urban Land)**

States the Government's intention to ensure that urban consolidation objectives are met in all urban areas throughout the State. The policy: focuses on the redevelopment of urban land that is no longer required for the purpose it is currently zoned or used encourages local councils to pursue their own urban consolidation strategies to help implement the aims and objectives of the policy. Councils will continue to be responsible for the majority of rezonings. The policy sets out guidelines for the Minister to follow when considering whether to initiate a regional environmental plan (REP) to make particular sites available for consolidated urban redevelopment. Where a site is rezoned by an REP, the Minister will be the consent authority.

#### **SEPP No. 33 - Hazardous and Offensive Development**

Provides new definitions for 'hazardous industry', 'hazardous storage establishment', 'offensive industry' and 'offensive storage establishment'. The definitions apply to all planning instruments, existing and future. The new definitions enable decisions to approve or refuse a development to be based on the merit of proposal. The consent authority must carefully consider the specifics of the case, the location and the way in which the proposed activity is to be carried out. The policy also requires specified matters to be considered for proposals that are 'potentially hazardous' or 'potentially offensive' as defined in the policy. For example, any application to carry out a potentially hazardous or potentially offensive development is to be advertised for public comment, and applications to carry out potentially hazardous development must be supported by a preliminary hazard analysis (PHA). The policy does not change the role of councils as consent authorities, land zoning, or the designated development provisions of the Environmental Planning and Assessment Act 1979.

#### **SEPP No. 36 - Manufactured Home Estates**

Helps establish well-designed and properly serviced manufactured home estates (MHEs) in suitable locations. Affordability and security of tenure for residents are important aspects. The policy applies to Gosford, Wyong and all local government areas outside the Sydney Region. To enable the immediate development of estates, the policy allows MHEs to be located on certain land where caravan parks are permitted. There are however, criteria that a

proposal must satisfy before the local council can approved development. The policy also permits, with consent, the subdivision of estates either by community title or by leases of up to 20 years. A section 117 direction issued in conjunction with the policy guides councils in preparing local environmental plans for MHEs, enabling them to be excluded from the policy.

#### **SEPP No. 44 - Koala Habitat Protection**

Encourages the conservation and management of natural vegetation areas that provide habitat for koalas to ensure permanent free-living populations will be maintained over their present range. The policy applies to 107 local government areas. Local councils cannot approve development in an area affected by the policy without an investigation of core koala habitat. The policy provides the state-wide approach needed to enable appropriate development to continue, while ensuring there is ongoing protection of koalas and their habitat.

#### **SEPP No. 50 - Canal Estates**

Bans new canal estates from the date of gazettal, to ensure coastal and aquatic environments are not affected by these developments.

#### **SEPP No. 55 - Remediation of Land**

Introduces state-wide planning controls for the remediation of contaminated land. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed. The policy makes remediation permissible across the State, defines when consent is required, requires all remediation to comply with standards, ensures land is investigated if contamination is suspected, and requires councils to be notified of all remediation proposals. To assist councils and developers, the Department, in conjunction with the Environment Protection Authority, has prepared Managing Land Contamination: Planning Guidelines.

#### **SEPP No 62 - Sustainable Aquaculture**

Provides for natural water-based water aquaculture in the form of Oyster aquaculture.

#### **SEPP No. 64 - Advertising and Signage**

Aims to improve the amenity of urban and natural settings by managing the impact of outdoor advertising. The policy responds to growing concerns from the community, the advertising industry and local government that existing controls and guidelines were not effective. SEPP No. 64 offers the comprehensive provisions and consistent approach needed. SEPP 64 – Advertising and Signage: Explanatory Information should be read in conjunction with the policy.

#### **SEPP No. 65 – Design Quality of Residential Flat Development**

This SEPP highlights 10 design quality principles to guide architects designing residential flats and to assist councils in assessing these developments.

The principles relate to key design issues such as:

- the context for design – the locality and streetscape
- scale, form and density of the building
- measures to achieve resource, energy and water efficiency
- landscape design to create useful outdoor spaces for residents
- safety and security, including ensuring public areas are safe, visible and well lit at night.

Aims to improve the design quality of flats of three or more storeys with four or more dwellings. The policy sets out a series of design principles for local councils or other consent authorities to consider when assessing development proposals for flats. It also creates a role for special design review panels and registered architects in the design and approval.

**SEPP – Housing for Seniors or People with a Disability 2004**

Aims to increase the supply and choice of housing for older people or people with a disability. Such housing is permitted, with council consent, wherever houses, flats, hospitals or certain 'special uses' are permitted in or adjoining urban areas, except for some environmentally sensitive lands. The policy contains development standards and matters a council and the Department of Planning must consider when determining development applications. For example, future residents must have reasonable access to services they require, taking into account convenience, affordability and the type and scale of housing. Relevant Government Circulars should be read in conjunction with this Policy.

**SEPP Building Sustainability Index: BASIX 2004**

This SEPP operates in conjunction with Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004 to ensure the effective introduction of BASIX in NSW. The SEPP ensures consistency in the implementation of BASIX throughout the State by overriding competing provisions in other environmental planning instruments and development control plans, and specifying that SEPP 1 does not apply in relation to any development standard arising under BASIX. The draft SEPP was exhibited together with draft Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004.

**SEPP (Major Development) 2005**

Defines major infrastructure projects and other projects of state significance which are determined by the Minister and identifies development for which Joint Regional Planning Panels are to exercise specified consent authority functions.

**SEPP (Infrastructure) 2007**

Provides a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process. The SEPP supports greater flexibility in the location of infrastructure and service facilities along with improved regulatory certainty and efficiency.

**SEPP (Mining, Petroleum Production and Extractive Industries) 2007**

Provides for the management and development of mineral, petroleum and extractive material resources.

**SEPP (Temporary Structures) 2007**

Provides for the erection of temporary structures and the use of places of public entertainment while protecting public safety and local amenity. Note the name of this policy was changed from SEPP (Temporary Structures and Places of Public Entertainment) 2007 to SEPP (Temporary Structures) 2007 effective 26.10.2009.

**SEPP (Rural Lands) 2008**

The aims of this policy are:

- to facilitate the orderly and economic use and development of rural lands for rural and related purposes,
- to identify the Rural Planning Principles and the Rural Subdivision Principles so as to assist in the proper management, development and protection of rural lands for the purpose of promoting the social, economic and environmental welfare of the State,
- to implement measures designed to reduce land use conflicts,
- to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations,
- to amend provisions of other environmental planning instruments relating to concessional lots in rural subdivisions.

**SEPP (Exempt and Complying Development Codes) 2008**

This policy aims to provide streamlined assessment processes for development that complies with specified development standards by:

- providing exempt and complying development codes that have State-wide application, and
- identifying types of development that are of minimal environmental impact that may be carried out without the need for development consent, and
- identifying types of complying development that may be carried out in accordance with a complying development certificate as defined in the *Environmental Planning and Assessment Act 1979*, and
- enabling the progressive extension of the types of development in this Policy, and
- providing transitional arrangements for the introduction of the State-wide codes, including the amendment of other environmental planning instruments.

**SEPP (Affordable Rental Housing) 2009**

This Policy aims to provide a consistent planning regime for the provision of affordable rental housing in the State and provides development standards for such housing, which are permissible with consent in residential zones.

**SEPP (State and Regional Development) 2011**

This Policy identifies classes of regional development (to be determined by Joint Regional Planning Panels) and classes of development that are considered to be State significant development, State significant infrastructure and critical State significant infrastructure (to be determined by the Minister or Minister's delegate).

**SCHEDULE OF DRAFT STATE ENVIRONMENTAL PLANNING POLICIES OF WHICH COUNCIL HAS BEEN MADE AWARE AT DATE OF ISSUE OF CERTIFICATE**

*Note: The NSW Department of Planning has issued Circular PS 08-013 to Councils on 13 November 2008. From 1 March 2009, Councils are directed not to consider draft environmental planning instruments that were exhibited prior to 1 March 2006 and not yet gazetted for the purpose of assessing development applications under Section 79C(a)(ii) of the Environmental Planning and Assessment Act 1979.*

## **APPENDIX D**

### **Laboratory Certificates – Geotechnical**



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Test Results - California Bearing Ratio

Client / Address: NBRS Architecture / Milsons Point

Job No: JG17064A

Project: Proposed School Buildings

Date: 20/11/17

Location: Armidale High School

Report No: R01A

### SAMPLE INFORMATION Test Methods

|                                 |                               |                        |  |  |  |
|---------------------------------|-------------------------------|------------------------|--|--|--|
| Lab Reference No.               | SR11722                       | SR11725                |  |  |  |
| Date Sampled                    | 04-May-17                     | 04-May-17              |  |  |  |
| Date Tested                     | 14-Nov-17                     | 14-Nov-17              |  |  |  |
| Sample Identification           | BH 6 (0.4-10m)                | BH 9 (0.6-1.2m)        |  |  |  |
| Laboratory Specimen Description | Silty Clay: brown with gravel | Silty Clay: dark brown |  |  |  |

### TEST RESULTS

#### Laboratory Compaction & Moisture Content - Test Methods AS1289 5.1.1 Mould A and AS1289 2.1.1

|                                      |      |      |  |  |  |
|--------------------------------------|------|------|--|--|--|
| Maximum Dry Density t/m3             | 1.53 | 1.52 |  |  |  |
| Optimum Moisture Content %           | 26.0 | 26.5 |  |  |  |
| Field Moisture Content %             | 20.0 | 25.5 |  |  |  |
| % Of Oversize 19mm                   | -    | -    |  |  |  |
| Replacement of Oversize (See note B) | -    | -    |  |  |  |

#### California Bearing Ratio - Test Method AS1289 6.1.1

|             |                       |                |       |       |  |  |  |
|-------------|-----------------------|----------------|-------|-------|--|--|--|
| C<br>B<br>R | Dry Density t/m3      | Before Soaking | 1.54  | 1.53  |  |  |  |
|             |                       | After Soaking  | 1.53  | 1.51  |  |  |  |
|             | Density Ratio %       | Before Soaking | 100.5 | 101.0 |  |  |  |
|             |                       | After Soaking  | 99.5  | 99.5  |  |  |  |
|             | Moisture Content %    | Before Soaking | 26.5  | 25.5  |  |  |  |
|             |                       | After Soaking  | 28.5  | 28.0  |  |  |  |
| T           | Number of Days Soaked |                | 4     | 4     |  |  |  |
| E           | Surcharge kg          |                | 6.75  | 6.75  |  |  |  |
| S           | Moisture Content      | Top 30mm       | 29.0  | 31.0  |  |  |  |
|             |                       | Whole Sample   | 28.5  | 28.0  |  |  |  |
| T           | Swell After Soaking % |                | 0.7   | 1.3   |  |  |  |
|             | Penetration mm        |                | 2.5   | 2.5   |  |  |  |
|             | CBR Value %           |                | 6.0   | 7.0   |  |  |  |

Notes: (A) Test specimen was compacted to a target dry density of 100 percent standard (AS 1289 5.1.1)

(B) If specified the percentage of oversize retained on the 19mm may be replaced by an equal portion of -19mm to +4.75mm

Remarks

C:\Lab\report\R003

Form No. R003/Ver07/07/13



Accredited for compliance with ISO/IEC 17025.

NATA Accredited Laboratory Number: 14208.

This document shall not be reproduced except in full.

Authorised Signatory

Solern Liew Date 20/11/17



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Test Results - Shrink/Swell Index

Client / Address: NBR Architecture / Milsons Point

Job No: JG17064A

Project: Proposed School Buildings

Date: 20/11/17

Location: Armidale High School

Report No: R02A

Test Procedure: AS 1289 7.1.1

|                       |                            |                            |  |  |
|-----------------------|----------------------------|----------------------------|--|--|
| Sample Identification | BH 2 (0.5-0.8m)            | BH 7 (0.5-0.75m)           |  |  |
| Sample Register No    | SR11721                    | SR11723                    |  |  |
| Sample Date           | 4-Nov-17                   | 4-Nov-17                   |  |  |
| Test Date             | 8-Nov-17                   | 8-Nov-17                   |  |  |
| Sample Procedure      | AS 1289 1.1, 1.2.1 (6.5.3) | AS 1289 1.1, 1.2.1 (6.5.3) |  |  |

### Test Results

|                  |               |               |  |  |
|------------------|---------------|---------------|--|--|
| Test Procedure   | AS 1289 2.1.1 | AS 1289 2.1.1 |  |  |
| Moisture Content |               |               |  |  |
| Initial %        | 11.5          | 32.0          |  |  |
| Final %          | 14.5          | 34.5          |  |  |

|                         |                            |                       |  |  |
|-------------------------|----------------------------|-----------------------|--|--|
| Test Procedure          | AS 1289 7.1.1              | AS 1289 7.1.1         |  |  |
| Estimated UCS           |                            |                       |  |  |
| Before Test kPa         | >600                       | 330                   |  |  |
| After Test kPa          | >600                       | 310                   |  |  |
| Swell %                 | 0.3                        | 0.1                   |  |  |
| Shrinkage %             | 0.5                        | 5.3                   |  |  |
| Shrink/Swell Index %/pF | 0.4                        | 3.0                   |  |  |
| Material Description    | Gravelly Silty Clay: brown | Silty Clay: red brown |  |  |

Remarks

c:/lab/reports/R013

Form No. R013/Ver 07/07/13



Accredited for compliance with ISO/IEC 17025.  
NATA Accredited Laboratory Number: 14208.

This document shall not be reproduced except in full.

Authorised Signatory

Solern Liew Date 20/11/17



# GeoEnviro Consultancy Pty Ltd

Unit 5, 39-41 Fourth Avenue, Blacktown NSW 2148, Australia  
Tel: (02) 96798733 Fax: (02) 96798744

## Test Results - Atterberg Limits

|                                                     |                                           |                                                           |                                              |                                           |
|-----------------------------------------------------|-------------------------------------------|-----------------------------------------------------------|----------------------------------------------|-------------------------------------------|
| Client / Address: NBRS Architecture / Milsons Point |                                           |                                                           | Job No: JG17064A                             |                                           |
| Project: Proposed School Buildings                  |                                           |                                                           | Date: 20/11/17                               |                                           |
| Location: Armidale High School                      |                                           |                                                           | Report No: R03A                              |                                           |
| Sample Identification                               | BH 1 (1.0-1.4m)                           | BH 2 (3.6-4.0m)                                           | BH 5 (2.5-2.95m)                             | BH 8 (0.6-1.0m)                           |
| Sample Register No                                  | SR11720                                   | SR11726                                                   | SR11727                                      | SR11724                                   |
| Sample Date                                         | 4-Nov-17                                  | 4-Nov-17                                                  | 4-Nov-17                                     | 4-Nov-17                                  |
| Test Date                                           | 9-Nov-17                                  | 9-Nov-17                                                  | 9-Nov-17                                     | 9-Nov-17                                  |
| Sample Procedure                                    | AS 1289 1.1, 1.2.1 (6.5.3)                | AS 1289 1.1, 1.2.1 (6.5.3)                                | AS 1289 1.1, 1.2.1 (6.5.3)                   | AS 1289 1.1, 1.2.1 (6.5.3)                |
| <b>Test Results</b>                                 |                                           |                                                           |                                              |                                           |
| Test Procedure:                                     | AS 1289 3.1.2                             | AS 1289 3.1.2                                             | AS 1289 3.1.2                                | AS 1289 3.1.2                             |
| Liquid Limit (%)                                    | 54                                        | 58                                                        | 62                                           | 42                                        |
| Test Procedure:                                     | AS 1289 3.2.1                             | AS 1289 3.2.1                                             | AS 1289 3.2.1                                | AS 1289 3.2.1                             |
| Plastic Limit (%)                                   | 17                                        | 37                                                        | 30                                           | 17                                        |
| Test Procedure:                                     | AS 1289 3.3.1                             | AS 1289 3.3.1                                             | AS 1289 3.3.1                                | AS 1289 3.3.1                             |
| Plasticity Index (%)                                | 37                                        | 21                                                        | 32                                           | 25                                        |
| Test Procedure:                                     | AS 1289 3.4.1                             | AS 1289 3.4.1                                             | AS 1289 3.4.1                                | AS 1289 3.4.1                             |
| Linear Shrinkage (%)                                | 14.5                                      | 9.0                                                       | 12.5                                         | 12.0                                      |
| Test Procedure:                                     | AS 1289 2.1.1                             | AS 1289 2.1.1                                             | AS 1289 2.1.1                                | AS 1289 2.1.1                             |
| Natural Moisture Content %                          | 17.0                                      | 26.5                                                      | 28.5                                         | 17.0                                      |
| Material Description                                | (CH) Silty Clay: medium plasticity, brown | (CI-CH) Silty Clay: medium to high plasticity, brown grey | (CH) Silty Clay: high plasticity, grey brown | (CI) Silty Clay: medium plasticity, brown |
| Remarks                                             |                                           |                                                           |                                              |                                           |

c:/lab/reports/R004

Form No. R004/Ver 08/07/13



Accredited for compliance with ISO/IEC 17025.  
NATA Accredited Laboratory Number: 14208.

This document shall not be reproduced except in full.

Authorised Signatory

Solern Liew Date 20/11/17

## **APPENDIX E**

### **Laboratory Certificates – Contamination and Salinity**

## CERTIFICATE OF ANALYSIS 179394

### Client Details

|                  |                                                      |
|------------------|------------------------------------------------------|
| <b>Client</b>    | Geoenviro Consultancy Pty Ltd                        |
| <b>Attention</b> | Solern Liew                                          |
| <b>Address</b>   | PO Box 1543, Macquarie Centre, North Ryde, NSW, 2113 |

### Sample Details

|                                             |                           |
|---------------------------------------------|---------------------------|
| <b>Your Reference</b>                       | <u>JG17064A, Armidale</u> |
| <b>Number of Samples</b>                    | 10 Soils                  |
| <b>Date samples received</b>                | 07/11/2017                |
| <b>Date completed instructions received</b> | 07/11/2017                |

### Analysis Details

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

### Report Details

|                                                                                                             |            |
|-------------------------------------------------------------------------------------------------------------|------------|
| <b>Date results requested by</b>                                                                            | 15/11/2017 |
| <b>Date of Issue</b>                                                                                        | 15/11/2017 |
| NATA Accreditation Number 2901. This document shall not be reproduced except in full.                       |            |
| Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b> |            |

#### Asbestos Approved By

Analysed by Asbestos Approved Identifier: Matt Tang  
 Authorised by Asbestos Approved Signatory: Paul Ching

#### Results Approved By

Dragana Tomas, Senior Chemist  
 Long Pham, Team Leader, Metals  
 Paul Ching, Senior Analyst  
 Priya Samarawickrama, Senior Chemist  
 Steven Luong, Senior Chemist

#### Authorised By



David Springer, General Manager

| vTRH(C6-C10)/BTEXN in Soil                           |       |            |            |            |            |
|------------------------------------------------------|-------|------------|------------|------------|------------|
| Our Reference                                        |       | 179394-1   | 179394-4   | 179394-5   | 179394-8   |
| Your Reference                                       | UNITS | BH 1       | BH 4       | BH 5       | BH 8       |
| Depth                                                |       | 0.00-0.20  | 0.20-0.40  | 0.80-1.00  | 0.20-0.40  |
| Date Sampled                                         |       | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample                                       |       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                                       | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Date analysed                                        | -     | 10/11/2017 | 10/11/2017 | 10/11/2017 | 10/11/2017 |
| TRH C <sub>6</sub> - C <sub>9</sub>                  | mg/kg | <25        | <25        | <25        | <25        |
| TRH C <sub>6</sub> - C <sub>10</sub>                 | mg/kg | <25        | <25        | <25        | <25        |
| vTPH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1) | mg/kg | <25        | <25        | <25        | <25        |
| Benzene                                              | mg/kg | <0.2       | <0.2       | <0.2       | <0.2       |
| Toluene                                              | mg/kg | <0.5       | <0.5       | <0.5       | <0.5       |
| Ethylbenzene                                         | mg/kg | <1         | <1         | <1         | <1         |
| m+p-xylene                                           | mg/kg | <2         | <2         | <2         | <2         |
| o-Xylene                                             | mg/kg | <1         | <1         | <1         | <1         |
| Total +ve Xylenes                                    | mg/kg | <1         | <1         | <1         | <1         |
| naphthalene                                          | mg/kg | <1         | <1         | <1         | <1         |
| Surrogate aaa-Trifluorotoluene                       | %     | 110        | 111        | 113        | 114        |

| svTRH (C10-C40) in Soil                                      |       |            |            |            |            |
|--------------------------------------------------------------|-------|------------|------------|------------|------------|
| Our Reference                                                |       | 179394-1   | 179394-4   | 179394-5   | 179394-8   |
| Your Reference                                               | UNITS | BH 1       | BH 4       | BH 5       | BH 8       |
| Depth                                                        |       | 0.00-0.20  | 0.20-0.40  | 0.80-1.00  | 0.20-0.40  |
| Date Sampled                                                 |       | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample                                               |       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                                               | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Date analysed                                                | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| TRH C <sub>10</sub> - C <sub>14</sub>                        | mg/kg | <50        | <50        | <50        | <50        |
| TRH C <sub>15</sub> - C <sub>28</sub>                        | mg/kg | <100       | <100       | <100       | <100       |
| TRH C <sub>29</sub> - C <sub>36</sub>                        | mg/kg | <100       | <100       | <100       | <100       |
| TRH >C <sub>10</sub> -C <sub>16</sub>                        | mg/kg | <50        | <50        | <50        | <50        |
| TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2) | mg/kg | <50        | <50        | <50        | <50        |
| TRH >C <sub>16</sub> -C <sub>34</sub>                        | mg/kg | <100       | <100       | <100       | <100       |
| TRH >C <sub>34</sub> -C <sub>40</sub>                        | mg/kg | <100       | <100       | <100       | <100       |
| Total +ve TRH (>C10-C40)                                     | mg/kg | <50        | <50        | <50        | <50        |
| Surrogate o-Terphenyl                                        | %     | 83         | 78         | 69         | 87         |

| PAHs in Soil                      |       |            |            |            |            |
|-----------------------------------|-------|------------|------------|------------|------------|
| Our Reference                     |       | 179394-1   | 179394-4   | 179394-5   | 179394-8   |
| Your Reference                    | UNITS | BH 1       | BH 4       | BH 5       | BH 8       |
| Depth                             |       | 0.00-0.20  | 0.20-0.40  | 0.80-1.00  | 0.20-0.40  |
| Date Sampled                      |       | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample                    |       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                    | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Date analysed                     | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Naphthalene                       | mg/kg | <0.1       | <0.1       | <0.1       | 0.1        |
| Acenaphthylene                    | mg/kg | <0.1       | <0.1       | <0.1       | 0.3        |
| Acenaphthene                      | mg/kg | <0.1       | <0.1       | <0.1       | 0.2        |
| Fluorene                          | mg/kg | <0.1       | <0.1       | <0.1       | 0.4        |
| Phenanthrene                      | mg/kg | <0.1       | 0.3        | <0.1       | 5.2        |
| Anthracene                        | mg/kg | <0.1       | <0.1       | <0.1       | 1.5        |
| Fluoranthene                      | mg/kg | <0.1       | 0.7        | <0.1       | 6.4        |
| Pyrene                            | mg/kg | <0.1       | 0.7        | <0.1       | 5.5        |
| Benzo(a)anthracene                | mg/kg | <0.1       | 0.3        | <0.1       | 2.2        |
| Chrysene                          | mg/kg | <0.1       | 0.4        | <0.1       | 2.1        |
| Benzo(b,j+k)fluoranthene          | mg/kg | <0.2       | 0.6        | <0.2       | 3.4        |
| Benzo(a)pyrene                    | mg/kg | <0.05      | 0.3        | <0.05      | 2.1        |
| Indeno(1,2,3-c,d)pyrene           | mg/kg | <0.1       | 0.2        | <0.1       | 1.1        |
| Dibenzo(a,h)anthracene            | mg/kg | <0.1       | <0.1       | <0.1       | 0.2        |
| Benzo(g,h,i)perylene              | mg/kg | <0.1       | 0.2        | <0.1       | 1.3        |
| Benzo(a)pyrene TEQ calc (zero)    | mg/kg | <0.5       | <0.5       | <0.5       | 3.0        |
| Benzo(a)pyrene TEQ calc(half)     | mg/kg | <0.5       | <0.5       | <0.5       | 3.0        |
| Benzo(a)pyrene TEQ calc(PQL)      | mg/kg | <0.5       | <0.5       | <0.5       | 3.0        |
| Total +ve PAH's                   | mg/kg | <0.05      | 3.9        | <0.05      | 32         |
| Surrogate <i>p</i> -Terphenyl-d14 | %     | 102        | 98         | 95         | 94         |

| Organochlorine Pesticides in soil |       |            |            |            |            |
|-----------------------------------|-------|------------|------------|------------|------------|
| Our Reference                     |       | 179394-1   | 179394-4   | 179394-5   | 179394-8   |
| Your Reference                    | UNITS | BH 1       | BH 4       | BH 5       | BH 8       |
| Depth                             |       | 0.00-0.20  | 0.20-0.40  | 0.80-1.00  | 0.20-0.40  |
| Date Sampled                      |       | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample                    |       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                    | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Date analysed                     | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| HCB                               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| alpha-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| gamma-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| beta-BHC                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Heptachlor                        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| delta-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Aldrin                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Heptachlor Epoxide                | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| gamma-Chlordane                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| alpha-chlordane                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan I                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDE                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Dieldrin                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Endrin                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDD                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan II                     | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDT                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Endrin Aldehyde                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan Sulphate               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Methoxychlor                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve DDT+DDD+DDE             | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX                    | %     | 85         | 84         | 86         | 84         |

| PCBs in Soil               |       |            |            |            |            |
|----------------------------|-------|------------|------------|------------|------------|
| Our Reference              |       | 179394-1   | 179394-4   | 179394-5   | 179394-8   |
| Your Reference             | UNITS | BH 1       | BH 4       | BH 5       | BH 8       |
| Depth                      |       | 0.00-0.20  | 0.20-0.40  | 0.80-1.00  | 0.20-0.40  |
| Date Sampled               |       | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample             |       | Soil       | Soil       | Soil       | Soil       |
| Date extracted             | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Date analysed              | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Aroclor 1016               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1221               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1232               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1242               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1248               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1254               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1260               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve PCBs (1016-1260) | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCLMX            | %     | 85         | 84         | 86         | 84         |

| Acid Extractable metals in soil |       |            |            |            |            |
|---------------------------------|-------|------------|------------|------------|------------|
| Our Reference                   |       | 179394-1   | 179394-4   | 179394-5   | 179394-8   |
| Your Reference                  | UNITS | BH 1       | BH 4       | BH 5       | BH 8       |
| Depth                           |       | 0.00-0.20  | 0.20-0.40  | 0.80-1.00  | 0.20-0.40  |
| Date Sampled                    |       | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample                  |       | Soil       | Soil       | Soil       | Soil       |
| Date prepared                   | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Date analysed                   | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Arsenic                         | mg/kg | <4         | <4         | <4         | <4         |
| Cadmium                         | mg/kg | <0.4       | <0.4       | <0.4       | <0.4       |
| Chromium                        | mg/kg | 53         | 50         | 69         | 60         |
| Copper                          | mg/kg | 15         | 24         | 18         | 13         |
| Lead                            | mg/kg | 12         | 9          | 10         | 9          |
| Mercury                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       |
| Nickel                          | mg/kg | 36         | 42         | 23         | 29         |
| Zinc                            | mg/kg | 24         | 44         | 24         | 16         |

| Misc Inorg - Soil                      |          |            |            |            |            |            |
|----------------------------------------|----------|------------|------------|------------|------------|------------|
| Our Reference                          |          | 179394-1   | 179394-2   | 179394-3   | 179394-4   | 179394-5   |
| Your Reference                         | UNITS    | BH 1       | BH 2       | BH 3       | BH 4       | BH 5       |
| Depth                                  |          | 0.00-0.20  | 0.30-0.50  | 0.80-1.00  | 0.20-0.40  | 0.80-1.00  |
| Date Sampled                           |          | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample                         |          | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date prepared                          | -        | 10/11/2017 | 10/11/2017 | 10/11/2017 | 10/11/2017 | 10/11/2017 |
| Date analysed                          | -        | 10/11/2017 | 10/11/2017 | 10/11/2017 | 10/11/2017 | 10/11/2017 |
| pH 1:5 soil:water                      | pH Units | 7.1        | 6.7        | 7.6        | 7.9        | 7.5        |
| Electrical Conductivity 1:5 soil:water | µS/cm    | 28         | 11         | 110        | 84         | 53         |
| Chloride, Cl 1:5 soil:water            | mg/kg    | 10         | 10         | 95         | 10         | 10         |
| Sulphate, SO4 1:5 soil:water           | mg/kg    | <10        | <10        | <10        | 22         | 23         |
| Resistivity in soil*                   | ohm m    | 360        | 930        | 93         | 120        | 190        |

| Misc Inorg - Soil                      |          |            |            |            |            |            |
|----------------------------------------|----------|------------|------------|------------|------------|------------|
| Our Reference                          |          | 179394-6   | 179394-7   | 179394-8   | 179394-9   | 179394-10  |
| Your Reference                         | UNITS    | BH 6       | BH 7       | BH 8       | BH 8       | BH 9       |
| Depth                                  |          | 1.00-1.45  | 0.80-1.00  | 0.20-0.40  | 2.50-2.95  | 0.10-0.20  |
| Date Sampled                           |          | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample                         |          | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date prepared                          | -        | 10/11/2017 | 10/11/2017 | 10/11/2017 | 10/11/2017 | 10/11/2017 |
| Date analysed                          | -        | 10/11/2017 | 10/11/2017 | 10/11/2017 | 10/11/2017 | 10/11/2017 |
| pH 1:5 soil:water                      | pH Units | 7.1        | 7.2        | 7.5        | 7.5        | 6.8        |
| Electrical Conductivity 1:5 soil:water | µS/cm    | 37         | 35         | 190        | 15         | 44         |
| Chloride, Cl 1:5 soil:water            | mg/kg    | 36         | <10        | 33         | <10        | 10         |
| Sulphate, SO4 1:5 soil:water           | mg/kg    | <10        | 26         | 240        | <10        | <10        |
| Resistivity in soil*                   | ohm m    | 270        | 280        | 53         | 680        | 230        |

| Moisture       |       |            |            |            |            |
|----------------|-------|------------|------------|------------|------------|
| Our Reference  |       | 179394-1   | 179394-4   | 179394-5   | 179394-8   |
| Your Reference | UNITS | BH 1       | BH 4       | BH 5       | BH 8       |
| Depth          |       | 0.00-0.20  | 0.20-0.40  | 0.80-1.00  | 0.20-0.40  |
| Date Sampled   |       | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample |       | Soil       | Soil       | Soil       | Soil       |
| Date prepared  | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Date analysed  | -     | 10/11/2017 | 10/11/2017 | 10/11/2017 | 10/11/2017 |
| Moisture       | %     | 16         | 17         | 15         | 16         |

| Asbestos ID - soils |       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|---------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Our Reference       |       | 179394-1                                                                          | 179394-4                                                                          | 179394-5                                                                          | 179394-8                                                                          |
| Your Reference      | UNITS | BH 1                                                                              | BH 4                                                                              | BH 5                                                                              | BH 8                                                                              |
| Depth               |       | 0.00-0.20                                                                         | 0.20-0.40                                                                         | 0.80-1.00                                                                         | 0.20-0.40                                                                         |
| Date Sampled        |       | 04/11/2017                                                                        | 04/11/2017                                                                        | 04/11/2017                                                                        | 04/11/2017                                                                        |
| Type of sample      |       | Soil                                                                              | Soil                                                                              | Soil                                                                              | Soil                                                                              |
| Date analysed       | -     | 14/11/2017                                                                        | 14/11/2017                                                                        | 14/11/2017                                                                        | 14/11/2017                                                                        |
| Sample mass tested  | g     | Approx. 30g                                                                       | Approx. 35g                                                                       | Approx. 30g                                                                       | Approx. 30g                                                                       |
| Sample Description  | -     | Brown clayey soil                                                                 | Brown clayey soil                                                                 | Brown clayey soil                                                                 | Brown clayey soil                                                                 |
| Asbestos ID in soil | -     | No asbestos detected at reporting limit of 0.1g/kg<br><br>Organic fibres detected | No asbestos detected at reporting limit of 0.1g/kg<br><br>Organic fibres detected | No asbestos detected at reporting limit of 0.1g/kg<br><br>Organic fibres detected | No asbestos detected at reporting limit of 0.1g/kg<br><br>Organic fibres detected |
| Trace Analysis      | -     | No asbestos detected                                                              | No asbestos detected                                                              | No asbestos detected                                                              | No asbestos detected                                                              |

| PAHs in TCLP (USEPA 1311)      |       |            |            |            |            |
|--------------------------------|-------|------------|------------|------------|------------|
| Our Reference                  |       | 179394-1   | 179394-4   | 179394-5   | 179394-8   |
| Your Reference                 | UNITS | BH 1       | BH 4       | BH 5       | BH 8       |
| Depth                          |       | 0.00-0.20  | 0.20-0.40  | 0.80-1.00  | 0.20-0.40  |
| Date Sampled                   |       | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample                 |       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                 | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Date analysed                  | -     | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Naphthalene in TCLP            | mg/L  | <0.001     | <0.001     | <0.001     | 0.001      |
| Acenaphthylene in TCLP         | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Acenaphthene in TCLP           | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Fluorene in TCLP               | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Phenanthrene in TCLP           | mg/L  | <0.001     | <0.001     | <0.001     | 0.002      |
| Anthracene in TCLP             | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Fluoranthene in TCLP           | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Pyrene in TCLP                 | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Benzo(a)anthracene in TCLP     | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Chrysene in TCLP               | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Benzo(b)k)fluoranthene in TCLP | mg/L  | <0.002     | <0.002     | <0.002     | <0.002     |
| Benzo(a)pyrene in TCLP         | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Indeno(1,2,3-c,d)pyrene - TCLP | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Dibenzo(a,h)anthracene in TCLP | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Benzo(g,h,i)perylene in TCLP   | mg/L  | <0.001     | <0.001     | <0.001     | <0.001     |
| Total +ve PAH's                | mg/L  | NIL (+)VE  | NIL (+)VE  | NIL (+)VE  | 0.0030     |
| Surrogate p-Terphenyl-d14      | %     | 112        | 116        | 121        | 88         |

| Metals in TCLP USEPA1311      |          |            |            |            |            |
|-------------------------------|----------|------------|------------|------------|------------|
| Our Reference                 |          | 179394-1   | 179394-4   | 179394-5   | 179394-8   |
| Your Reference                | UNITS    | BH 1       | BH 4       | BH 5       | BH 8       |
| Depth                         |          | 0.00-0.20  | 0.20-0.40  | 0.80-1.00  | 0.20-0.40  |
| Date Sampled                  |          | 04/11/2017 | 04/11/2017 | 04/11/2017 | 04/11/2017 |
| Type of sample                |          | Soil       | Soil       | Soil       | Soil       |
| Date extracted                | -        | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| Date analysed                 | -        | 09/11/2017 | 09/11/2017 | 09/11/2017 | 09/11/2017 |
| pH of soil for fluid# determ. | pH units | 6.2        | 6.1        | 6.1        | 6.2        |
| pH of soil TCLP (after HCl)   | pH units | 1.7        | 1.7        | 1.6        | 1.6        |
| Extraction fluid used         | -        | 1          | 1          | 1          | 1          |
| pH of final Leachate          | pH units | 4.9        | 4.9        | 4.9        | 4.9        |
| Arsenic in TCLP               | mg/L     | <0.05      | <0.05      | <0.05      | <0.05      |
| Cadmium in TCLP               | mg/L     | <0.01      | <0.01      | <0.01      | <0.01      |
| Chromium in TCLP              | mg/L     | <0.01      | <0.01      | <0.01      | <0.01      |
| Lead in TCLP                  | mg/L     | <0.03      | <0.03      | <0.03      | <0.03      |
| Mercury in TCLP               | mg/L     | <0.0005    | <0.0005    | <0.0005    | <0.0005    |
| Nickel in TCLP                | mg/L     | 0.03       | <0.02      | <0.02      | <0.02      |

| Method ID                 | Methodology Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ASB-001</b>            | Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.                                                                                                                                                                                                                                                              |
| <b>EXTRACT.7</b>          | Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Inorg-001</b>          | pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.                                                                                                                                                                                                                                                                                 |
| <b>Inorg-002</b>          | Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.                                                                                                                                                                                                                                                                                                                                                         |
| <b>Inorg-002</b>          | Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA 22nd ED 2510 and Rayment & Lyons. Resistivity is calculated from Conductivity.                                                                                                                                                                                                                                                                                                                   |
| <b>Inorg-004</b>          | Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004.                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Inorg-008</b>          | Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Inorg-081</b>          | Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Alternatively determined by colourimetry/turbidity using Discrete Analyser.                                                                                                                                                                                                                                                                                                    |
| <b>Metals-020</b>         | Determination of various metals by ICP-AES.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Metals-020 ICP-AES</b> | Determination of various metals by ICP-AES.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Metals-021</b>         | Determination of Mercury by Cold Vapour AAS.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Metals-021 CV-AAS</b>  | Determination of Mercury by Cold Vapour AAS.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Org-003</b>            | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.                                                                                                                                                                                         |
| <b>Org-003</b>            | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br><br>F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.<br><br>Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40). |
| <b>Org-005</b>            | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Org-005</b>            | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.<br>Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.                                                                                                                                                                                           |
| <b>Org-006</b>            | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.                                                                                                                                                                                                                                                                                                                                                                                 |

| Method ID      | Methodology Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Org-006</b> | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.<br>Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PCBs" is simply a sum of the positive individual PCBs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Org-012</b> | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Org-012</b> | Leachates are extracted with Dichloromethane and analysed by GC-MS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Org-012</b> | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.<br>Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Org-012</b> | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.<br>Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.<br>For soil results:-<br>1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present.<br>2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL.<br>3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above.<br>Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs. |
| <b>Org-014</b> | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Org-016</b> | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Org-016</b> | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.<br>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil |       |     |         |            | Duplicate |      |      |      | Spike Recovery % |      |
|---------------------------------------------|-------|-----|---------|------------|-----------|------|------|------|------------------|------|
| Test Description                            | Units | PQL | Method  | Blank      | #         | Base | Dup. | RPD  | LCS-2            | [NT] |
| Date extracted                              | -     |     |         | 09/11/2017 | [NT]      | [NT] | [NT] | [NT] | 09/11/2017       | [NT] |
| Date analysed                               | -     |     |         | 10/11/2017 | [NT]      | [NT] | [NT] | [NT] | 10/11/2017       | [NT] |
| TRH C <sub>6</sub> - C <sub>9</sub>         | mg/kg | 25  | Org-016 | <25        | [NT]      | [NT] | [NT] | [NT] | 116              | [NT] |
| TRH C <sub>6</sub> - C <sub>10</sub>        | mg/kg | 25  | Org-016 | <25        | [NT]      | [NT] | [NT] | [NT] | 116              | [NT] |
| Benzene                                     | mg/kg | 0.2 | Org-016 | <0.2       | [NT]      | [NT] | [NT] | [NT] | 108              | [NT] |
| Toluene                                     | mg/kg | 0.5 | Org-016 | <0.5       | [NT]      | [NT] | [NT] | [NT] | 116              | [NT] |
| Ethylbenzene                                | mg/kg | 1   | Org-016 | <1         | [NT]      | [NT] | [NT] | [NT] | 117              | [NT] |
| m+p-xylene                                  | mg/kg | 2   | Org-016 | <2         | [NT]      | [NT] | [NT] | [NT] | 120              | [NT] |
| o-Xylene                                    | mg/kg | 1   | Org-016 | <1         | [NT]      | [NT] | [NT] | [NT] | 114              | [NT] |
| naphthalene                                 | mg/kg | 1   | Org-014 | <1         | [NT]      | [NT] | [NT] | [NT] | [NT]             | [NT] |
| Surrogate aaa-Trifluorotoluene              | %     |     | Org-016 | 120        | [NT]      | [NT] | [NT] | [NT] | 122              | [NT] |

| QUALITY CONTROL: svTRH (C10-C40) in Soil |       |     |         |            |      | Duplicate |      | Spike Recovery % |            |      |
|------------------------------------------|-------|-----|---------|------------|------|-----------|------|------------------|------------|------|
| Test Description                         | Units | PQL | Method  | Blank      | #    | Base      | Dup. | RPD              | LCS-3      | [NT] |
| Date extracted                           | -     |     |         | 09/11/2017 | [NT] | [NT]      | [NT] | [NT]             | 09/11/2017 | [NT] |
| Date analysed                            | -     |     |         | 09/11/2017 | [NT] | [NT]      | [NT] | [NT]             | 09/11/2017 | [NT] |
| TRH C <sub>10</sub> - C <sub>14</sub>    | mg/kg | 50  | Org-003 | <50        | [NT] | [NT]      | [NT] | [NT]             | 132        | [NT] |
| TRH C <sub>15</sub> - C <sub>28</sub>    | mg/kg | 100 | Org-003 | <100       | [NT] | [NT]      | [NT] | [NT]             | 132        | [NT] |
| TRH C <sub>29</sub> - C <sub>36</sub>    | mg/kg | 100 | Org-003 | <100       | [NT] | [NT]      | [NT] | [NT]             | 106        | [NT] |
| TRH >C <sub>10</sub> -C <sub>16</sub>    | mg/kg | 50  | Org-003 | <50        | [NT] | [NT]      | [NT] | [NT]             | 132        | [NT] |
| TRH >C <sub>16</sub> -C <sub>34</sub>    | mg/kg | 100 | Org-003 | <100       | [NT] | [NT]      | [NT] | [NT]             | 132        | [NT] |
| TRH >C <sub>34</sub> -C <sub>40</sub>    | mg/kg | 100 | Org-003 | <100       | [NT] | [NT]      | [NT] | [NT]             | 106        | [NT] |
| Surrogate o-Terphenyl                    | %     |     | Org-003 | 90         | [NT] | [NT]      | [NT] | [NT]             | 101        | [NT] |

| QUALITY CONTROL: PAHs in Soil |       |      |         |            |      | Duplicate |      | Spike Recovery % |            |      |
|-------------------------------|-------|------|---------|------------|------|-----------|------|------------------|------------|------|
| Test Description              | Units | PQL  | Method  | Blank      | #    | Base      | Dup. | RPD              | LCS-2      | [NT] |
| Date extracted                | -     |      |         | 09/11/2017 | [NT] | [NT]      | [NT] | [NT]             | 09/11/2017 | [NT] |
| Date analysed                 | -     |      |         | 09/11/2017 | [NT] | [NT]      | [NT] | [NT]             | 09/11/2017 | [NT] |
| Naphthalene                   | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 72         | [NT] |
| Acenaphthylene                | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Acenaphthene                  | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Fluorene                      | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 92         | [NT] |
| Phenanthrene                  | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 91         | [NT] |
| Anthracene                    | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Fluoranthene                  | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 84         | [NT] |
| Pyrene                        | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 88         | [NT] |
| Benzo(a)anthracene            | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Chrysene                      | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 92         | [NT] |
| Benzo(b,j+k)fluoranthene      | mg/kg | 0.2  | Org-012 | <0.2       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Benzo(a)pyrene                | mg/kg | 0.05 | Org-012 | <0.05      | [NT] | [NT]      | [NT] | [NT]             | 77         | [NT] |
| Indeno(1,2,3-c,d)pyrene       | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Dibenzo(a,h)anthracene        | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Benzo(g,h,i)perylene          | mg/kg | 0.1  | Org-012 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Surrogate p-Terphenyl-d14     | %     |      | Org-012 | 99         | [NT] | [NT]      | [NT] | [NT]             | 123        | [NT] |

| QUALITY CONTROL: Organochlorine Pesticides in soil |       |     |         |            |      | Duplicate |      | Spike Recovery % |            |      |
|----------------------------------------------------|-------|-----|---------|------------|------|-----------|------|------------------|------------|------|
| Test Description                                   | Units | PQL | Method  | Blank      | #    | Base      | Dup. | RPD              | LCS-3      | [NT] |
| Date extracted                                     | -     |     |         | 09/11/2017 | [NT] | [NT]      | [NT] | [NT]             | 09/11/2017 | [NT] |
| Date analysed                                      | -     |     |         | 09/11/2017 | [NT] | [NT]      | [NT] | [NT]             | 09/11/2017 | [NT] |
| HCB                                                | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| alpha-BHC                                          | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 91         | [NT] |
| gamma-BHC                                          | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| beta-BHC                                           | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 92         | [NT] |
| Heptachlor                                         | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 87         | [NT] |
| delta-BHC                                          | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Aldrin                                             | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 86         | [NT] |
| Heptachlor Epoxide                                 | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 89         | [NT] |
| gamma-Chlordane                                    | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| alpha-chlordane                                    | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Endosulfan I                                       | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| pp-DDE                                             | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 97         | [NT] |
| Dieldrin                                           | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 95         | [NT] |
| Endrin                                             | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 84         | [NT] |
| pp-DDD                                             | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 90         | [NT] |
| Endosulfan II                                      | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| pp-DDT                                             | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Endrin Aldehyde                                    | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Endosulfan Sulphate                                | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | 77         | [NT] |
| Methoxychlor                                       | mg/kg | 0.1 | Org-005 | <0.1       | [NT] | [NT]      | [NT] | [NT]             | [NT]       | [NT] |
| Surrogate TCMX                                     | %     |     | Org-005 | 88         | [NT] | [NT]      | [NT] | [NT]             | 105        | [NT] |

| QUALITY CONTROL: PCBs in Soil |       |     |         |            | Duplicate |      |      | Spike Recovery % |            |      |
|-------------------------------|-------|-----|---------|------------|-----------|------|------|------------------|------------|------|
| Test Description              | Units | PQL | Method  | Blank      | #         | Base | Dup. | RPD              | LCS-3      | [NT] |
| Date extracted                | -     |     |         | 09/11/2017 | [NT]      | [NT] | [NT] | [NT]             | 09/11/2017 | [NT] |
| Date analysed                 | -     |     |         | 09/11/2017 | [NT]      | [NT] | [NT] | [NT]             | 09/11/2017 | [NT] |
| Aroclor 1016                  | mg/kg | 0.1 | Org-006 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Aroclor 1221                  | mg/kg | 0.1 | Org-006 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Aroclor 1232                  | mg/kg | 0.1 | Org-006 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Aroclor 1242                  | mg/kg | 0.1 | Org-006 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Aroclor 1248                  | mg/kg | 0.1 | Org-006 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Aroclor 1254                  | mg/kg | 0.1 | Org-006 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | 101        | [NT] |
| Aroclor 1260                  | mg/kg | 0.1 | Org-006 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Surrogate TCLMX               | %     |     | Org-006 | 88         | [NT]      | [NT] | [NT] | [NT]             | 86         | [NT] |

| QUALITY CONTROL: Acid Extractable metals in soil |       |     |            |            | Duplicate |      |      | Spike Recovery % |            |      |
|--------------------------------------------------|-------|-----|------------|------------|-----------|------|------|------------------|------------|------|
| Test Description                                 | Units | PQL | Method     | Blank      | #         | Base | Dup. | RPD              | LCS-3      | [NT] |
| Date prepared                                    | -     |     |            | 09/11/2017 | [NT]      | [NT] | [NT] | [NT]             | 09/11/2017 | [NT] |
| Date analysed                                    | -     |     |            | 09/11/2017 | [NT]      | [NT] | [NT] | [NT]             | 09/11/2017 | [NT] |
| Arsenic                                          | mg/kg | 4   | Metals-020 | <4         | [NT]      | [NT] | [NT] | [NT]             | 102        | [NT] |
| Cadmium                                          | mg/kg | 0.4 | Metals-020 | <0.4       | [NT]      | [NT] | [NT] | [NT]             | 97         | [NT] |
| Chromium                                         | mg/kg | 1   | Metals-020 | <1         | [NT]      | [NT] | [NT] | [NT]             | 101        | [NT] |
| Copper                                           | mg/kg | 1   | Metals-020 | <1         | [NT]      | [NT] | [NT] | [NT]             | 98         | [NT] |
| Lead                                             | mg/kg | 1   | Metals-020 | <1         | [NT]      | [NT] | [NT] | [NT]             | 94         | [NT] |
| Mercury                                          | mg/kg | 0.1 | Metals-021 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | 110        | [NT] |
| Nickel                                           | mg/kg | 1   | Metals-020 | <1         | [NT]      | [NT] | [NT] | [NT]             | 95         | [NT] |
| Zinc                                             | mg/kg | 1   | Metals-020 | <1         | [NT]      | [NT] | [NT] | [NT]             | 104        | [NT] |

| QUALITY CONTROL: Misc Inorg - Soil     |          |     |           |            |   | Duplicate  |            |     | Spike Recovery % |            |
|----------------------------------------|----------|-----|-----------|------------|---|------------|------------|-----|------------------|------------|
| Test Description                       | Units    | PQL | Method    | Blank      | # | Base       | Dup.       | RPD | LCS-3            | 179394-2   |
| Date prepared                          | -        |     |           | 10/11/2017 | 1 | 10/11/2017 | 10/11/2017 |     | 10/11/2017       | 10/11/2017 |
| Date analysed                          | -        |     |           | 10/11/2017 | 1 | 10/11/2017 | 10/11/2017 |     | 10/11/2017       | 10/11/2017 |
| pH 1:5 soil:water                      | pH Units |     | Inorg-001 | [NT]       | 1 | 7.1        | 7.1        | 0   | 102              | [NT]       |
| Electrical Conductivity 1:5 soil:water | µS/cm    | 1   | Inorg-002 | <1         | 1 | 28         | 30         | 7   | 104              | [NT]       |
| Chloride, Cl 1:5 soil:water            | mg/kg    | 10  | Inorg-081 | <10        | 1 | 10         | 10         | 0   | 118              | 73         |
| Sulphate, SO4 1:5 soil:water           | mg/kg    | 10  | Inorg-081 | <10        | 1 | <10        | <10        | 0   | 96               | 82         |
| Resistivity in soil*                   | ohm m    | 1   | Inorg-002 | <1         | 1 | 360        | 340        | 6   | [NT]             | [NT]       |

| QUALITY CONTROL: PAHs in TCLP (USEPA 1311) |       |       |         |            | Duplicate |      |      | Spike Recovery % |            |      |
|--------------------------------------------|-------|-------|---------|------------|-----------|------|------|------------------|------------|------|
| Test Description                           | Units | PQL   | Method  | Blank      | #         | Base | Dup. | RPD              | LCS-W2     | [NT] |
| Date extracted                             | -     |       |         | 09/11/2017 | [NT]      | [NT] | [NT] | [NT]             | 09/11/2017 | [NT] |
| Date analysed                              | -     |       |         | 09/11/2017 | [NT]      | [NT] | [NT] | [NT]             | 09/11/2017 | [NT] |
| Naphthalene in TCLP                        | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | 85         | [NT] |
| Acenaphthylene in TCLP                     | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Acenaphthene in TCLP                       | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Fluorene in TCLP                           | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | 88         | [NT] |
| Phenanthrene in TCLP                       | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | 92         | [NT] |
| Anthracene in TCLP                         | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Fluoranthene in TCLP                       | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | 85         | [NT] |
| Pyrene in TCLP                             | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | 88         | [NT] |
| Benzo(a)anthracene in TCLP                 | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Chrysene in TCLP                           | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | 97         | [NT] |
| Benzo(b)fluoranthene in TCLP               | mg/L  | 0.002 | Org-012 | <0.002     | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Benzo(a)pyrene in TCLP                     | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | 94         | [NT] |
| Indeno(1,2,3-c,d)pyrene - TCLP             | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Dibenzo(a,h)anthracene in TCLP             | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Benzo(g,h,i)perylene in TCLP               | mg/L  | 0.001 | Org-012 | <0.001     | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Surrogate p-Terphenyl-d14                  | %     |       | Org-012 | 115        | [NT]      | [NT] | [NT] | [NT]             | 107        | [NT] |

| QUALITY CONTROL: Metals in TCLP USEPA1311 |       |        |                    |            | Duplicate |            |            | Spike Recovery % |            |      |
|-------------------------------------------|-------|--------|--------------------|------------|-----------|------------|------------|------------------|------------|------|
| Test Description                          | Units | PQL    | Method             | Blank      | #         | Base       | Dup.       | RPD              | LCS-W1     | [NT] |
| Date extracted                            | -     |        |                    | 09/11/2017 | 1         | 09/11/2017 | 09/11/2017 |                  | 09/11/2017 | [NT] |
| Date analysed                             | -     |        |                    | 09/11/2017 | 1         | 09/11/2017 | 09/11/2017 |                  | 09/11/2017 | [NT] |
| Arsenic in TCLP                           | mg/L  | 0.05   | Metals-020 ICP-AES | <0.05      | 1         | <0.05      | <0.05      | 0                | 98         | [NT] |
| Cadmium in TCLP                           | mg/L  | 0.01   | Metals-020 ICP-AES | <0.01      | 1         | <0.01      | <0.01      | 0                | 98         | [NT] |
| Chromium in TCLP                          | mg/L  | 0.01   | Metals-020 ICP-AES | <0.01      | 1         | <0.01      | <0.01      | 0                | 99         | [NT] |
| Lead in TCLP                              | mg/L  | 0.03   | Metals-020 ICP-AES | <0.03      | 1         | <0.03      | <0.03      | 0                | 98         | [NT] |
| Mercury in TCLP                           | mg/L  | 0.0005 | Metals-021 CV-AAS  | <0.0005    | 1         | <0.0005    | <0.0005    | 0                | 101        | [NT] |
| Nickel in TCLP                            | mg/L  | 0.02   | Metals-020 ICP-AES | <0.02      | 1         | 0.03       | 0.02       | 40               | 97         | [NT] |

## Result Definitions

|             |                                           |
|-------------|-------------------------------------------|
| <b>NT</b>   | Not tested                                |
| <b>NA</b>   | Test not required                         |
| <b>INS</b>  | Insufficient sample for this test         |
| <b>PQL</b>  | Practical Quantitation Limit              |
| <b>&lt;</b> | Less than                                 |
| <b>&gt;</b> | Greater than                              |
| <b>RPD</b>  | Relative Percent Difference               |
| <b>LCS</b>  | Laboratory Control Sample                 |
| <b>NS</b>   | Not specified                             |
| <b>NEPM</b> | National Environmental Protection Measure |
| <b>NR</b>   | Not Reported                              |

## Quality Control Definitions

|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Blank</b>                                                                                                                                                                                                                                               | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.           |
| <b>Duplicate</b>                                                                                                                                                                                                                                           | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.                                                 |
| <b>Matrix Spike</b>                                                                                                                                                                                                                                        | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| <b>LCS (Laboratory Control Sample)</b>                                                                                                                                                                                                                     | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.                                |
| <b>Surrogate Spike</b>                                                                                                                                                                                                                                     | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.                          |
| Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011. |                                                                                                                                                                                                                                  |

## Laboratory Acceptance Criteria

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

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

## Report Comments

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.

We cannot guarantee that these sub-samples are indicative of the entire sample.

Envirolab recommends supplying 40-50g of sample in its own container.

Note: Samples 179394-1, 4, 5 & 8 were sub-sampled from jars provided by the client.

## SAMPLE RECEIPT ADVICE

### Client Details

|                  |                               |
|------------------|-------------------------------|
| <b>Client</b>    | Geoenviro Consultancy Pty Ltd |
| <b>Attention</b> | Solern Liew                   |

### Sample Login Details

|                                             |                    |
|---------------------------------------------|--------------------|
| <b>Your reference</b>                       | JG17064A, Armidale |
| <b>Envirolab Reference</b>                  | 179394             |
| <b>Date Sample Received</b>                 | 07/11/2017         |
| <b>Date Instructions Received</b>           | 07/11/2017         |
| <b>Date Results Expected to be Reported</b> | 15/11/2017         |

### Sample Condition

|                                                               |          |
|---------------------------------------------------------------|----------|
| <b>Samples received in appropriate condition for analysis</b> | YES      |
| <b>No. of Samples Provided</b>                                | 10 Soils |
| <b>Turnaround Time Requested</b>                              | Standard |
| <b>Temperature on Receipt (°C)</b>                            | 10.6     |
| <b>Cooling Method</b>                                         | Ice Pack |
| <b>Sampling Date Provided</b>                                 | YES      |

### Comments

Nil

Please direct any queries to:

#### Aileen Hie

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** ahie@envirolab.com.au

#### Jacinta Hurst

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** jhurst@envirolab.com.au

*Analysis Underway, details on the following page:*



**EnviroLab Services Pty Ltd**

ABN 37 112 535 645

12 Ashley St Chatswood NSW 2067

ph 02 9910 6200 fax 02 9910 6201

customerservice@envirolab.com.au

www.envirolab.com.au

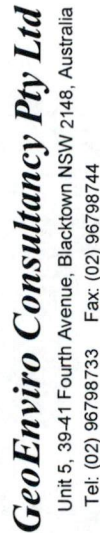
| Sample ID      | VTRH(C6-C10)/BTEXN in Soil | svTRH (C10-C40) in Soil | PAHs in Soil | Organochlorine Pesticides in soil | PCBs in Soil | Acid Extractable metals in soil | pH1:5 soil:water | Electrical Conductivity1:5 soil:water | Chloride, Cl1:5 soil:water | Sulphate, SO41:5 soil:water | Resistivity in soil* | Asbestos ID - soils | PAHs in TCLP(USEPA 1311) | Metals in TCLP USEPA1311 |
|----------------|----------------------------|-------------------------|--------------|-----------------------------------|--------------|---------------------------------|------------------|---------------------------------------|----------------------------|-----------------------------|----------------------|---------------------|--------------------------|--------------------------|
| BH 1-0.00-0.20 | ✓                          | ✓                       | ✓            | ✓                                 | ✓            | ✓                               | ✓                | ✓                                     | ✓                          | ✓                           | ✓                    | ✓                   | ✓                        | ✓                        |
| BH 2-0.30-0.50 |                            |                         |              |                                   |              |                                 | ✓                | ✓                                     | ✓                          | ✓                           | ✓                    |                     |                          |                          |
| BH 3-0.80-1.00 |                            |                         |              |                                   |              |                                 | ✓                | ✓                                     | ✓                          | ✓                           | ✓                    |                     |                          |                          |
| BH 4-0.20-0.40 | ✓                          | ✓                       | ✓            | ✓                                 | ✓            | ✓                               | ✓                | ✓                                     | ✓                          | ✓                           | ✓                    | ✓                   | ✓                        | ✓                        |
| BH 5-0.80-1.00 | ✓                          | ✓                       | ✓            | ✓                                 | ✓            | ✓                               | ✓                | ✓                                     | ✓                          | ✓                           | ✓                    | ✓                   | ✓                        | ✓                        |
| BH 6-1.00-1.45 |                            |                         |              |                                   |              |                                 | ✓                | ✓                                     | ✓                          | ✓                           | ✓                    |                     |                          |                          |
| BH 7-0.80-1.00 |                            |                         |              |                                   |              |                                 | ✓                | ✓                                     | ✓                          | ✓                           | ✓                    |                     |                          |                          |
| BH 8-0.20-0.40 | ✓                          | ✓                       | ✓            | ✓                                 | ✓            | ✓                               | ✓                | ✓                                     | ✓                          | ✓                           | ✓                    | ✓                   | ✓                        | ✓                        |
| BH 8-2.50-2.95 |                            |                         |              |                                   |              |                                 | ✓                | ✓                                     | ✓                          | ✓                           | ✓                    |                     |                          |                          |
| BH 9-0.10-0.20 |                            |                         |              |                                   |              |                                 | ✓                | ✓                                     | ✓                          | ✓                           | ✓                    |                     |                          |                          |

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

### Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.



# Laboratory Test Request/Chain of Custody Record

Sample Date: 4-5/11/2017  
Sampled By: SG  
Project Manager: SL  
Store Location:

**THE**

[illegible]0  
1  
2  
3  
4  
5  
6  
7  
8  
9

Order No. WU 19-1/V

607/1/09

[illegible]

## **APPENDIX F**

### **Unexpected Finds Protocol**

## Unexpected Asbestos Finds

If asbestos is detected in area not identified as containing asbestos prior to, or during, bulk excavation works the following 'Unexpected Finds Protocol' will apply:

- Upon discovery of suspected asbestos containing material, the site manager is to be notified and the affected area closed off by the use of barrier tape and warning signs. Warning signs shall be specific to Asbestos Hazards and shall comply with the Australian Standard 1319-1994 – Safety Signs for the Occupational Environment;
- Work shall comply with WorkCover requirements including *Working with Asbestos, 2008*;
- An OHS consultant or a hygienist is to be notified to inspect the area and confirm the presence of asbestos and determine whether the asbestos is classified as friable or bonded asbestos and determine the extent of remediation works to be undertaken. A report detailing this information will be compiled by the OHS consultant and provided to the Site Manager (SM) (or his representative);
- The impacted soil will be classified and disposed of, as a minimum, as Special Waste (Asbestos) at an appropriately licensed facility. In dry and windy conditions the stockpile will be kept lightly wetted and may be covered with plastic sheet whilst awaiting disposal;
- All work associated with asbestos in soil will be undertaken by a contractor holding a class AS-1 Licence (friable) or AS2 Licence for bonded asbestos, as appropriate. WorkCover must be notified 7 days in advance of any asbestos works;
- Monitoring for airborne asbestos fibres is to be carried out during the soil excavation in asbestos contaminated materials;
- Documentary evidence (weighbridge dockets) of correct disposal is to be provided to the Principal (or their representative);
- At the completion of the excavation, a clearance inspection is to be carried out, soil samples taken and analysed for asbestos fibres followed by written certification provided by an OHS Consultant that the area is safe to be accessed and worked (with respect to asbestos impact). If required, the filling material remaining in the inspected area can be covered/ sealed by an appropriate physical barrier layer of non-asbestos containing material prior to sign-off;
- Details are to be recorded in the site record system;
- Following clearance by an OHS Consultant or hygienist, the area may be reopened for further excavation or construction work.

## **APPENDIX G**

### **Important Information about your Environmental Site Assessment Explanatory Notes**



## ***GeoEnviro Consultancy Pty Ltd***

Unit 5, 39-41 Fourth Avenue, Blacktown, NSW 2148, Australia  
PO Box 1543, Macquarie Centre, North Ryde, NSW 2113

ABN: 62 084 294 762

Tel: (02) 9679 8733

Fax: (02) 9679 8744

Email: [geoenviro@exemail.com.au](mailto:geoenviro@exemail.com.au)

### **IMPORTANT INFORMATION REGARDING YOUR ENVIRONMENTAL SITE ASSESSMENT**

This Environmental Assessment Report was performed in general conformance with our understanding of the guidelines by the Australian and New Zealand Conservation Council (ANZECC), the Office of Environment and Heritage (OEH) and the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013).

These accompanying notes have been prepared by GeoEnviro Consultancy Pty Ltd, using guidelines prepared by ASFE; The Association of Engineering Firms Practising in the Geosciences. The notes are offered as an aid in the interpretation of your environmental site assessment report.

### **REASONS FOR AN ENVIRONMENTAL SITE ASSESSMENT**

Environmental site assessments are typically, though not exclusively, performed in the following circumstances:

- As a pre- acquisition assessment on behalf of either a purchaser or a vendor, when a property is to be sold
- As a pre-development assessment, when a property or area of land is to be redeveloped, or the land use has change, eg from a factory to a residential subdivision
- As a pre-development assessment of greenfield sites, to establish baseline conditions and assess environmental, geological and hydrological constraints to the development of, eg, a landfill
- As an audit of the environmental effects of previous and present site usage

Each circumstance requires a specific approach to the assessment of soil and groundwater contamination. In all cases the objective is to identify and if possible, quantify the risks which unrecognised contamination poses to the ongoing or proposed activity. Such risk may be both financial (clean-up costs or limitations in site use) and physical (health risks to site users or the public).

### **ENVIRONMENTAL SITE ASSESSMENT LIMITATIONS**

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



---

**AN ENVIRONMENTAL SITE ASSESSMENT REPORT IS BASED ON A UNIQUE SET OF PROJECT SPECIFIC FACTORS**

Your environmental assessment report should not be used;

- When the nature of the proposed development is changed, eg, if a residential development is proposed, rather than a commercial development
- When the size or configuration of the proposed development is altered, eg, if a basement is added
- When the location or orientation of the proposed structure is modified
- When there is a change of land ownership, or
- For application to an adjacent site

In order to avoid costly problems, you should ask your consultant to assess any changes in the project since the assessment and the implications, if any, to recommendations made in the assessment.

**ENVIRONMENTAL SITE ASSESSMENT FINDINGS ARE PROFESSIONAL ESTIMATES**

Site assessment identifies actual sub-surface conditions only at those points where samples are taken, when they are taken. Data obtained from the sampling and subsequent laboratory analyses are interpreted by geologists, engineers or scientist and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on any proposed development and appropriate remediation measures. Actual conditions may differ from those inferred, because no professional, no matter how qualified and no sub-surface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, however, steps can be taken to help minimise the impact. For this reason, site owner should retain the services of their consultants throughout the development stage of the project in order to identify variances, conduct additional tests which may be necessary and to recommend solutions to problems encountered on site.

Soil and groundwater contamination is a field in which legislation and interpretation of legislation by government departments is changing rapidly. Whilst every attempt is made by GeoEnviro Consultancy Pty Ltd to be familiar with current policy, our interpretation of the investigation findings should not be taken to be that of the relevant authority. When approval from a statutory authority is required for a project, that approval should be directly sought.

**STABILITY OF SUB-SURFACE CONDITIONS**

Sub-surface conditions can change by natural processes and site activities. As an environmental site assessment is based on conditions existing at the time of the investigation, project decisions should not be based on environmental site assessment data which may have been affected by time. The consultant should be requested to advise if additional tests are required.



---

## **ENVIRONMENTAL SITE ASSESSMENTS ARE PERFORMED FOR SPECIFIC PURPOSES AND CLIENTS**

Environmental site assessments are prepared in response to a specific scope of work required to meet the specific needs or specific individuals. An assessment prepared for a consulting civil engineer may not be adequate to a construction contractor or another civil engineer.

An assessment should not be used by other persons for any purpose, or by the client for a different purposes. No individual, other than the client, should apply an assessment, even for its intended purposes, without first conferring with the consultant. No person should apply an assessment for any purposes other than that originally contemplated, without first conferring with the consultant.

## **MISINTERPRETATION OF ENVIRONMENTAL SITE ASSESSMENTS**

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

## **LOGS SHOULD NOT BE SEPARATED FORM THE REPORT**

Borehole and test pit logs are prepared by environmental scientists, engineers or geologist, based upon interpretation of field conditions and laboratory evaluation of field samples. Field logs normally provided in our reports and these should not be redrawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however, contractors can still misinterpret the logs during bid preparation if separated from the test of the assessment. Should this occur, delays and disputes , or unanticipated costs may result.

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

## **READ RESPONSIBILITY CLAUSES CLOSELY**

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



## EXPLANATORY NOTES

### Introduction

These notes have been provided to amplify the geotechnical report with regard to investigation procedures, classification methods and certain matters relating to the Discussion and Comments sections. Not all notes are necessarily relevant to all reports.

Geotechnical reports are based on information gained from finite sub-surface probing, excavation, boring, sampling or other means of investigation, supplemented by experience and knowledge of local geology. For this reason they must be regarded as interpretative rather than factual documents, limited to some extent by the scope of information on which they rely.

### Description and Classification Methods

The methods the description and classification of soils and rocks used in this report are based on Australian standard 1726, the SSA Site investigation Code, in general descriptions cover the following properties - strength or density, colour, structure, soil or rock type and inclusions. Identification and classification of soil and rock involves to a large extent, judgement within the acceptable level commonly adopted by current geotechnical practices.

Soil types are described according to the predominating particle size, qualified by the grading or other particles present (eg sandy clay) on the following bases:

| Soil Classification | Particle Size     |
|---------------------|-------------------|
| Clay                | Less than 0.002mm |
| Silt                | 0.002 to 0.06mm   |
| Sand                | 0.06 to 2.00mm    |
| Gravel              | 2.00mm to 60.00mm |

| Soil Classification | Particle size     |
|---------------------|-------------------|
| Clay                | less than 0.002mm |
| Silt                | 0.002 to 0.06mm   |
| Sand                | 0.06 to 2.00mm    |
| Gravel              | 2.00mm to 60.00mm |

Cohesive soils are classified on the basis of strength, either by laboratory testing or engineering examination. The strength terms are defined as follows:

| Classification | Undrained Shear Strength kPa |
|----------------|------------------------------|
| Very Soft      | Less than 12                 |
| Soft           | 12 - 25                      |
| Firm           | 25 - 50                      |
| Stiff          | 50 - 100                     |
| Very Stiff     | 100 - 200                    |
| Hard           | Greater than 200             |

Non-cohesive soils are classified on the basis of relative density, generally from the results of standard penetration tests (SPT) or Dutch cone penetrometer test (CPT), as below:

| Relative Dense | SPT 'N' Value (blows/300mm) | CPT Cone Value (q <sub>c</sub> -Mpa) |
|----------------|-----------------------------|--------------------------------------|
| Very Loose     | Less than 5                 | Less than 2                          |
| Loose          | 5 - 10                      | 2 - 5                                |
| Medium Dense   | 10 - 30                     | 5 - 15                               |
| Dense          | 30 - 50                     | 15 - 25                              |
| Very Dense     | > 50                        | > 25                                 |

Rock types are classified by their geological names, together with descriptive terms on degrees of weathering strength, defects and other minor components. Where relevant, further information

regarding rock classification, is given on the following sheet.

### Sampling

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

Disturbed samples taken during drilling provided information on plasticity, grained size, colour, type, moisture content, inclusions and depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin walled sample tube (normally known as U<sub>50</sub>) into the soil and withdrawing a sample of the soil in a relatively undisturbed state. Such Samples yield information on structure and strength and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils. Details of the type and method of sampling are given in the report.

### Field Investigation Methods

The following is a brief summary of investigation methods currently carried out by this company and comments on their use and application.

### Hand Auger Drilling

The borehole is advanced by manually operated equipment. The diameter of the borehole ranges from 50mm to 100mm. Penetration depth of hand augered boreholes may be limited by premature refusal on a variety of materials, such as hard clay, gravels or ironstone.

### Test Pits

These are excavated with a tractor-mounted backhoe or a tracked excavator, allowing close examination of the insitu soils if it is safe to descend into the pit. The depth of penetration is limited to about 3.0m for a backhoe and up to 6.0m for an excavator. A potential disadvantage is the disturbance caused by the excavation.

Care must be taken if construction is to be carried out near, or within the test pit locations, to either adequately recompact the backfill during construction, or to design the structure or accommodate the poorly compacted backfill.

### Large Diameter Auger (eg Pengo)

The hole is advanced by a rotating plate or short spiral auger generally 300mm or larger in diameter. The cuttings are returned to the surface at intervals (generally of not more than 0.5m) and are disturbed, but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers and is usually supplemented by occasional undisturbed tube sampling.

### Continuous Spiral Flight Augers

The hole is advanced by using 90mm - 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling or insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the augers flights, but they are very disturbed and may be highly mixed with soil of other stratum.

Information from the drilling (as distinct from specific sampling by SPT or undisturbed samples) is of relatively low reliability due to remoulding, mixing or softening of samples by ground water, resulting in uncertainties of the original sample depth.

### Continuous Spiral Flight Augers (continued)

The spiral augers are usually advanced by using a V - bit through the soil profile refusal, followed by Tungsten Carbide (TC) bit, to penetrate into bedrock. The quality and continuity of the bedrock may be assessed by examination of the recovered rock fragments and through observation of the drilling penetration resistance.

### Non - core Rotary Drilling (Wash Boring)

The hole is advanced by a rotary bit, with water being pumped down the drill rod and returned up the annulus, carrying the cuttings, together with some information from the "feel" and rate of penetration.

### Rotary Mud Stabilised Drilling

This is similar to rotary drilling, but uses drilling mud as a circulating fluid, which may consist of a range of products, from bentonite to polymers such as Revert or Biogel. The mud tends to mask the cuttings and reliable identification is again only possible from separate intact sampling (eg SPT and  $U_{50}$  samples).

### Continuous Core Drilling

A continuous core sample is obtained using a diamond tipped core barrel. Providing full core recovery is achieved (which is not always possible in very weak rock and granular soils) this technique provides a very reliable (but relatively expensive) method of investigation. In rocks an NMLC triple tube core barrel which gives a core of about 50mm diameter, is usually used with water flush.

### Portable Proline Drilling

This is manually operated equipment and is only used in sites which require bedrock core sampling and there is restricted site access to truck mounted drill rigs. The boreholes are usually advanced initially using a tricone roller bit and water circulation to penetrate the upper soil profile. In some instances a hand auger may be used to penetrate the soil profile. Subsequent drilling into bedrock involves the use of NMLC triple tube equipment, using water as a lubricant.

### Standard Penetration Tests

Standard penetration tests are used mainly in non-cohesive soils, but occasionally also in cohesive soils, as a means of determining density or strength and of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289 "Methods of testing Soils for Engineering Purpose"- Test F31.

The test is carried out in a borehole by driving a 50mm diameter split sample tube under the impact of a 63Kg hammer with a free fall of 769mm. It is normal for the tube to be driven in three successive 150mm increments and the "N" value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rocks, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

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

$$\begin{array}{l} \text{as 4, 6, 7} \\ N = 13 \end{array}$$

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

$$\text{as 15,30/40mm}$$

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

methods is used to obtain samples in 50mm diameter thin walled samples tubes in clays. In these circumstances, the best results are shown on the bore logs in brackets.

### Dynamic Cone Penetration Test

A modification to the SPT test is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The cone can be continuously driven into the borehole and is normally used in areas with thick layers of soft clays or loose sand. The results of this test are shown as ' $N_c$ ' on the bore logs, together with the number of blows per 150mm penetration.

### Cone Penetrometer Testing and Interpretation

Cone penetrometer testing (sometimes referred to as Dutch Cone-CPT) described in this report, has been carried out using an electrical friction cone penetrometer and the test is described in Australian Standard 1289 test F5.1.

In the test, a 35mm diameter rod with cone tipped end is pushed continuously into the soil, the reaction being provided by a specially designed truck or rig, which is fitted with a hydraulic ram system. Measurements are made of the end bearing resistance on the cone and the friction resistance on a separate 130mm long sleeve, immediately behind the cone. Transducer in the tip of the assembly are connected by electrical wires passing through the centre of the push rods to an amplifier and recorder unit mounted on the control truck.

As penetration occurs (at a rate of approximately 20mm per second) the information is output on continuous chart recorders. The plotted results in this report have been traced from the original records. The information provided on the charts comprises:

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

There are two scales available for measurement of cone resistance. The lower "A" scale (0-5Mpa) is used in very soft soils where increased sensitivity is required and is shown in the graphs as a dotted line. The main "B" scale (0-50Mpa) is less sensitive and is shown as a full line.

The ratios of the sleeve resistance to cone resistance will vary with the type of soil encountered, with higher relative frictions in clays than in sands. Friction ratios of 1% to 2% are commonly encountered in sands and very soft clays, rising to 4% to 10% in stiff clays.

In sands, the relationship between cone resistance and SPT value is commonly in the range:

$$q_c \text{ (Mpa)} = (0.4 \text{ to } 0.6) N \text{ (blows per 300mm)}$$

In clays the relationship between undrained shear strength and cone resistance is commonly in the range:

$$q_c = (12 \text{ to } 18) C_u$$

Interpretation of CPT values can also be made to allow estimate of modulus or compressibility values to allow calculation of foundation settlements. Inferred stratification, as shown on the attached report, is assessed from the cone and friction traces, from experience and information from nearby boreholes etc.

## **Cone Penetrometer Testing and Interpretation continued**

This information is presented for general guidance, but must be regarded as being to some extent interpretive. The test method provides a continuous profile of engineering properties and where precise information or soil classification is required, direct drilling and sampling may be preferable.

### **Portable Dynamic Cone Penetrometer (AS1289)**

Portable dynamic cone penetrometer tests are carried out by driving a rod in to the ground with a falling weight hammer and measuring the blows per successive 100mm increments of penetration.

There are two similar tests, Cone Penetrometer (commonly known as Scala Penetrometer) and the Perth Sand Penetrometer. Scala Penetrometer is commonly adopted by this company and consists of a 16mm rod with a 20mm diameter cone end, driven with a 9kg hammer, dropping 510mm (AS 1289 Test F3.2).

### **Laboratory Testing**

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

### **Engineering Logs**

The engineering logs presented herein are an engineering and/or geological interpretation of the sub-surface conditions and their reliability will depend to some extent on frequency of sampling and the method of drilling. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, however, this is not always practicable or possible to justify economically. As it is, the boreholes represent only a small sample of the total sub-surface profile. Interpretation of the information and its application to design and construction should take into account the spacing of boreholes, frequency of sampling and the possibility of other than "straight line" variations between the boreholes.

### **Ground water**

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

- In low permeability soils, ground water although present, may enter the hole slowly, or perhaps not at all, during the investigation period.
- A localised perched water table may lead to a erroneous indication of the true water table.
- Water table levels will vary from time to time, due to the seasons or recent weather changes. They may not be the same at the time of construction as indicated in the report.
- The use of water or mud as a drilling fluid will mask any ground water inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole if any water observations are to be made.

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

### **Engineering Reports**

Engineering reports are prepared by qualified personnel and are based on the information obtained and on current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal is changed, say to a twenty storey building. If this occurs, the company will be pleased to review the report and sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of sub-surface conditions, discussions of geotechnical aspects and recommendations or suggestions for design and construction. However, the company cannot always anticipate or assume responsibility for:

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

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

### **Site Anomalies**

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, the company request immediate notification. Most problems are much more readily resolved when conditions are exposed than at some later stage, well after the event.

### **Reproduction of Information for Contractual Purposes**

Attention is drawn to the document "Guidelines for the Provision of Geotechnical Information trader Documents", published by the Institute of Engineers Australia. Where information obtained for this investigation is provided for tender purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. The Company would be pleased to assist in this regard and/or make additional copies of the report available for contract purpose, at a nominal charge.

### **Site Inspection**

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

### **Review of Design**

Where major civil or structural developments are proposed, or where only a limited investigation has been completed, or where the geotechnical conditions are complex, it is prudent to have the design reviewed by a Senior Geotechnical Engineer.



## Graphic Symbols For Soil and Rock

| SOIL                                                                                |                        | ROCK                                                                                |                                   |
|-------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------|-----------------------------------|
|    | Fill                   |    | Shale                             |
|    | Topsoil                |    | Sandstone                         |
|    | Gravel (GW , GP)       |    | Siltstone, Mudstone, Claystone    |
|    | Sand (SP, SW)          |    | Granite, Gabbro                   |
|    | Silt (ML, MH)          |    | Dolerite, Diorite                 |
|   | Clay (CL, CH)          |   | Basalt, Andesite                  |
|  | Clayey Gravel (GC)     | <b>Other Materials</b>                                                              |                                   |
|  | Silty Sand (SM)        |  | Concrete                          |
|  | Clayey Sand (SC)       |  | Bitumen, Asphaltic Concrete, Coal |
|  | Sandy Silt (ML)        |  | Ironstone Gravel                  |
|  | Gravelly Clay (CL, CH) |  | Organic Material                  |
|  | Silty Clay (CL, CH)    |                                                                                     |                                   |
|  | Sandy Clay (CL, CH)    |                                                                                     |                                   |
|  | Peat or Organic Soil   |                                                                                     |                                   |