ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

BANKSTOWN CITY CAMPUS, WESTERN SYDNEY UNIVERSITY

BANKSTOWN, NSW

19 AUGUST 2019
SA7500
FINAL
PREPARED FOR WESTERN SYDNEY UNVERSITY

URBIS

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EXECUTIVE SUMMARY

Urbis Pty Ltd (Urbis) was commissioned by Western Sydney University (the Proponent) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) as per the relevant section of the *National Parks and Wildlife Act 1974* (NPW Act) and the *National Parks and Wildlife Regulations 2009* (NPW Reg). This Aboriginal Cultural Heritage Assessment Report presents the findings of the ACHA of the proposed development of the new Bankstown City Campus of Western Sydney University (WSU), Bankstown NSW (the Subject Area).

The ACHA is required to inform the Environmental Impact Statement (EIS) which will be submitted to support a State Significant Development Application (SSDA). The ACHA is to be carried out in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (Office of Environment and Heritage (OEH) 2011).* The ACHA will also address the relevant requirements of the Department of Planning and Environment Secretary's Environmental Assessment Requirements (SEARs) issued under Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* (EP7A Act) and Schedule 2 of the *Environmental Planning and Assessment Regulations 2000* (EP&A Reg).

The ACHA process included the:

- Comprehensive background research of all available archaeological and cultural heritage information for the Subject Area in context with the scope of the Project.
- Analysis and interpretation of the background research.
- Consultation with the Registered Aboriginal Parties (RAPs).
- Summarising of results and providing recommendations for the proposed development in relation to Aboriginal cultural heritage and archaeological resources.

The ACHA concluded that:

- There are no registered Aboriginal objects and/or archaeological sites within the Subject Area;
- There are no landscape features with potential for Aboriginal objects or archaeological deposits located within the Subject Area;
- The Subject Area has been the subject of high to extreme levels of disturbance since the 1960s at the latest; and
- The original soil profile has been entirely removed from the Subject Area during the last 50 years and replaced with extensive levels of fill material.
- No Aboriginal cultural heritage values have been identified by the RAPs.

Based on the above conclusions, the Proponent can proceed with the development in accordance with the following recommendations:

- The Proponent should continue to consult with the Aboriginal community in regard to the Project.
- The Proponent is encouraged to include the RAPs in the discussion of the potential of the interpretation of the Aboriginal history and cultural heritage values of the Bankstown area.
- In the unlikely event that previously unknown Aboriginal object(s) and/or sites are discovered during the demolition of the existing building, works must stop and an appropriately qualified archaeologist and members of the Gandangara Local Aboriginal Land Council (GLALC) contacted to assess the nature, extent and significance of the identified object(s) and/or sites.
- In the unlikely event that suspected human remains are encountered during the demolition of the existing building, all work in the area that may cause further impacts, must cease immediately and the following measures must be implemented.
  - The location, including a 20m curtilage, should be secured using barrier fencing to avoid further harm;
  - The NSW Police must be contacted immediately;

- Notify OEH's Environment Line on 131 555 as soon as practicable and provide available details of the remains and their location;
- No further action is to be undertaken until the NSW Police provide written clearance for the identified remains;
- Should the remains be identified as Aboriginal, the GLALC must be notified; and
- A suitably qualified archaeologist and/or anthropologist with forensic training must be contacted.

1. INTRODUCTION

Urbis Pty Ltd (Urbis) was commissioned by Western Sydney University (the Proponent) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) as per the relevant section of the *National Parks and Wildlife Act 1974* (NPW Act) and the *National Parks and Wildlife Regulations 2009* (NPW Reg). This Aboriginal Cultural Heritage Assessment Report presents the findings of the ACHA of the proposed development of the new Bankstown City Campus of Western Sydney University (WSU), Bankstown NSW The ACHAR was prepared in accordance to the following guidelines:

- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (Department of Environment, Climate Change and Water (DECCW), 2010) (the Consultation Requirements);
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage (OEH) 2011) (the Assessment Guidelines);
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).
- The Australia ICOMOS Charter for Places of Cultural Significance, The Burra Charter, 2013 (Burra Charter)

1.1. THE PROPOSED ACTIVITY

The proposed development is located on Lot 5/DP 777510 and part of Lot 6 and Lot 7/DP 777510, Lot 12/DP566924, Lot 3/DP 773698, and adjoining road reserves at 74 Rickard Road and part of 375 Chapel Street, Bankstown NSW (the Subject Area), within the boundary of the Canterbury Bankstown Council Local Government Area (LGA), NSW. The site boundaries are defined by Rickard Road (to the north), proposed continuation of Appian Way (to the east), Paul Keating Park (to the south) and Chapel Road, colloquially referred to as “Library Road” (to the west) (Figure 1 and Figure 2).

WSU is proposing to construct a self-contained vertical campus within the Bankstown CBD. The Subject Area is currently utilised in part as a public car park with 59 car parking spaces, and in part as landscaped open space (Figure 2 and Figure 3). The proposed development will have various impacts on the existing ground surface and will involve:

- The demolition of all structures and hardstand within the site along with the removal of all vegetation.
- Excavation to a maximum depth of 8.5m (RL 17000).
- Construction of an 18-storey building (maximum height of 83m) with an additional 2 levels of basement.
- Associated public domain and civil works.

1.2. STATUTORY CONTROLS

The ACHA is required to inform the Environmental Impact Statement (EIS) which will be submitted to support a State Significant Development Application (SSDA). The ACHA is to be carried out in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011).* The ACHA will also address the relevant requirements of the Department of Planning and Environment Secretary’s Environmental Assessment Requirements (SEARs) issued under Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* (EP7A Act) and Schedule 2 of the *Environmental Planning and Assessment Regulations 2000* (EP&A Reg). The SEARs include the following in relation to Aboriginal heritage:

- Address Aboriginal Cultural Heritage (ACH) in an Aboriginal Cultural Heritage Report (ACHAR) to be prepared in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (OEH 2010), Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW); and
- The EIS must demonstrate attempts to avoid any impacts upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to

mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.

1.3. OBJECTIVES

The objective of this assessment was to address the requirements of the SEARs and to investigate and confirm the absence, or presence, of Aboriginal objects and places, and whether they would be impacted by the proposed development. It also documents consultation with the local Aboriginal community, which aimed to identify any spiritual, traditional, historical or contemporary associations or attachments to Aboriginal sites or objects, or to the Subject Area itself.

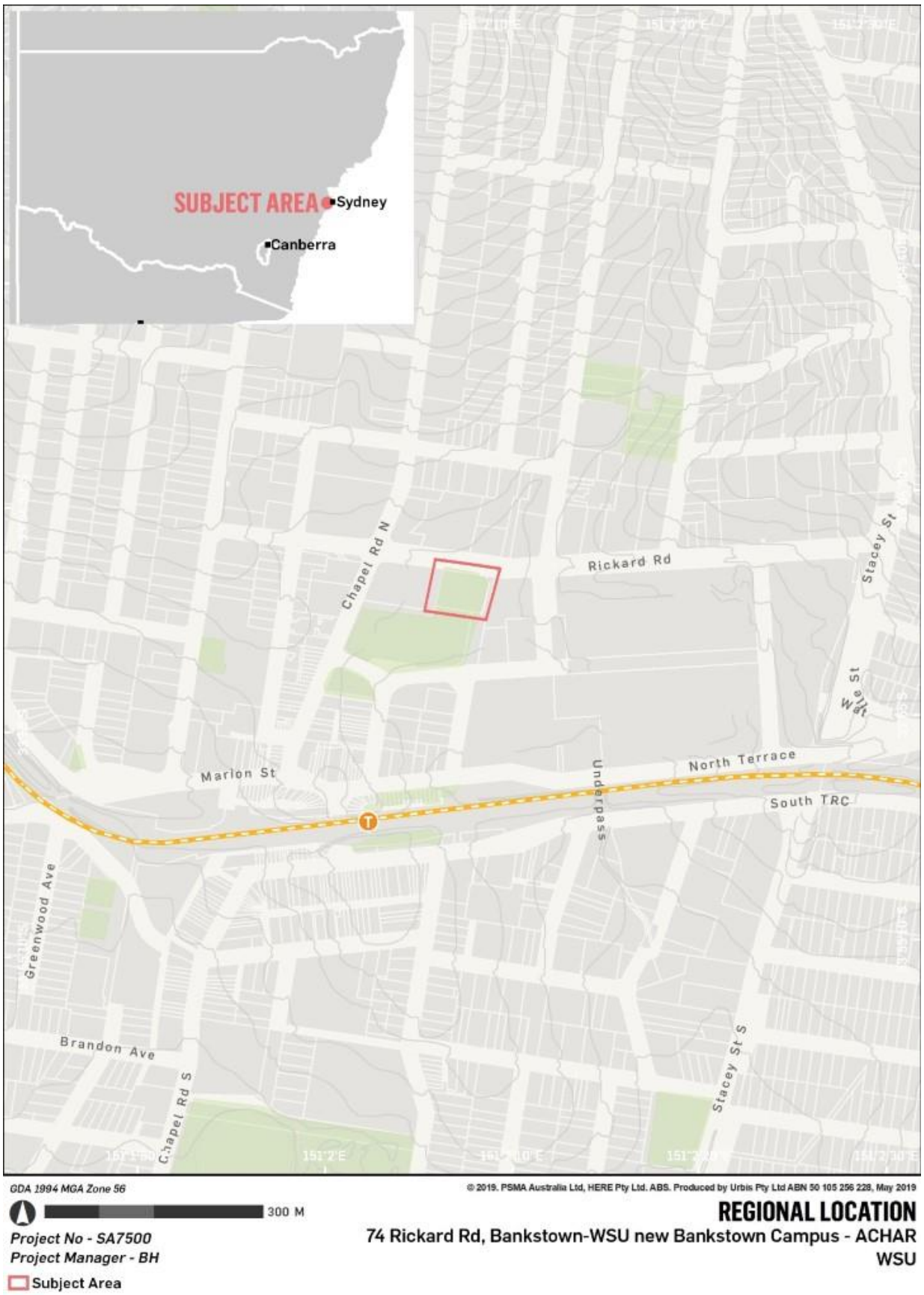


Figure 1 – Regional Location

Figure 2 – Location of the Subject Area

Figure 3 – Proposed Activity/Development

2. DESCRIPTION OF THE SUBJECT AREA

2.1. LOCATION

The Subject Area is located on Lot 5/DP 777510 and part of Lot 6 and Lot 7/DP 777510, Lot 12/DP566924, Lot 3/DP 773698, and adjoining road reserves at 74 Rickard Road and part of 375 Chapel Street, Bankstown NSW, within the boundary of the Canterbury Bankstown Council Local Government Area (LGA), NSW. The site boundaries are defined by Rickard Road (to the north), proposed continuation of Appian Way (to the east), Paul Keating Park (to the south) and Chapel Road, colloquially referred to as “Library Road” (to the west) (Figure 1 and Figure 2 in Section 1).

2.2. ABORIGINAL ARCHAEOLOGICAL BACKGROUND

The search of the Aboriginal Heritage Information Management Systems (AHIMS) was carried out on the 14th March 2019 (AHIMS Client Service ID: 406244) for an area of 12 kilometres (km) by 9 km. Altogether, 115 Aboriginal sites were identified by the AHIMS search. Sixteen entries are listed as ‘Not a Site’ and were consequently excluded from the analysis of the archaeological record for this ACHA. The search found no registered Aboriginal objects and/or sites within or near the Subject Area. The nearest registered Aboriginal site is located approximately 2 km to the south-east of the Subject Area (Figure 4). Details of the AHIMS search is provided in Table 1 below, and the original extensive search results provided in Appendix A.

The types and spatial distribution of the registered Aboriginal sites (n=99) is consistent with the known archaeological site patterns of the central section of the Cumberland Plains. The higher number of open sites (n=85, 86%) in comparison to closed sites (n=14, 14%) corresponds with the topography, underlaying geology and soil landscapes of the search area. The search area is dominated by the undulating landscape of the central Cumberland Plains and the Blacktown residual (REbt) and Glenorie erosional (ERgn) soil landscapes with some areas of alluvial sand deposits along major water ways and some pockets of Hawkesbury Sandstone on the northern and southern edges of the search area. The residual and erosional soil landscapes are associated with open artefact scatters, isolated finds and Potential Archaeological Deposits (PADs) and their combinations, while alluvial soils and sandstone outcrops are associated with shell middens and grinding groove and shelter sites respectively. The eastern margin of the Subject Area and its immediate surroundings are also comprising large areas of Disturbed Terrain (DTxx) which suggest the complete absence of the original soil profile and archaeological resources within those areas. Evaluation of the soil landscapes and the impact of historical European land use is discussed in the following sub-sections.

Table 1 – Results of AHIMS search (Client Service ID: 406244).

Site Type	Context	Total	Percentage
Artefact Scatter	Open Site	41	36
Scarred Tree	Open Site	10	9
Isolated Find	Open Site	10	9
Shelter with Deposit	Closed Site	9	7
PAD	Open Site	8	6
Midden	Open Site	5	4
Artefact Scatter, PAD	Open Site	4	3
Shell	Open Site	2	2
Shelter with Midden and Deposit	Closed Site	2	2

Site Type	Context	Total	Percentage
Axe Grinding Grooves	Open Site	1	1
Aboriginal Resource Gathering, PAD	Open Site	1	1
Artefact Scatter, Shell	Open Site	1	1
Isolated Find, PAD	Open Site	1	1
Rock Engraving	Open Site	1	1
Shelter with Artefact Scatter and Deposit	Closed Site	1	1
Shelter with Art and Deposit	Closed Site	1	1
Shelter with Art and Deposit, Shell	Closed Site	1	1
Not a Site	N/A	16	14
Total	**N/A**	**115**	**100**

2.3. GEOLOGY AND SOILS

The Subject Area is located on the edge of the Cumberland Lowlands and situated on the geological formation of Hawkesbury Sandstone which is overlaid by Ashfield and Bringelly Shale (Figure 5).

The soils of the Subject Area consist of the Blacktown residual (REbt) and Glenorie erosional (ERgn) soil landscapes. The Blacktown residual soil landscape consists of shallow to moderately deep red and brown podzoic soils on crests, upper slopes, and well drained areas; and yellow podzoic soils on lower slopes and in areas of poor drainage.

On Figure 5, the eastern margin of the Subject Area is marked as being very close or within the Disturbed Terrain (DTxx) and it is very likely that the Subject Areas itself has the same level of disturbance in accordance with the results of the recently carried out geotechnical investigation (Douglas Partners, 2018) (Appendix C). The results of all geotechnical bore hole drills show concrete and imported filling overlaying stiff clay or silty clay with no signs of remaining original top soil within the Subject Area.

All the results confirm that no original soil profiles are left within the Subject Area and consequently there very low to nil potential for any archaeological resources present within the Subject Area.

2.4. VEGETATION

The Subject Area is entirely cleared of native vegetation and through the historical land use and development has been turned into an artificial, urban landscape.

2.5. PAST ABORIGINAL LAND USE

The Subject Area is located within the LGA of Canterbury Bankstown. The traditional Aboriginal people of the region are recognised as being the Bediagal, a linguistic group of the Daruk (or Durag/Dharug) language (Canterbury-Bankstown Council, 2016), particularly one of the coastal dialects (Attenbrow 2010:34). It is thought to have been spoken on the Sydney peninsula, between Port Jackson (to the north) and Botany Bay (to the south), and west to Paramatta. With this large and dynamically changing area, there were numerous

clans or tribes that would intermingle and interact with others in the local area rather than strictly confining to 'tribal' borders that were solidified later by European anthropologists (Organ 1990: xliii).

Historical accounts from the late 1700s differ in the estimations of the Aboriginal population of the Sydney region, but most suggest between 3000-5000 occupants (Attenbrow 2010:158). The lack of accurate baseline data poses problems for estimations of the population decrease following the arrival of the British, but it is believed that around half of the traditional inhabitants died within the first few years post-contact, resulting from introduced disease and particularly following a massive outbreak of small pox in 1789 that spread through Sydney region and Cumberland Plain more broadly (accounts of Philip (1790 and 1793) and Fowell (1790) in Attenbrow 2010; Heiss and Gibson 2013).

As Attenbrow (2010) asserts, there was significant and rapid loss of land following the establishment of the British colony from 1788, and within 40 years the pre-colonial life of Sydney had generally disappeared. For decades, many Aboriginal people became afraid to enter Sydney, or other areas with a dominant white population, for fear of violence or death from guns and other weapons (Heiss 2013). However, many people continued to fight alienation from traditional land, and established strong communities at places such as La Perouse, Mulgoa, Emu Plains, Manly, Campbelltown, Sackville, and Camden, comprising people traditionally of the Sydney area and surrounds, and continuing pre-Contact customs and ways of life where possible.

2.6. HISTORICAL LAND USE

The Subject Area and surrounds have been subject to high levels of disturbance since the time of first European colonisation. Significance disturbance, including clearing of vegetation, the construction of buildings, roads, associated infrastructure and constant changing of the built environment have changed the original environment, and resulted in an artificial, urban landscape (Figure 6). Furthermore, the geotechnical investigation carried out by Douglas Partners Pty Ltd has confirmed that no original topsoil is left within the Subject Area, and that the existing soil profile comprises various introduced fill, concrete, asphalt and re-deposited, introduced hard clay (Douglas Partners, 2018). None of the 13 boreholes that were investigated within the Subject Area have samples containing remains of the original top-soil profile. Relevant excerpts of the geotechnical report are provided in Appendix C.

Another way of assessing the level of surface soil disturbance is to scrutinise historical aerial photographs which can provide vital information of the changing environment with a given area. Five historical aerial photographs from 1930, 1961, 1983, 1998, 2005, and the most recent 2019 aerial photography were assessed for the Subject Area (Figure 6). The results of the assessment are provided in Table 2 below.

Table 2 – Results of the analysis of the historical aerial images.

Year	Observation
1930	The location and surroundings of the Subject Area had already been developed as part of the growing city of Sydney. The entire area is a built-up environment, and few natural landscape features are visible. The Subject Area is a largely cleared field within a densely developed residential area.
1961	A number of structures have been built on the Subject Area, with the surrounding residential environment showing little change.
1983	A new set of buildings have been construction on the Subject Area, including some new landscaping, with the surrounding residential environment showing little change.
1998	The Subject Area has been converted into a carpark, with some minor landscaping.
2005	Existing buildings around the Subject Area have been changed, with one large structure to the south removed completely.
2019	The Subject Area has not changed from 2005, though the surrounding residential areas have been further developed.

Overall, the Subject Area has been the subject of high to extreme disturbance resulting from the continuous development of the central Sydney area. Extensive clearing, the construction of buildings, roads, carparks, and associated infrastructure have changed the original environment and created a highly artificial landscape within and near the Subject Area.

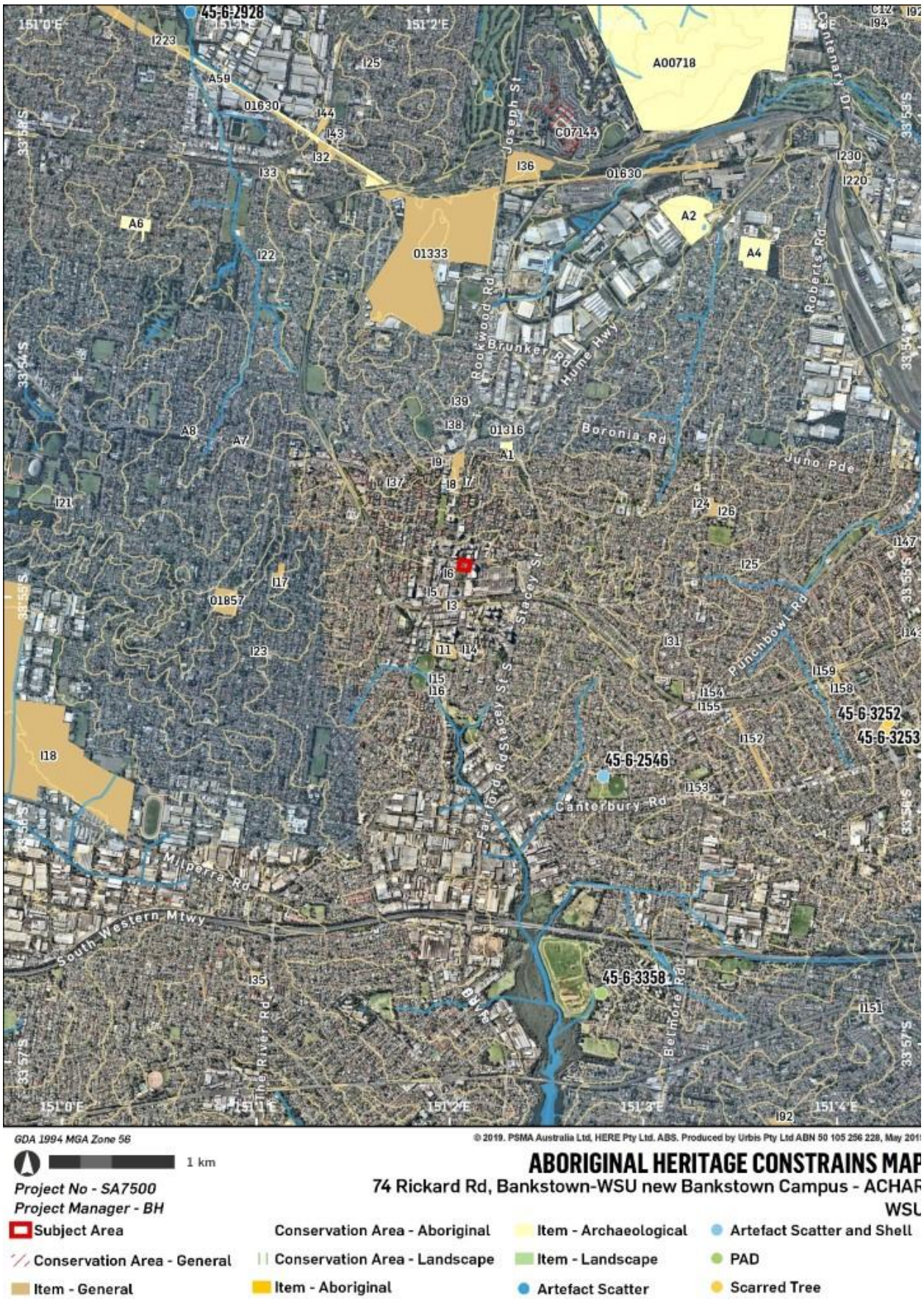


Figure 4 – Aboriginal Heritage Constraints Map

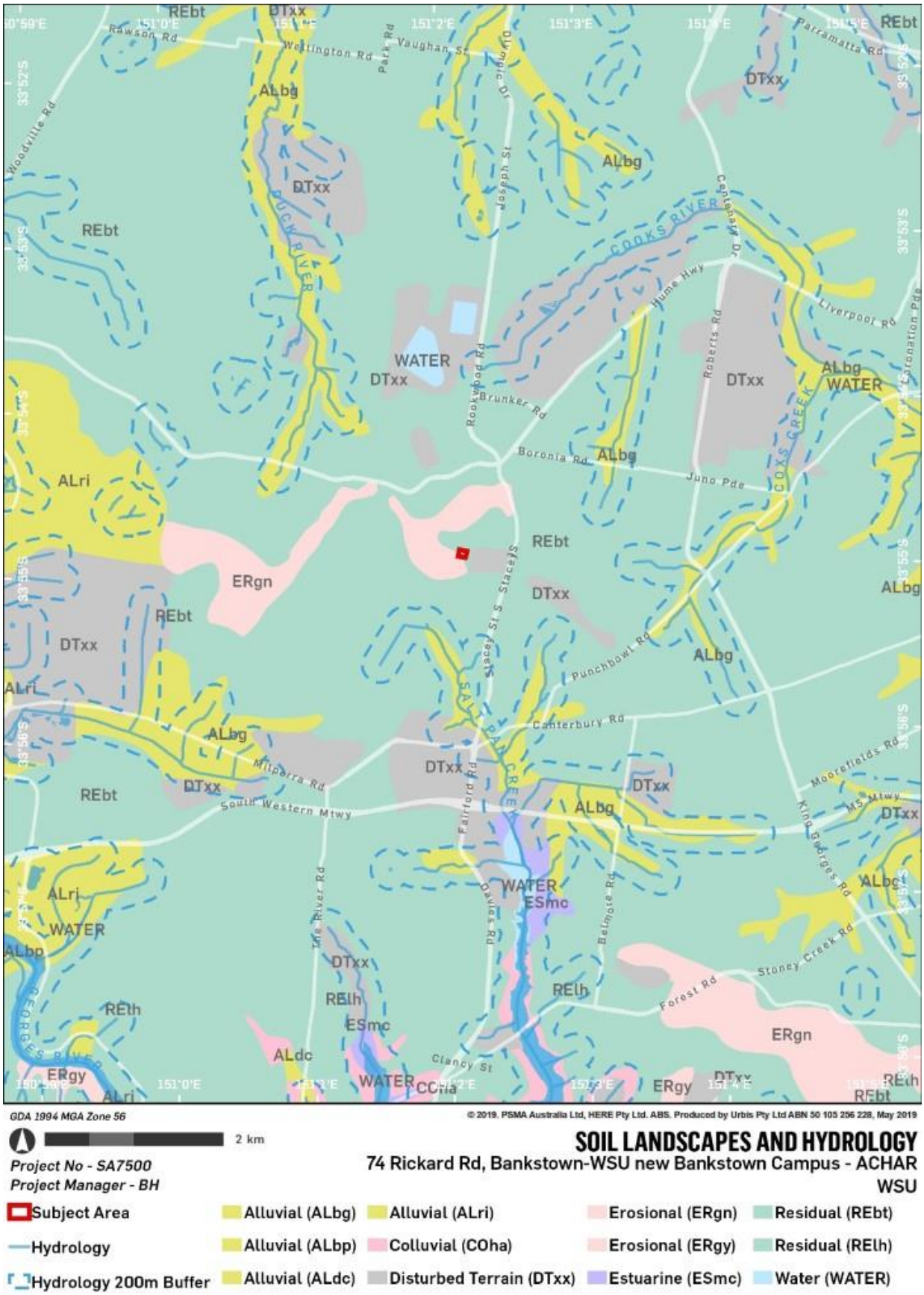
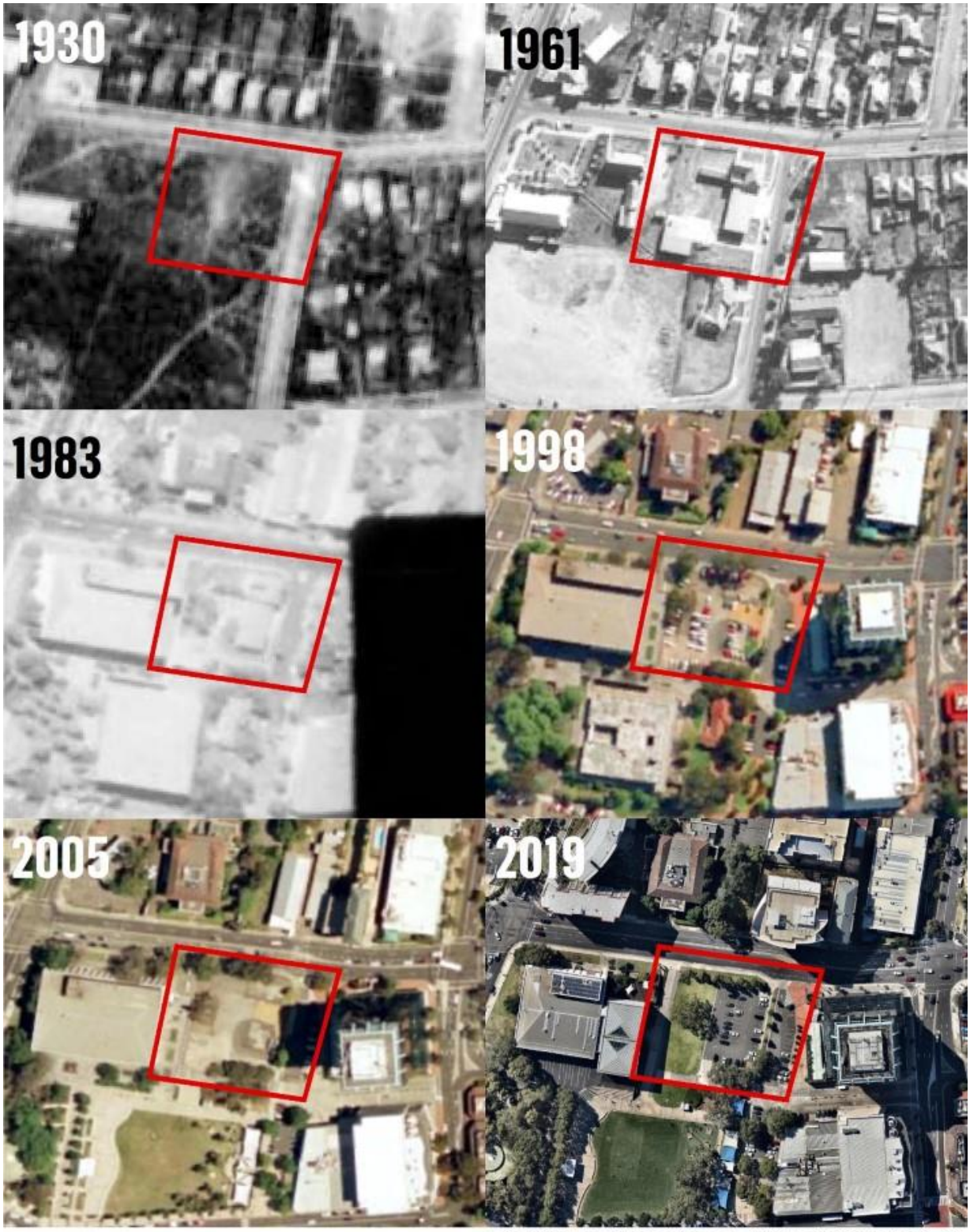


Figure 5 – Soil Landscapes and Hydrology



GDA 1994 MGA Zone 56

100 M

Project No - SA7500
Project Manager - BH

Subject Area

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HISTORICAL AERIAL PHOTOGRAPHS
74 Rickard Rd, Bankstown-WSU new Bankstown Campus - ACHAR
WSU

Figure 6 – Historical Aerial Photographs

3. CONSULTATION PROCESS

3.1. CONSULTATION PROCESS

In administering its statutory functions under Part 6 of the *NSW National Parks and Wildlife Act 1974*, the Office of Environment and Heritage (OEH) requires that Proponent consult with Aboriginal people about the Aboriginal cultural heritage values (cultural significance) of Aboriginal objects and/or places within any given development area in accordance with Clause 80c of the NSW National Parks and Wildlife Regulation, 2009.

The OEH maintains that the objective of consultation with Aboriginal communities about the cultural heritage values of Aboriginal objects and places is to ensure that Aboriginal people have the opportunity to improve ACHA outcomes by (DECCW 2010a):

- providing relevant information about the cultural significance and values of Aboriginal objects and/or places.
- influencing the design of the method to assess cultural and scientific significance of Aboriginal objects and/or places.
- actively contributing to the development of cultural heritage management options and recommendations for any Aboriginal objects and/or places within the proposed Subject Area, and
- commenting on draft assessment reports before they are submitted by the Proponent to the OEH.

Consultation in the form outlined in the Consultation Requirements (DECCW 2010) is a formal requirement where a Proponent is aware that their development activity has the potential to harm Aboriginal objects or places. The OEH also recommends that these requirements be used when the certainty of harm is not yet established but a Proponent has, through some formal development mechanism, been required to undertake a cultural heritage assessment to establish the potential harm their proposal may have on Aboriginal objects and places.

Consultation for this assessment, has been undertaken in accordance with the Consultation Requirements as these meet the fundamental tenants of the 2004 consultation requirements (NSW Department of Environment and Conservation [DEC] 2004), while meeting current industry standards for community consultation.

The Consultation Requirements outline a four-stage consultation process that includes the following:

- Stage 1 – Notification of Project proposal and registration of interest.
- Stage 2 - Presentation of information about the proposed Project.
- Stage 3 - Gathering information about the cultural significance.
- Stage 4 – Review of draft cultural heritage assessment report.

The document also outlines the roles and responsibilities of the OEH, Registered Aboriginal Parties (RAPs) including Local and State Aboriginal Land Councils, and Proponents throughout the consultation process.

To meet the requirements of consultation it is expected that Proponents will:

- Bring the Registered Aboriginal Parties (RAPs), or their nominated representatives, together and be responsible for ensuring appropriate administration and management of the consultation process.
- Consider the cultural perspectives, views, knowledge and advice of the RAPs involved in the consultation process in assessing cultural significance and developing any heritage management outcomes for Aboriginal objects(s) and/or places(s).
- Provide evidence to the OEH of consultation by including information relevant to the cultural perspectives, views, knowledge and advice provided by the RAPs.
- Accurately record and clearly articulate all consultation findings in the final cultural heritage assessment report, and
- Provide copies of their cultural heritage assessment report to the RAPs who have been consulted.

The consultation process undertaken to seek active involvement from relevant Aboriginal representatives for the Project followed the current NSW statutory guideline, namely, the Consultation Requirements. Section 1.3 of the Consultation Requirements describes the guiding principles of the document. The principles have been derived directly from the principles section of the *Australian Heritage Commission's Ask First: A guide to respecting Indigenous heritage places and values* (Australian Heritage Commission 2002). Both documents share the aim of creating a system where free prior informed advice can be sought from the Aboriginal community.

The following outlines the process and results of the consultation conducted during this assessment to ascertain and reflect the Aboriginal cultural heritage values of the Subject Area, further information in regard to the Aboriginal community consultation processed is outlined in Appendix B

3.2. STAGE 1 - NOTIFICATION AND REGISTRATION OF INTEREST

Notification was initiated on 1 April 2019 to all relevant organisations named under Section 4.1.2 of the Consultation Requirements to identify Aboriginal people who may have cultural knowledge relevant to the Subject Area and may have interest in the proposed project. The list of the contacted organisations is provided in Table 3.

Table 3 – List of agencies contacted during Stage 1.

Name of Organisation	Date of Notification sent	Date of response received
NSW Office Of Environment and Heritage, Sydney	1 April 2019	3 April 2019
Gandangara Local Aboriginal Land Council	1 April 2019	3 April 2019
Local Land Services- Greater Sydney Region	1 April 2019	3 April 2019
National Native Title Tribunal	1 April 2019	9 April 2019
NTS Corp Limited	1 April 2019	No response received
Office of the Registrar, Aboriginal Land Rights Act 1983	1 April 2019	3 April 2019
Canterbury-Bankstown City Council	1 April 2019	No response received

A list of potential cultural knowledge holders was compiled from submissions and information collected during the notification from the relevant agencies, particularly from the OEH.

The following 53 groups were contacted in accordance to Section 4.1.3 of the Consultation Requirements to register an interest in the project:

- Canterbury Bankstown Aboriginal and Torres Strait Islander Reference Group (CBATRG)
- Bankstown Elders (BE)
- Bankstown Koori Elders Inc (BKE)
- Koori Interagency Group (KIG)
- Metropolitan Local Aboriginal Land Council (MLALC)
- Gandangara Local Aboriginal Land Council (GLALC)
- Darug Aboriginal Cultural Heritage Assessments (DACHA)
- Darug Land Observations (DLO)
- A1 Indigenous Services (A1)
- Kawal Cultural Services (KAS)

- Tocomwall
- Amanda Hickey Cultural Services (AHCS)
- Gunyuu
- Walbunja
- Badu
- Goobah Developments (GD)
- Wullung
- Yerramurra
- Nundagurri
- Murrumbul
- Jerringong
- Pemulwuy Cultural Heritage Technical Services (PCHTS)
- Bilinga
- Munyunga
- Wingikara
- Minnamunnung
- Walgalu
- Thauaira
- Dharug
- Bilinga Cultural Heritage Technical Services (BCHTS)
- Gunyuu Cultural Heritage Technical Services GCHTS)
- Munyunga Cultural Heritage Technical Services (MCHTS)
- Murrumbul Cultural Heritage Technical Services (MuCHTS)
- Wingikara Cultural Heritage Technical Services (WCHTS)
- Gulaga
- Biamanga
- Callendulla
- Murramarang
- Butucarbin Aboriginal Corporation (BAC)
- Didge Ngunawal Clan (DNC)
- Ginninderra Aboriginal Corporation (GAC)
- Nerrigundah
- Wailwan Aboriginal Group (WAG)
- Barking Owl Aboriginal Corporation (BOAC)
- Yulay Cultural Services (YCS)

- Thoorga Nura (TN)
- Barraby Cultural Services (BCS)
- Yurrandaali Cultural Services YuCS)
- Darug Boorooberongal Elders Aboriginal Corporation (DBEAC)
- B.H. Heritage Consultants (BHHC)
- Ngambaa Cultural Connections (NCC)
- Goodradigbee Cultural & Heritage Aboriginal Corporation (GCHAC)
- Mura Indigenous Corporation (MIC)
- Eric Keidge

In accordance with Section 4.1.3 a newspaper advertisement was also placed in the Canterbury Bankstown Express on 16 April 2019 to provide additional opportunity for Aboriginal people who may be interested in the project to come forth. A copy of the advertisement and the notification letter is included in Appendix B.

As a result of Stage 1, the following twelve (12) individuals and/or organisations have become Registered Aboriginal Parties (RAPs) for the Project:

- A1 Indigenous Services (A1)
- Amanda Hickey Cultural Services (AHCS)
- Barraby Cultural Services (BCS)
- Barking Owl Aboriginal Corporation (BOAC)
- Canterbury Bankstown Aboriginal and Torres Strait Islander Reference Group (CBATRG)
- Darug Land Observations (DLO)
- Didge Ngunawal Clan (DNC)
- Ginninderra Aboriginal Corporation (GAC)
- Goobah Developments (GD)
- Gandangara Local Aboriginal Land Council (GLALC)
- Tocomwall
- Wailwan Aboriginal Group (WAG)

The copies of the Registration of Interest (RoI) of each RAP and the consultation log of all correspondence with the RAPs is included in Appendix B.

3.3. STAGE 2 - PRESENTATION OF INFORMATION ABOUT THE PROPOSED PROJECT

The RAPs were provided with a letter on the 8 May 2019 outlining information about the Project and a copy of the proposed methodology for an ACHA in accordance with Section 4.2 of the Consultation Requirements. The purpose of these documents was to:

- Describe the project, outline the project scope, time frame and proposed impact.
- Describe the environment of the Subject Area and information relevant to the ACHAR process.
- Provide opportunity for RAPs to understand the process and comment on the proposed methodology.
- Set a time frame for providing feedback and comments on the methodology and project information.

A copy of the letter with the information regarding methodology is included in Appendix B.

By the close of the comment period, the 6 June 2019 Urbis has received the following comment from one RAP organisation in relation to the Stage 2 information.

Table 4 – List of comments provided during Stage 2.

RAP	Contact Name	Feedback Provided	Response from Urbis
A1 Indigenous Services	Carolyn Hickey	*Hi, A1 supports the ACHAR Methodology .Thank you Carolyn Hickey*	Acknowledged and responded.

No further comments were received by Urbis in relation to the proposed methodology and project information.

3.4. STAGE 3 - GATHERING INFORMATION ABOUT CULTURAL SIGNIFICANCE

Information about cultural heritage significance and cultural information relating to the Subject Area has been sought throughout the consultation process. Opportunity was provided in the Stage 2 consultation letter as well for all RAPs to express their views and provide information on cultural heritage matters and significance.

No cultural heritage information has been received from the RAPs during the lifetime of the Project.

3.5. STAGE 4 – REVIEW OF DRAFT CULTURAL HERITAGE ASSESSMENT

The RAPs were provided with the draft ACHAR on 10th July 2019 I accordance with Section 4.2 of the Consultation Requirements.

By the close of the comment period, the 7th August 2019 Urbis, has received the following comment from one RAP organisation.

Table 5 – List of comments provided during Stage 2.

RAP	Contact Name	Feedback Provided	Response from Urbis
CBCC	Turkan Aksoy	*"No further comments or amendments that are needed. The file/ report is comprehensive I still strongly advise that Aboriginal specific consultations at later stages of this projects in order to ensure visibility and transparency with our community stakeholders and look forward to hearing back from you at a later date when time has been set for this"*	Acknowledged and responded. We will be in touch in relation to further opportunities going forward.

No further comments were received by Urbis in relation to the proposed methodology and project information.

4. SUMMARY AND ANALYSIS OF BACKGROUND INFORMATION

There are no registered Aboriginal sites within, or near to, the Subject Area and it is highly unlikely that unregistered Aboriginal objects are survived the high level of disturbance caused by historical land use.

Analysis of historical aerial photographs that cover the Subject Area indicates that it is highly unlikely that any unregistered Aboriginal sites survive within or near the Subject Area. The Subject Area is highly disturbed, entirely cleared and surrounded by residential development by 1930. By 1961, the Subject Area had been developed into a small complex of buildings, surrounded by residential areas and established streets. These activities likely resulted in high disturbance of subsurface deposits, particularly due to foundations that would likely have been dug to support the larger buildings in the site.

By 1983, a new complex had been constructed on the Subject Area, with some areas of landscaping around the buildings. The construction and landscaping of this complex would have resulted in further significant disturbance to the subsurface deposits. The geotechnical investigation results suggest that there has been extensive disturbance to subsurface deposits, with little to no natural soil remaining across the Subject Area.

Overall, the Subject Area has been the subject of high to extreme disturbance resulting from the continuous development of the central Sydney area. Extensive clearing, the construction of buildings, roads, carparks, and associated infrastructure have changed the original environment and created a highly artificial landscape within and near the Subject Area.

Given the above facts, it is impossible to establish what events took place in the past and how Aboriginal people might have used the land comprised by the Subject Area.

5. CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE

5.1. METHODS OF ASSESSING HERITAGE SIGNIFICANCE

Heritage significance is assessed by considering each cultural, or archaeological site, against the significance criteria set out in the Assessment Guidelines. In all case, the assessment of significance detailed below is informed by the Aboriginal community, which is documented in this report. If any culturally sensitive values were identified they would not be specifically included in the report, or made publicly available, but would be documented and lodged with the knowledge holder providing the information.

5.2. ASSESSMENT FRAMEWORK

The Burra Charter (Australia ICOMOS 1999) defines the basic principles and procedure to be observed in the conservation of important places. It provided the primary framework within which decisions about the management of heritage sites should be made. The Burra Charter defines cultural significance as being derived from the values listed below.

5.2.1. Social or Cultural Value

Social or cultural value refers to the spiritual, traditional, historical or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural values is how people express their connection with a place and the meaning that place has for them.

Places of social or cultural value have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods, or events. Communities can experience a sense of loss should a place of social or cultural value be damaged or destroyed.

There is not always a consensus about a place's social or cultural value. When identifying values, it is not necessary to agree with or acknowledge the validity of each other's values, but it is necessary to document the range of values identified.

Social or cultural values can only be identified through consultation with Aboriginal people. The could involve a range of methodologies, such as cultural mapping, oral histories, archival documentation and specific information provided by Aboriginal people specifically for the investigation.

When recording oral history:

- Identify who was interviewed and why
- Document the time, place and date the interview was conducted
- Describe the interview arrangements (the number of people present, recording arrangements, information access arrangements)
- Provide a summary of the information provided to the person being interviewed
- Summarise the information provided by each person interviewed.

More information on conducting oral history projects can be found in OEH's publication *Talking history: oral history guidelines*.

Occasionally information about social value may not be forthcoming. In these circumstances, document the consultation process but make it clear in the discussions and conclusions about social value that this was the case.

5.2.2. Historic Value

Historic value refers to the associations of a place with a historically important person, event, phase or activity in an Aboriginal community. Historic places do not always have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). They may have 'shared' historic values with other (non-Aboriginal) communities.

Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage. Consequently, the Aboriginal involvement and contribution to important regional historical themes is often missing from accepted historical narratives. This means it is often necessary to collect oral histories along with archival or documentary research to gain a sufficient understanding of historic values.

5.2.3. Scientific (Archaeological) Value

This refers to the importance of a landscape, area, place or object because of its rarity, representativeness and the extent to which is may contribute to further understanding and information (Australian ICOMOS 1988).

Information about scientific values will be gathered through any archaeological investigation undertaken. Archaeological investigations must be carried out according to OEH's *Code of practice for archaeological investigation of Aboriginal objects in NSW*.

5.2.4. Aesthetic Value

This refers to sensory, scenic, architectural, and creative aspects of the place. It is often closely linked with the social values. It may consider form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use (Australian ICOMOS 1988).

5.3. IDENTIFYING VALUES

The information collected in the background review of the project can be used to help identify these values. The review of background information and information gained through consultation with Aboriginal people should provide insight into past events. These include how the landscape was used and why any identified Aboriginal objects are in this location, along with contemporary uses of the land.

Information gaps are not uncommon and should be acknowledged. They may require further investigation to adequately identify the values present across the subject area. It may be helpful to prepare a preliminary values map that identifies, to the extent of information available, the:

- Known places of social, spiritual, cultural value, including natural resources of significance;
- Known historic places;
- Known Aboriginal objects and/or declared Aboriginal places; and
- Potential places/areas of social, spiritual, cultural value, including natural resources, historic or archaeological significance.

Places of potential value that are not fully identified or defined should be included as 'sensitive' areas to target further investigation.

5.4. ASSESSING VALUES AND SIGNIFICANCE

This stage is used to assess and discuss the cultural significance of the values identified during the identification and assessment of cultural significance by consulting Aboriginal people and to prepare a statement of significance. The assessment of values is a discussion of what is significant and why. An assessment of values is more than simply restating the evidence collected during the background review and identification of values stages of the project. Rather, the assessment should lead to a statement of significance that sets out a succinct summary of the salient values that have been identified.

The assessment and justification in the statement of significance must discuss whether any value meets the following criteria (NSW Heritage Office 2001):

- Does the subject area have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons? – social value
- Is the subject area important to the cultural or natural history of the local area and/or region and/or state? – historic value
- Does the subject area have potential to yield information that will contribute to an understanding of the cultural or natural history of the local area and/or region and/or state? – scientific (archaeological) value

- Is the subject area important in demonstrating aesthetic characteristics in the local area and/or region and/or state? – aesthetic value.

Assessment of each of the criteria (above) should be graded in terms that allow the significance to be described and compared; for example, as high, moderate, or low. In applying these criteria, consideration should be given to:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?

Then discuss what is significance and why – this should be summarised into a statement of significance. Thus, the statement of significance is a succinct summary of the salient values drawn from the identification of values.

5.5. IDENTIFIED VALUES

There have been no cultural heritage values identified for the Subject Area either by the RAPs or the evaluation of the background information during the ACHA process. Consequently, the assessment of values was not warranted for the Subject Area.

6. THE PROPOSED ACTIVITY

The Subject Area is the traditional land of the Bediagal of the Daruk language group. Since arrival of non-indigenous people, the area has been largely cleared of any native vegetation, and experienced large-scale disturbance through built infrastructure, with the site currently being used as a public car park, with some landscaped open space.

The proposed activity involves the development of a self-contained vertical campus within the Bankstown CBD. The proposed development will include:

- The demolition of all structure and hardstand within the site;
- Removal of all vegetation;
- Excavation to a maximum depth of 8.5m;
- Construction of an 18-storey building (maximum height of 83m) with an additional 2 levels of basement; and
- Associated public domain and civil works.

6.1. POTENTIAL HARM

This section identifies the potential impacts to cultural heritage arising from the proposal, including demolition, excavation, and construction phases. Harm can be direct or indirect, defined by the Assessment Guidelines as:

- Direct harm – may occur as the result of any activity which disturbs the ground including, but not limited to, site preparation activities, installation of services and infrastructure, roadworks, excavation, flood mitigation measures; and
- Indirect harm – may affect sites or features located immediately beyond or within the area of the proposed activity. Examples include, but are not limited to, increased impact on art in a shelter from increased visitation, destruction from increased erosion and changes in access to wild food resources.

It is noted that no Aboriginal archaeological or cultural sites have been identified within, or in close proximity to, the Subject Area. Therefore, it is considered unlikely that the proposed works will disturb the archaeological record.

6.2. LIKELY IMPACTED VALUES

It is highly unlikely that any artefacts associated with the site would be located within the Subject Area, due to the degree of disturbance that has occurred across the entire Subject Area. It is known that fill has been deposited across the site at depths ranging from 0.8m and 2.0m, with clay or silty clay below the fill layers at depths ranging from 2.7m to 3.8m. This suggests that there is an archaeologically sterile layer directly below the concrete layer of the carpark and surroundings within the entire Subject Area. The proposed works will therefore take place in areas of existing disturbance and direct impact to archaeological deposits or places is unlikely.

6.3. JUSTIFICATION

Given the lack of registered Aboriginal sites, and the extensive disturbance that has occurred across the whole site that has removed all possibility of any remaining Aboriginal objects, and the lack of any cultural heritage information from the RAPs, the construction of the new campus for the Western Sydney University is justified. The new education hub will provide another opportunity for quality tertiary education for the Western Sydney Community. The Proponent is also planning to incorporate Aboriginal cultural heritage themes and art into the interior design of the new building which will provide further opportunity to the larger Aboriginal community including the RAPs of the current ACHA process to express their knowledge and ideas in relation to the Aboriginal history of the area.

7. AVOIDING AND MINIMISING HARM

As identified by the ACHA process, there are no Aboriginal objects and/or cultural heritage places within the Subject Area and consequently there is no harm proposed that needs to be avoided or minimised. There is a low to nil possibility of the presence of un-registered Aboriginal objects or sites within the Subject Area, due to the extensive disturbance of the subsurface deposits, as evidenced by the extensive development of the Subject Area and its surrounding, as well as the geotechnical results which indicated a lack of natural soil below the surface level. Due to this low to nil possibility of Aboriginal resources within the Subject Area, avoidance and mitigation measures are not warranted other than the standards chance find procedures that are included in the recommendations in Section 8 of the ACHAR.

8. CONCLUSIONS AND RECOMMENDATIONS

This ACHAR was prepared as per the relevant section of the *National Parks and Wildlife Act 1974* (NPW Act) and the *National Parks and Wildlife Regulations 2009* (NPW Reg) and in accordance to the following guidelines:

- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (Department of Environment, Climate Change and Water (DECCW), 2010) (the Consultation Requirements);
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage (OEH) 2011) (the Assessment Guidelines);
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).
- The Australia ICOMOS Charter for Places of Cultural Significance, The Burra Charter, 2013 (Burra Charter)

The ACHA process included the:

- Comprehensive background research of all available archaeological and cultural heritage information for the Subject Area in context with the scope of the Project;
- Analysis and interpretation of the background research;
- Consultation with the Registered Aboriginal Parties (RAPs); and
- Summarising of results and providing recommendations for the proposed development in relation to Aboriginal cultural heritage and archaeological resources.

The ACHAR concluded that:

- There are no registered Aboriginal objects and/or archaeological sites within the Subject Area;
- There are no landscape features with potential for Aboriginal objects or archaeological deposits located within the Subject Area;
- The Subject Area has been the subject of high to extreme levels of disturbance since the 1960s at the latest;
- The original soil profile has been entirely removed from the Subject Area during the last 50 years, and replaced with extensive levels of fill material; and
- No Aboriginal cultural heritage values have been identified by the RAPs.

Based on the above conclusions, the Proponent can proceed with the development in accordance to the following recommendations:

- The Proponent should continue to consult with the Aboriginal community in regard to the Project;
- The Proponent is encouraged to include the RAPs in the discussion of the potential of the interpretation of the Aboriginal history and cultural heritage values of the Bankstown area;
- In the unlikely event that previously unknown Aboriginal object(s) and/or sites are discovered during the demolition of the existing building, works must stop and an appropriately qualified archaeologist and members of the GLALC contacted to assess the nature, extent and significance of the identified object(s) and/or sites;
- In the unlikely event that suspected human remains are encountered during the demolition of the existing building, all work in the area that may cause further impacts, must cease immediately and the following measures must be implemented.
  - The location, including a 20m curtilage, should be secured using barrier fencing to avoid further harm
  - The NSW Police must be contacted immediately

- Notify OEH's Environment Line on 131 555 as soon as practicable and provide available details of the remains and their location
- No further action is to be undertaken until the NSW Police provide written clearance for the identified remains
- Should the remains be identified as Aboriginal, the GLALC must be notified
- A suitably qualified archaeologist and/or anthropologist with forensic training must be contacted.

9. REFERENCES

Attenbrow, V. 2010 *Sydney's Aboriginal Past*. UNSW Press.

Canterbury-Bankstown Council 2016 *Map Boundaries and Aboriginal Languages*. https://www.cbcity.nsw.gov.au/community/cultural-services/aboriginal-torres-strait-islanders/map-boundaries-aboriginal-languages

Department of Environment, Climate Change and Water NSW 2010 *Aboriginal cultural heritage consultation requirements for proponents 2010: Part 6 National Parks and Wildlife Act 1974*, Department of Environment, Climate Change and Water NSW.

Department of Environment, Climate Change and Water NSW 2010 *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales: Part 6 National Parks and Wildlife Act 1974*, Department of Environment, Climate Change and Water NSW.

Department of Environment, Climate Change and Water NSW 2010 *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in New South Wales: Part 6 National Parks and Wildlife Act 1974*, Department of Environment, Climate Change and Water NSW.

Douglas Partners 2018 *Report on Supplementary Geotechnical Investigation*. Document MSP-DP-GT-011; Project 86443.00, October 2018. Report to Woods Bagot.

Heiss, A. 2013 *First Contact*. Sydney Barani – Early Contact. https://www.sydneybarani.com.au/sites/first-contact/

Heiss, A. and M-J Gibson 2013 *Aboriginal People and Place.* Sydney Barani – Early Contact https://www.sydneybarani.com.au/sites/aboriginal-people-and-place/

Organ, M.K. 1990 *Illawarra and South Coast Aboriginal 1770-1850.* Aboriginal Education Unit, University of Wollongong.

DISCLAIMER

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In preparing this report, Urbis was required to make judgements which may be affected by unforeseen future events, the likelihood and effects of which are not capable of precise assessment.

All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

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This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

APPENDIX A AHIMS EXTENSIVE SEARCH RESULTS

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : SA7500/3

Client Service ID : 406244

Urbis Pty Ltd - 201 Sussex St Sydney

L23, Tower 2 201 sussex St
Sydney New South Wales 2000

Attention: Balazs Hansel

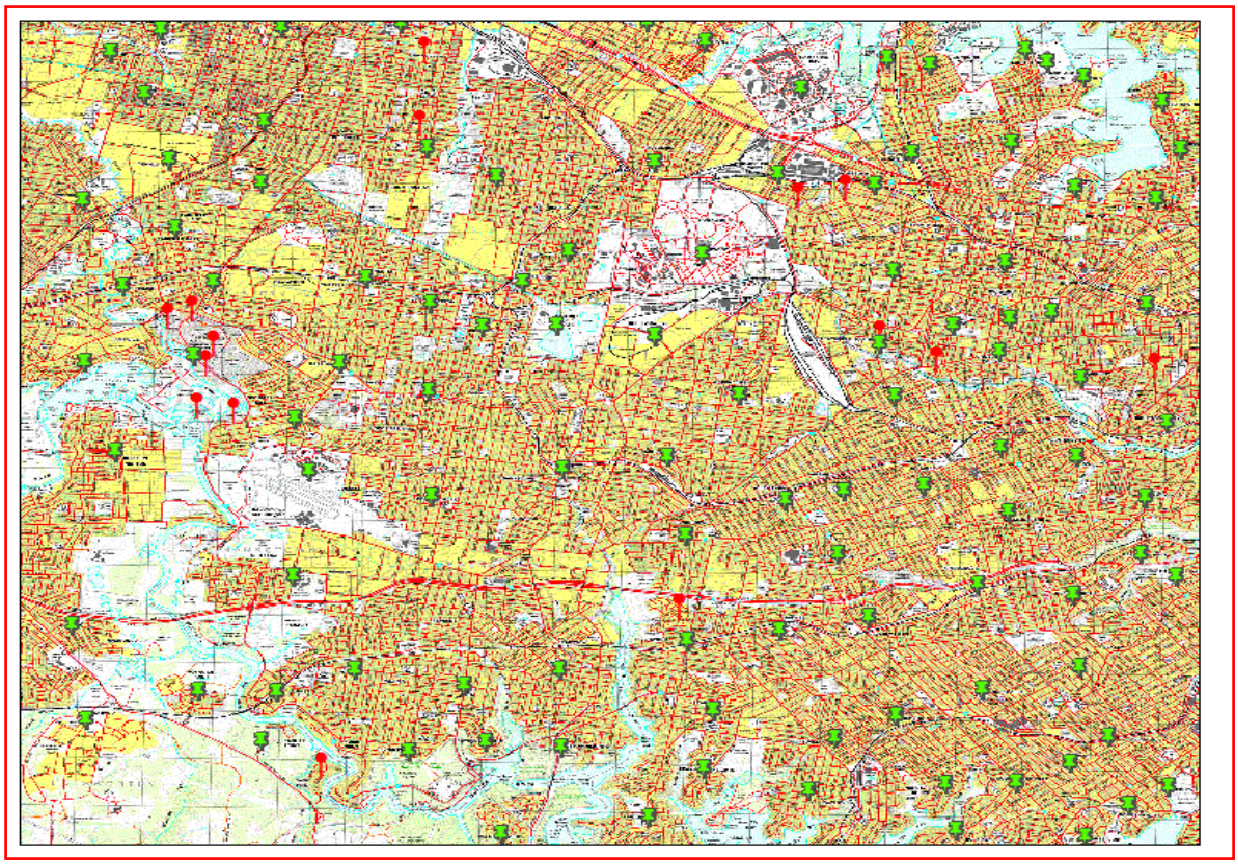
Email: bhansel@urbis.com.au

Date: 14 March 2019

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -33.9715, 150.9454 - Lat, Long To : -33.8524, 151.1341 with a Buffer of 0 meters, conducted by Balazs Hansel on 14 March 2019.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

115	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SA7500/3

Client Service ID : 406244

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-2591	Duck Creek;Guildford;	AGD	56	314750	6251320	Open site	Valid	Artefact : -	Open Camp Site	102196
Contact		Recorders	Michael Guider					Permits		
45-5-2450	PP1	AGD	56	314230	6239390	Open site	Valid	Shell : -, Artefact : -	Midden	
Contact		Recorders	Michael Therin					Permits		
45-5-2448	PP1	AGD	56	314230	6239390	Open site	Valid	Artefact : -	Open Camp Site	
Contact		Recorders	ASRSYS					Permits		
45-6-2339	Haslams Ck 1	AGD	56	319810	6251690	Open site	Valid	Artefact : -	Open Camp Site	102196
Contact		Recorders	Michael Guider					Permits		
45-6-2344	Duck River 21;Granville South;	AGD	56	316314	6251800	Open site	Valid	Artefact : -	Open Camp Site	102196
Contact		Recorders	Michael Guider					Permits		
45-6-2349	Duck River 22;	AGD	56	316414	6251970	Open site	Valid	Artefact : -	Open Camp Site	102196
Contact		Recorders	Michael Guider					Permits		
45-5-1058	Voyager Point ISF 1;VP ISF1;	AGD	56	312240	6239910	Open site	Valid	Artefact : -	Isolated Find	
Contact		Recorders	Doctor.Jo McDonald,Elizabeth Rich					Permits		
45-5-1059	Voyager Point ISF 2;VP ISF2;	AGD	56	312210	6240050	Open site	Valid	Artefact : -	Isolated Find	
Contact		Recorders	Doctor.Jo McDonald,Elizabeth Rich					Permits		
45-5-1060	Voyager Point ISF 3;VP ISF3;	GDA	56	312633	6239938	Open site	Valid	Artefact : -	Isolated Find	
Contact		Recorders	Doctor.Jo McDonald,Elizabeth Rich					Permits		
45-5-1061	Voyager Point ISF 4;VP ISF4;	AGD	56	312450	6239690	Open site	Valid	Artefact : -	Isolated Find	
Contact		Recorders	Doctor.Jo McDonald,Elizabeth Rich					Permits		
45-6-2145	France/Exile Bay, Concord.	AGD	56	325900	6252400	Open site	Valid	Shell : -, Artefact : -	Midden	1809,1911
Contact		Recorders	Mr.R Taplin					Permits		
45-6-2546	Punchbowl Park_1;PbP 1;	AGD	56	319400	6243660	Open site	Valid	Artefact : -	Open Camp Site	
Contact		Recorders	Michael Guider					Permits		
45-6-0601	East Hill;Sandaken Road;	AGD	56	317130	6239500	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	1276
Contact		Recorders	ASRSYS					Permits		
45-6-0602	Henry Lawson Drive	AGD	56	317964	6239556	Closed site	Valid	Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Deposit	1276
Contact		Recorders	ASRSYS					Permits		
45-5-0337	Greenwood 1;Freeway No.5;	AGD	56	311800	6241530	Open site	Valid	Artefact : -	Open Camp Site	260,824,1018,2132
Contact		Recorders	F Cain,Ms.Laila Haglund					Permits	285,337	
45-5-0971	WGO3-2	AGD	56	310430	6239900	Open site	Valid	Artefact : -	Open Camp Site	2826
Contact		Recorders	Philip Boot					Permits		

Report generated by AHIMS Web Service on 14/03/2019 for Balazs Hansel for the following area at Lat, Long From : -33.9715, 150.9454 - Lat, Long To : -33.8524, 151.1341 with a Buffer of 0 meters. Additional Info : confirm site data. Number of Aboriginal sites and Aboriginal objects found is 115

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SA7500/3

Client Service ID : 406244

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-0972	WGO3-1	AGD	56	310620	6239950	Open site	Valid	Artefact : -	Open Camp Site	2826
Contact		Recorders	Philip Boot					Permits	702,905	
45-6-2470	None Specified	AGD	56	317850	6240650	Closed site	Valid	Artefact : -, Art (Pigment or Engraved) : -, Grinding Groove : -	Axe Grinding Groove,Shelter with Art,Shelter with Deposit	
Contact		Recorders	Gary Dunnett					Permits		
45-6-2471	None Specified	AGD	56	317850	6240700	Closed site	Valid	Artefact : -, Art (Pigment or Engraved) : -, Grinding Groove : -	Axe Grinding Groove,Shelter with Art,Shelter with Deposit	
Contact		Recorders	Gary Dunnett					Permits		
45-6-2142	Hen & Chicken Bay, Five Dock.;	AGD	56	326200	6251250	Open site	Valid	Shell : -, Artefact : -	Midden	
Contact		Recorders	Mr.R Taplin					Permits		
45-5-2344	Holsworthy IF 4;	AGD	56	311200	6240380	Open site	Destroyed	Artefact : -	Isolated Find	
Contact		Recorders	Mrs.Robynne Mills					Permits		
45-5-2345	Holsworthy IF 2,3;	AGD	56	311900	6240480	Open site	Valid	Artefact : -	Isolated Find	
Contact		Recorders	Mrs.Robynne Mills					Permits		
45-5-2346	Holsworthy IF 1;	AGD	56	311810	6240410	Open site	Valid	Artefact : -	Isolated Find	
Contact		Recorders	Mrs.Robynne Mills					Permits		
45-6-2098	Duck River 1;	AGD	56	316305	6251180	Open site	Valid	Artefact : -	Open Camp Site	102196
Contact		Recorders	Val Attenbrow					Permits		
45-6-2414	Wolli_Creek 1.6;	AGD	56	326280	6243580	Closed site	Valid	Artefact : -	Shelter with Deposit	1452
Contact		Recorders	Tranby College					Permits		
45-6-2415	Wolli_Creek 1.4;	AGD	56	325740	6243270	Closed site	Valid	Artefact : -	Shelter with Deposit	1452
Contact		Recorders	Tranby College					Permits		
45-6-2564	Wolli Creek 2.5	AGD	56	327250	6243760	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
Contact		Recorders	Tranby College					Permits		
45-6-2565	Wolli Creek 2.4	AGD	56	327010	6243900	Closed site	Valid	Artefact : -	Shelter with Deposit	
Contact		Recorders	Tranby College					Permits		
45-6-2566	Wolli Creek 2.1	AGD	56	326960	6243880	Closed site	Valid	Artefact : -	Shelter with Deposit	
Contact		Recorders	Tranby College					Permits		

Report generated by AHIMS Web Service on 14/03/2019 for Balazs Hansel for the following area at Lat, Long From : -33.9715, 150.9454 - Lat, Long To : -33.8524, 151.1341 with a Buffer of 0 meters. Additional Info : confirm site data. Number of Aboriginal sites and Aboriginal objects found is 115

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AHIMS Web Services (AWS)
Extensive search - Site list report

Your Ref/PO Number : SA7500/3
Client Service ID : 406244

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-2567	Wolli Creek	AGD	56	327250	6243760	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
Contact		Recorders	Tranby College					Permits		
45-6-2568	Wolli Creek	AGD	56	327010	6244000	Closed site	Valid	Artefact : -	Shelter with Deposit	
Contact		Recorders	Tranby College					Permits		
45-5-1099	Hume Highway;	AGD	56	312000	6248060	Open site	Valid	Artefact : -	Open Camp Site	102196
Contact		Recorders	Michael Guider					Permits		
45-6-2416	Wolli_Creek 1.3;	AGD	56	325840	6243370	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	1452
Contact		Recorders	Tranby College					Permits		
45-6-2417	Wolli_Creek 1.2;	AGD	56	325880	6243400	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	1452
Contact		Recorders	Tranby College					Permits		
45-6-2418	Wolli_Creek 1.1;	AGD	56	325880	6243400	Closed site	Valid	Artefact : -	Shelter with Deposit	1452
Contact		Recorders	Tranby College					Permits		
45-5-2355	WGO 3-1; (duplicate copy 45-5-0972)	AGD	56	310620	6239950	Open site	Valid	Artefact : -	Open Camp Site	
Contact		Recorders	Philip Boot					Permits		
45-5-2369	WGO3-2;(REFER TO 45-5-0971)	AGD	56	310430	6239900	Open site	Valid	Artefact : -	Open Camp Site	
Contact		Recorders	Philip Boot					Permits		
45-5-2371	VP3;Voyager Pt. 3;	AGD	56	312240	6239800	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	3561
Contact		Recorders	Doctor.Jo McDonald,Elizabeth Rich					Permits		
45-5-2372	VP1;Voyager Pt. 1;	AGD	56	312240	6239730	Open site	Valid	Shell : -, Artefact : -	Midden	3561
Contact		Recorders	Doctor.Jo McDonald,Elizabeth Rich					Permits	1095	
45-5-2373	VP2;Voyager Pt. 2;	AGD	56	312240	6239780	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	3561
Contact		Recorders	Doctor.Jo McDonald,Elizabeth Rich					Permits		
45-5-0730	Orphan School Creek 5	AGD	56	309970	6248450	Open site	Valid	Artefact : -	Open Camp Site	1506,102196
Contact		Recorders	Gandangara Eel Dreamers					Permits		
45-5-0733	Orphan School Creek 2	AGD	56	310550	6248640	Open site	Valid	Artefact : -	Open Camp Site	
Contact		Recorders	Gandangara Eel Dreamers					Permits		
45-6-1783	Salt Pan Creek;	AGD	56	319309	6239781	Open site	Valid	Art (Pigment or Engraved) : -	Axe Grinding Groove,Rock Engraving	

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AHIMS Web Services (AWS)
Extensive search - Site list report

Your Ref/PO Number : SA7500/3
Client Service ID : 406244

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	Warren Bluff,Jarvis					**Permits**		
45-6-1738	Oatley Pleasure Ground;	AGD	56	322940	6239430	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	**Recorders**	Warren Bluff					**Permits**		
45-6-1739	Oatley Pleasure Ground;	AGD	56	322940	6239450	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	**Recorders**	Warren Bluff					**Permits**		
45-5-0837	Toll Plaza Site 1;TPS 1;	AGD	56	311900	6241580	Open site	Valid	Artefact : -	Open Camp Site	2132
	Contact	**Recorders**	F Cain					**Permits**		
45-5-0740	Carawood Park Caramar	GDA	56	311472	6248210	Open site	Valid	Artefact : -	Isolated Find	102196
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists,R Lampert,Ms.Tamika Goward					**Permits**		
45-5-2645	HCRST2	AGD	56	313450	6239110	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	**Recorders**	Jeff Thomas					**Permits**		
45-5-2909	Mirambeena Regional Park 2	AGD	56	312125	6247600	Open site	Valid	Artefact : 18		102196
	Contact	**Recorders**	Michael Guider					**Permits**		
45-5-2910	Mirambeena Regional Park 3	GDA	56	312185	6247952	Open site	Valid	Artefact : 3		102196
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists,Michael Guider,Ms.Tamika Goward					**Permits**		
45-5-2908	Mirambeena Regional Park 1	GDA	56	312124	6248126	Open site	Valid	Artefact : 100		102196
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists,Michael Guider,Ms.Tamika Goward					**Permits**		
45-6-2758	Duck River 3	AGD	56	316235	6250935	Open site	Partially Destroyed	Artefact : 1		102196
	Contact T Russell	**Recorders**	Michael Guider					**Permits**	3532	
45-6-2759	Duck River 5	AGD	56	316205	6250840	Open site	Valid	Artefact : -		102196
	Contact T Russell	**Recorders**	Michael Guider					**Permits**		
45-6-2760	Duck River 2	AGD	56	316320	6251120	Open site	Valid	Artefact : -		102196
	Contact T Russell	**Recorders**	Michael Guider					**Permits**		
45-6-2761	Duck River 4	AGD	56	316230	6250840	Open site	Partially Destroyed	Artefact : -		102196
	Contact T Russell	**Recorders**	Michael Guider					**Permits**	3532	
45-5-0734	Orphan School Creek 1	AGD	56	310680	6248780	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	102196
	Contact	**Recorders**	Gandangara Eel Dreamers					**Permits**		
45-5-3208	SPL 1	AGD	56	311954	6241094	Open site	Valid	Artefact : 5, Potential Archaeological Deposit (PAD) : 1		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact Searle	**Recorders**	Doug Binns					**Permits**	2501	
45-5-3209	SPL 2	AGD	56	313051	6241800	Open site	Valid	Modified Tree (Carved or Scarred) : 2		
	Contact Searle	**Recorders**	Biosis Pty Ltd - Sydney					**Permits**		
45-5-3210	SPL 3	AGD	56	313187	6241793	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact Searle	**Recorders**	Biosis Pty Ltd - Sydney					**Permits**		
45-5-3269	OSC 1	AGD	56	310694	6248899	Open site	Valid	Artefact : -		102196
	Contact	**Recorders**	Therin Archaeological Consulting					**Permits**	2571	
45-5-3272	PC1	AGD	56	311160	6249391	Open site	Valid	Potential Archaeological Deposit (PAD) : -, Artefact : -		102196
	Contact T Russell	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**	2582,2594,2696	
45-6-2916	Duck River 6	GDA	56	316105	6250850	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Michael Guider					**Permits**		
45-6-2917	Duck River 7	GDA	56	316035	6250850	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Michael Guider					**Permits**		
45-6-2918	Duck River 8	GDA	56	316135	6250975	Open site	Partially Destroyed	Artefact : -		
	Contact	**Recorders**	Michael Guider					**Permits**	3532	
45-6-2919	Duck River 9	GDA	56	316160	6251055	Open site	Partially Destroyed	Artefact : -		
	Contact	**Recorders**	Michael Guider					**Permits**	3532	
45-6-2920	Duck River 10	GDA	56	316215	6251175	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Michael Guider					**Permits**		
45-6-2921	Duck River 12	GDA	56	316200	6250800	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Michael Guider					**Permits**		
45-6-2922	Duck River 11	GDA	56	316080	6250785	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Michael Guider					**Permits**		
45-6-2923	Duck River 13	GDA	56	316210	6250695	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Michael Guider					**Permits**		
45-6-2924	Duck River 16	GDA	56	316325	6250565	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Michael Guider					**Permits**		
45-6-2925	Duck River 14	GDA	56	316270	6250618	Open site	Valid	Artefact : -		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Michael Guider					Permits		
45-6-2926	Duck River 15	GDA	56	316325	6250575	Open site	Valid	Artefact : -		
	Contact	Recorders	Michael Guider					Permits		
45-6-2927	Duck River 17	GDA	56	316200	6250520	Open site	Valid	Artefact : -		
	Contact	Recorders	Michael Guider					Permits		
45-6-2928	Duck River 18	GDA	56	316215	6249935	Open site	Valid	Artefact : -		
	Contact	Recorders	Michael Guider					Permits		
45-5-3697	JP 1 (Canley Vale)	GDA	56	310204	6248567	Open site	Valid	Artefact : -		
	Contact	Recorders	Mary Dallas Consulting Archaeologists,Michael Guider,Ms.Tamika Goward					Permits		
45-5-0257	Liverpool Chipping Norton	AGD	56	310540	6245081	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	260,1018,102196
	Contact	Recorders	David Bell					Permits		
45-5-4301	Carramar ST	GDA	56	311367	6248138	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Sydney Water-Parramatta,Ms.Yvonne Kaiser					Permits		
45-5-4303	New Brighton Isolated Find	GDA	56	312347	6241606	Open site	Valid	Artefact : 1		
	Contact	Recorders	Ms.Fenella Atkinson					Permits	3623,3628	
45-5-4814	Scar Tree 11	GDA	56	312550	6242220	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4816	Scar Tree 8	GDA	56	312672	6242236	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4817	Scar Tree 9	GDA	56	312672	6242225	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4818	Scar Tree 10	GDA	56	312560	6242248	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-6-3252	Wiley Park Scar Tree 1	GDA	56	321779	6244287	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		

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AHIMS Web Services (AWS)
Extensive search - Site list report

Your Ref/PO Number : SA7500/3
Client Service ID : 406244

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-3253	Wiley Park Scar Tree 2	GDA	56	321779	6244287	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4819	Riverlands Scar Tree 7	GDA	56	312704	6242251	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4822	Riverlands Scar Tree 1	GDA	56	312771	6242427	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4823	Riverlands Scar Tree 2	GDA	56	312770	6242434	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4824	Riverlands Scar Tree 3	GDA	56	312759	6242392	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4825	Riverlands Scar Tree 4	GDA	56	312750	6242402	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4826	Riverlands Scar Tree 5	GDA	56	312745	6242310	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4827	Riverlands Scar Tree 6	GDA	56	312736	6242256	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4828	Riverlands Scar Tree 13	GDA	56	312722	6242511	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		
45-5-4829	Riverlands Scar Tree 12	GDA	56	312732	6242569	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	Recorders	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					Permits		

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AHIMS Web Services (AWS)
Extensive search - Site list report

Your Ref/PO Number : SA7500/3
Client Service ID : 406244

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-4830	Riverlands Scar Tree 14	GDA	56	312718	6242459	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	**Recorders**	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					**Permits**		
45-5-4831	Riverlands Scar Tree 15	GDA	56	312712	6242455	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	**Recorders**	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					**Permits**		
45-5-4832	Riverlands Scar Tree 16	GDA	56	312649	6242331	Open site	Not a Site	Modified Tree (Carved or Scarred) : -		103636
	Contact	**Recorders**	Dummy Organisation for AHIMS APP Users,Doctor.Paul Wynn					**Permits**		
45-6-3358	Riverwood PAD01	GDA	56	319489	6242118	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Artefact - Cultural Heritage Management ,Mr.Michael Lever					**Permits**		
45-5-5192	Shell Midden OPTRd	AGD	56	310203	6244869	Open site	Valid	Shell : 1		
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**		
45-5-5193	wiley pk cnr canterbuty and king georges	GDA	56	314013	6240763	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Bankstown Bushland Society,Mr.Chris Brogan					**Permits**		
45-5-5124	HLD Resource Zone 1 + PAD	GDA	56	312924	6244624	Open site	Valid	Aboriginal Resource and Gathering : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					**Permits**		
45-5-5125	HLD Site 5 (IF)	GDA	56	313732	6243856	Open site	Valid	Artefact : -		
	Contact	**Recorders**	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					**Permits**		
45-5-5114	HLD Site 4 (AS+PAD)	GDA	56	312878	6247057	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					**Permits**		
45-5-5115	HLD Site 3 (AS+PAD)	GDA	56	312520	6248132	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					**Permits**		
45-5-5116	HLD Site 2 (IF)	GDA	56	312743	6247149	Open site	Valid	Artefact : -		
	Contact	**Recorders**	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					**Permits**		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : SA7500/3

Client Service ID : 406244

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-5117	HLD PAD 1	GDA	56	312404	6248008	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					Permits		
45-5-5118	HLD PAD 2	GDA	56	312531	6247561	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					Permits		
45-5-5119	HLD Site 1 (AS+PAD)	GDA	56	312985	6246882	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					Permits		
45-5-5120	HLD PAD 3	GDA	56	313363	6246462	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					Permits		
45-5-5121	HLD PAD 4	GDA	56	313291	6246031	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					Permits		
45-5-5122	HLD PAD 5	GDA	56	312899	6244709	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					Permits		
45-5-5123	HLD PAD 6	GDA	56	313097	6244334	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					Permits		
45-5-5109	Sirius Rd Midden	GDA	56	313175	6240405	Open site	Valid	Shell : 1		103915
Contact		Recorders	Ms.Tory Stening,Unearthed Archaeology & Heritage					Permits		
45-6-3545	Elliot Reserve 1 (STRA-001)	GDA	56	323155	6247290	Open site	Valid	Artefact : 150		
Contact		Recorders	Mr.Phil Hunt,Aboriginal Housing Office					Permits		
45-6-3546	Maria Reserve 1 (STRA-002)	GDA	56	322850	6247555	Open site	Valid	Artefact : 1		
Contact		Recorders	Mr.Phil Hunt,Aboriginal Housing Office					Permits		
45-6-3547	St Annes Reserve 1 (STRA-003)	GDA	56	322145	6248135	Open site	Valid	Aboriginal Resource and Gathering : 150		
Contact		Recorders	Mr.Phil Hunt,Aboriginal Heritage Office					Permits		

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APPENDIX B ABORIGINAL CONSULTATION DOCUMENTS

URBIS

TOWER 2, LEVEL 23
DARLING PARK, 201 SUSSEX ST
SYDNEY NSW 2000

URBIS.COM.AU
Urbis Pty Ltd
ABN 50 105 256 228

1 April 2019

To whom it may concern

Office of Enviornment and Heritage
Greater Sydney Branch
Communities and Greater Sydney Division
PO Box 644
Parramatta NSW 2124
gs.ach@environment.nsw.gov.au

ESTABLISHMENT OF WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS – ABORIGINAL CULTURAL HERITAGE ASSESSMENT, ABORIGINAL CONSULTATION STAGE 1 – NOTIFICATION AND REGISTRATION OF INTEREST

Urbis has been commissioned by Western Sydney University (WSU) (the Proponent) to conduct an Aboriginal Cultural Heritage Assessment (ACHA) for the establishment of the new Bankstown City Campus on the whole of Lot 5/DP 777510 and part of Lot 6 and Lot 7/DP 777510, Lot 12/DP566924, Lot 3/DP 773698, and adjoining road reserves at 74 Rickard Road and part of 375 Chapel Street, Bankstown NSW (hereafter referred as the Subject Area) (Figure 1). The Planning Secretary's Environmental Assessment Requirements (SEARs – SSD 9831) have been released and an ACHA is required to accompany the Environmental Impact Statement (EIS) which will be submitted to support a State Significant Development Application (SSDA). The ACHA will detail any Aboriginal heritage constraints within the Subject Area and provide management recommendations regarding the development.

The Proponent can be directly contacted via:

Michelle Lee
Associate Director
Estate Master Planning and Strategy
Office of Estate and Commercial
Western Sydney University
Locked Bag 1797 Penrith NSW 2751

The purpose of the Aboriginal community consultation will be to assist the Proponent with:

- The preparation of an ACHA to address the SEARs.
- Recording of any Aboriginal objects in line with the OEH's Aboriginal Heritage Information Management System (AHIMS) that might exist within the Subject Area.
- Appropriate conservation outcomes, mitigation strategies and management recommendations for any Aboriginal objects that might be identified in the Subject Areas during the process.

In addition to following through the consultation process, the University is consulting with the University's Aboriginal and Torres Strait Islander Elders on Campus Advisory Group.

The Proponent is seeking the names and contact details of Aboriginal persons and groups who hold cultural knowledge relevant to, or who have a right or interest in determining the cultural heritage significance of Aboriginal object(s) and/or place(s) in the Subject Area. Should you be aware of any Aboriginal persons and/or organisations that might be interested in the project, please provide their details at your earliest convenience and preferably by 5pm on 10 April 2019 in writing to:

Mr Balazs Hansel
Urbis
Level 8, Angel Place
123 Pitt Street
Sydney NSW 2000
M: 0499 986 833
E: bhansel@urbis.com.au

The proponent will write to each Aboriginal person or group whose details are provided to notify them of the proposed project and invite them to register an interest in the community consultation process.

Please be advised that, as per the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, the Proponent is required to forward the names of Aboriginal persons and groups who register an interest (Registered Aboriginal Parties) to Gandangara Local Aboriginal Land Council and OEH unless the person or group specifies, that they do not want their details released.

Yours sincerely,

Balazs Hansel
Associate Director

Subject Area

GDA 1994 MGA Zone 56

400 M

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74 Rickard Rd, Bankstown-WSU new Bankstown Campus - ACHAR
WSU
Project Manager BH / Project No SA7500

FIGURE 1: REGIONAL LOCATION

National Native Title Tribunal

Request for Search of Tribunal Registers

Search for overlapping interests i.e.: Is there a native title claim, determination or land use agreement over this land?
Please note: the NNTT cannot search over freehold land.
For further information on freehold land: Click Here (NNTT website)

1. Your details

NAME:	Balazs Hansel
POSITION:	Associated Director
COMPANY/ORGANISATION:	Urbis
POSTAL ADDRESS:	Angle Place, Level 8, 123 Pitt St, Sydney 2000 NSW
TELEPHONE:	02 8233 7668
EMAIL:	bhansel@urbis.com.au
YOUR REFERENCE:	SA7500
DATE OF REQUEST:	8 April 2019

2. Reason for your request

Are you a party to a native title proceeding? ☐ Yes × No

Please provide Federal Court/Tribunal file number/or application name:

OR

Do you need to identify existing native title interests to comply with the *Native Title Act 1993* (Cth) or other State/Territory legislation? X☐ Yes ☐ No

Please provide brief details of these obligations here: Comply with the *Aboriginal cultural heritage consultation requirements for Proponents 2010*

3. Identify the area to be searched

If there is insufficient room below, please send more information on a Word or Excel document.

Mining tenure

State/Territory:

Tenement ref/s:

OR

Crown land / non-freehold tenure

Tenure type: ☐ Lease ☐ Reserve or other Crown land

State/Territory: NSW

Lot and plan details: whole of Lot 5/DP 777510 and part of Lot 6 and Lot 7/DP 777510, Lot 12/DP566924, Lot 3/DP 773698

Pastoral Lease number or name:

Other details: (Town/County/Parish/ Section/Hundred/Portion): Canterbury-Bankstown LGA

Email completed form to: GeospatialSearch@nntt.gov.au

From:	Geospatial Search Requests
To:	Balazs Hansel
Subject:	RE: SR5668 - Native Title Search - SA7500, 74 Rickard Rd Bankstown, NSW - SR5668
Date:	Tuesday, 9 April 2019 6:11:13 PM
Attachments:	image001.gif image012.png image013.png image014.png image015.png image016.png

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UNCLASSIFIED

Native title search – *NSW Parcels – Lot 5/DP 777510, Lot 6, Lot 7/DP 777510, Lot 12/DP566924 and Lot 3/DP 773698*
Your ref: *SA7500* - **Our ref:** *SR668*

Dear Balazs Hansel,

Thank you for your search request received on 09 April 2019 in relation to the above area.

Please note: Records held by the National Native Title Tribunal as at 09 April 2019 indicate that the identified parcels appear to be freehold, and freehold tenure extinguishes native title.
The National Native Title Tribunal does not hold data sets for freehold tenure; consequently, we **cannot** conduct searches over freehold. For confirmation of freehold data, please contact the NSW Land and Property Information office or seek independent legal advice.

For further information, please visit our website.

Cultural Heritage Searches in NSW
The National Native Title Tribunal (the Tribunal) has undertaken steps to remove itself from the formal list of sources for information about indigenous groups in development areas. The existence or otherwise of native title is quite separate to any matters relating to Aboriginal cultural heritage. Information on native title claims, native title determinations and Indigenous Land Use Agreements is available on the Tribunal's website.

Interested parties are invited to use Native Title Vision (NTV) the Tribunal's online mapping system to discover native title matters in their area of interest. Access to NTV is available at http://www.nntt.gov.au/assistance/Geospatial/Pages/NTV.aspx
Training and self-help documents are available on the NTV web page under "Training and help documents". For additional assistance or general advice on NTV please contact GeospatialSearch@NNTT.gov.au

Additional information can be extracted from the Registers available at http://www.nntt.gov.au/searchRegApps/Pages/default.aspx

If you have any further queries, please do not hesitate to contact us on the free call number 1800 640 501.

Regards,

Geospatial Searches
National Native Title Tribunal | Perth
Email: GeospatialSearch@nntt.gov.au | **www.nntt.gov.au**

From: Balazs Hansel <bhansel@urbis.com.au>
Sent: Monday, 8 April 2019 8:07 AM
To: Geospatial Search Requests <GeospatialSearch@NNTT.gov.au>
Subject: SR5668 - Native Title Search - SA7500, 74 Rickard Rd Bankstown, NSW

Dear Sir/Madam,

Please find the completed search form attached for the purpose of an Aboriginal Cultural Heritage Assessment as per the *Aboriginal cultural heritage consultation requirements for Proponents 2010.*

Kind Regards,

BALAZS HANSEL
ASSOCIATE DIRECTOR
D +61 2 8233 7668
T +61 2 8233 9900
M +61 499 986 833
E bhansel@urbis.com.au

Urbis Website

LEVEL 8, ANGEL PLACE, 123 PITT STREET
SYDNEY, NSW 2000, AUSTRALIA

Urbis recognises the traditional owners of the land on which we work.
Learn more about our **Reconciliation Action Plan.**

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From:	Melissa Williams
To:	Balazs Hansel
Cc:	Tony Scholes
Subject:	FW: ESTABLISHMENT OF WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS – ACHA, ABORIGINAL CONSULTATION STAGE 1 – NOTIFICATION
Date:	Wednesday, 3 April 2019 2:57:51 PM
Attachments:	image001.gif image003.png image005.png image007.png image009.png image011.png image012.png SA7500_S1_GLALC_ltr_FNL01_20190401.pdf

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Dear Balazs,

Thank you for contacting GLALC.
Can we discuss a time which suits for you to discuss requirements as part of a broader consultation with GLALC and members.
GLALC has the following functions in relation to Aboriginal Culture and Heritage:

(a) to take action to protect the culture and heritage of Aboriginal persons in the Council's area

(b) to promote awareness in the community of the culture and heritage of Aboriginal persons in the Council's area.

In relation to our Community, Land and Business Plan the following key priority areas:

(i) Engaging with Our Members and its objective, ('Opening the doors of our Land Council to our members')

(ii) Culture and Heritage' and its two objectives (protection of Aboriginal sites; promotion, celebration of Aboriginal identity and culture and heritage)

(iii The provision and management of community benefit schemes' and its objectives (sustainable, quality, and affordable services)

(iv) The acquisition, management and development of land and other assets' and the objectives (strategic acquisition, management and development)

(v) Business enterprises and investment' and its objectives (new employment opportunities to Aboriginal people, sustainable operation of services)

(vi) The identity of, and particulars of any encumbrance affecting, any parcel of land of the Council

GLALC is committed to raising awareness of and giving respect to cultural, social and religious systems practiced by Aboriginal peoples to work alongside and engage with Aboriginal peoples in a culturally respectful way.
Please let me know times and dates which suit for a meeting to discuss the local requirements and engagement protocols ?

Melissa Williams

Chief Executive Officer

Gandangara Local Aboriginal Land Council

64 Macquarie Street, LIVERPOOL NSW 2170 I PO Box 1038 Liverpool BC 1871

Ph: (02) 9602 5280 Fax: (02) 9602 2741 Mobile: 0477 706 280 E: mwilliams@glalc.org.au W: www.glalc.org.au

Gandangara LALC acknowledges the Cabrogal Clan and the Darug Nation as the traditional custodians of the land and as such pays deep respect to the Elders past and present. We also

acknowledge that the Dhurawal and Darug Nations continue to have a long standing relationship with this country and its people.

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From: Balazs Hansel <bhansel@urbis.com.au>
Sent: Monday, 1 April 2019 3:15 PM
To: Melissa Williams <MWilliams@glalc.org.au>
Subject: ESTABLISHMENT OF WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS – ACHA, ABORIGINAL CONSULTATION STAGE 1 – NOTIFICATION

Dear Gandangarra Local Aboriginal Land Council,

Urbis has been commissioned by Western Sydney University (WSU) (the Proponent) to conduct an Aboriginal Cultural Heritage Assessment (ACHA) for the establishment of the new Bankston City Campus on the entire of Lot 5/DP 777510 and part of Lot 6 and Lot 7/DP 777510, Lot 12/DP566924 and Lot 3/DP 773698, and adjoining road reserves at 74 Rickard Road and part of 375 Chapel Street, Bankstown NSW (hereafter referred as the Subject Area) (Figure 1). The Planning Secretary's Environmental Assessment Requirements (SEARs – SSD 9831) have been released and an ACHA is required to accompany the Environmental Impact Statement (EIS) which will be submitted to support a State Significant Development Application (SSDA).

The Proponent is seeking the names and contact details of Aboriginal persons and groups who hold cultural knowledge relevant to, or who have a right or interest in determining the cultural heritage significance of Aboriginal object(s) and/or place(s) in the Subject Area.

Should you be aware of any Aboriginal persons and/or organisations that might be interested in the project, please provide their details at your earliest convenience and preferably by 5pm on 10 April 2019 in writing to:

Mr Balazs Hansel
Urbis
Level 8, Angel Place
123 Pitt Street
Sydney NSW 2000
M: 0499 986 833
E: bhansel@urbis.com.au

Please find the formal notification letter attached to this email.

Kind Regards,

BALAZS HANSEL
ASSOCIATE DIRECTOR
D +61 2 8233 7668
T +61 2 8233 9900
M +61 499 986 833
E bhansel@urbis.com.au

Urbis Website

LEVEL 8, ANGEL PLACE, 123 PITT STREET
SYDNEY, NSW 2000, AUSTRALIA

Urbis recognises the traditional owners of the land on which we work.
Learn more about our **Reconciliation Action Plan.**

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From: Margaret Bottrell
To: Balazs Hansel
Subject: ABORIGINAL CULTURAL HERITAGE ASSESSMENT WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS –
Date: Wednesday, 3 April 2019 8:21:09 AM

To Balazs Hansel,

RE: ESTABLISHMENT OF WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS – ABORIGINAL CULTURAL HERITAGE ASSESSMENT, ABORIGINAL CONSULTATION STAGE 1 – NOTIFICATION AND REGISTRATION OF INTEREST

Thank you for your letter dated 1 April 2019, requesting assistance with identifying Aboriginal stakeholder groups or persons who may have an interest in your project area.

Greater Sydney Local Land Services (GS LLS) acknowledges that Local Land Services have been listed in *Section 4.1.2 (g)* of the*Aboriginal cultural heritage consultation requirements for proponents 2010,* under *Part 6, National Parks and Wildlife Act 1974* as a source of information to obtain the "names of Aboriginal people who may hold cultural knowledge relevant to determining the significance of Aboriginal *objects* and/or *places*".

GS LLS is a partner with many Aboriginal communities in the region on many natural resource management (NRM) projects. However, GS LLS is not the primary source for contacting or managing contact lists for Aboriginal communities or persons that may inform or provide comment on planning issues. GS LLS considers cultural heritage issues that relate to land-use planning in general and only considers culture and heritage issues in the context of NRM.

We strongly recommend that you make contact with the Office of Environment and Heritage (OEH), Cultural Heritage Division, for all-inclusive contact lists of persons and organisations that may assist with your investigation.

Note: Hawkesbury Nepean Catchment Management Authority (HNCMA) no longer exists. All work previously carried out by HNCMA in now delivered by Greater Sydney Local Land Services (GS LLS).

Regards,

--
Margaret Bottrell Senior Strategic Land Services Officer
(Aboriginal Communities)
Greater Sydney Local Land Service
Level 4, 2-6 Station Street Penrith
PO Box 4515 Penrith Westfields NSW 2750
T: 02 47242111
E:margaret.bottrell@lls.nsw.gov.au
W: http://www.lls.nsw.gov.au

NSW GOVERNMENT | Office of Environment & Heritage

Our reference: SF19/284983

Balazs Hansel
Associate Director
URBIS
Level 8, Angel Place
123 Pitt Street
Sydney NSW 2000

Dear Balazs,

Thank you for your letter dated 1st April 2019 to the Office of Environment and Heritage (OEH) regarding obtaining a list of the Aboriginal stakeholders that may have an interest in the proposed development for the Bankstown City Campus and adjoining road reserves at 74 Rickard Road and part of 375 Chapel Street Bankstown, NSW.

Please find attached the list of Aboriginal stakeholders known to OEH that may have an interest in the project.

As the Department of Planning and Environment is the approval authority for this project, the consultation process should be in accordance with the relevant guidelines as stipulated by the Department of Planning and Environment.

If you wish to discuss any of the above matter further please email gs.ach@environment.nsw.gov.au.

Yours sincerely

S. Harrison 03/04/19

Susan Harrison
Senior Team Leader Planning
Greater Sydney Branch
Communities and Greater Sydney Division

PO Box 644 Parramatta NSW 2124
Level 2, 10 Valentine Avenue Parramatta NSW 2150
Tel: (02) 9995 5477
ABN 30 841 387 271
www.environment.nsw.gov.au

Doc19/284983

URBIS

TOWER 2, LEVEL 23
DARLING PARK, 201 SUSSEX ST
SYDNEY NSW 2000

URBIS.COM.AU
Urbis Pty Ltd
ABN 50 105 256 228

1 April 2019

To whom it may concern

Office of Enviornment and Heritage
Greater Sydney Branch
Communities and Greater Sydney Division
PO Box 644
Parramatta NSW 2124
gs.ach@environment.nsw.gov.au

ESTABLISHMENT OF WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS – ABORIGINAL CULTURAL HERITAGE ASSESSMENT, ABORIGINAL CONSULTATION STAGE 1 – NOTIFICATION AND REGISTRATION OF INTEREST

Urbis has been commissioned by Western Sydney University (WSU) (the Proponent) to conduct an Aboriginal Cultural Heritage Assessment (ACHA) for the establishment of the new Bankstown City Campus on the whole of Lot 5/DP 777510 and part of Lot 6 and Lot 7/DP 777510, Lot 12/DP566924, Lot 3/DP 773698, and adjoining road reserves at 74 Rickard Road and part of 375 Chapel Street, Bankstown NSW (hereafter referred as the Subject Area) (Figure 1). The Planning Secretary's Environmental Assessment Requirements (SEARs – SSD 9831) have been released and an ACHA is required to accompany the Environmental Impact Statement (EIS) which will be submitted to support a State Significant Development Application (SSDA). The ACHA will detail any Aboriginal heritage constraints within the Subject Area and provide management recommendations regarding the development.

The Proponent can be directly contacted via:

Michelle Lee
Associate Director
Estate Master Planning and Strategy
Office of Estate and Commercial
Western Sydney University
Locked Bag 1797 Penrith NSW 2751

The purpose of the Aboriginal community consultation will be to assist the Proponent with:

- The preparation of an ACHA to address the SEARs.
- Recording of any Aboriginal objects in line with the OEH's Aboriginal Heritage Information Management System (AHIMS) that might exist within the Subject Area.
- Appropriate conservation outcomes, mitigation strategies and management recommendations for any Aboriginal objects that might be identified in the Subject Areas during the process.

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In addition to following through the consultation process, the University is consulting with the University's Aboriginal and Torres Strait Islander Elders on Campus Advisory Group.

The Proponent is seeking the names and contact details of Aboriginal persons and groups who hold cultural knowledge relevant to, or who have a right or interest in determining the cultural heritage significance of Aboriginal object(s) and/or place(s) in the Subject Area. Should you be aware of any Aboriginal persons and/or organisations that might be interested in the project, please provide their details at your earliest convenience and preferably by 5pm on 10 April 2019 in writing to:

Mr Balazs Hansel
Urbis
Level 8, Angel Place
123 Pitt Street
Sydney NSW 2000
M: 0499 986 833
E: bhansel@urbis.com.au

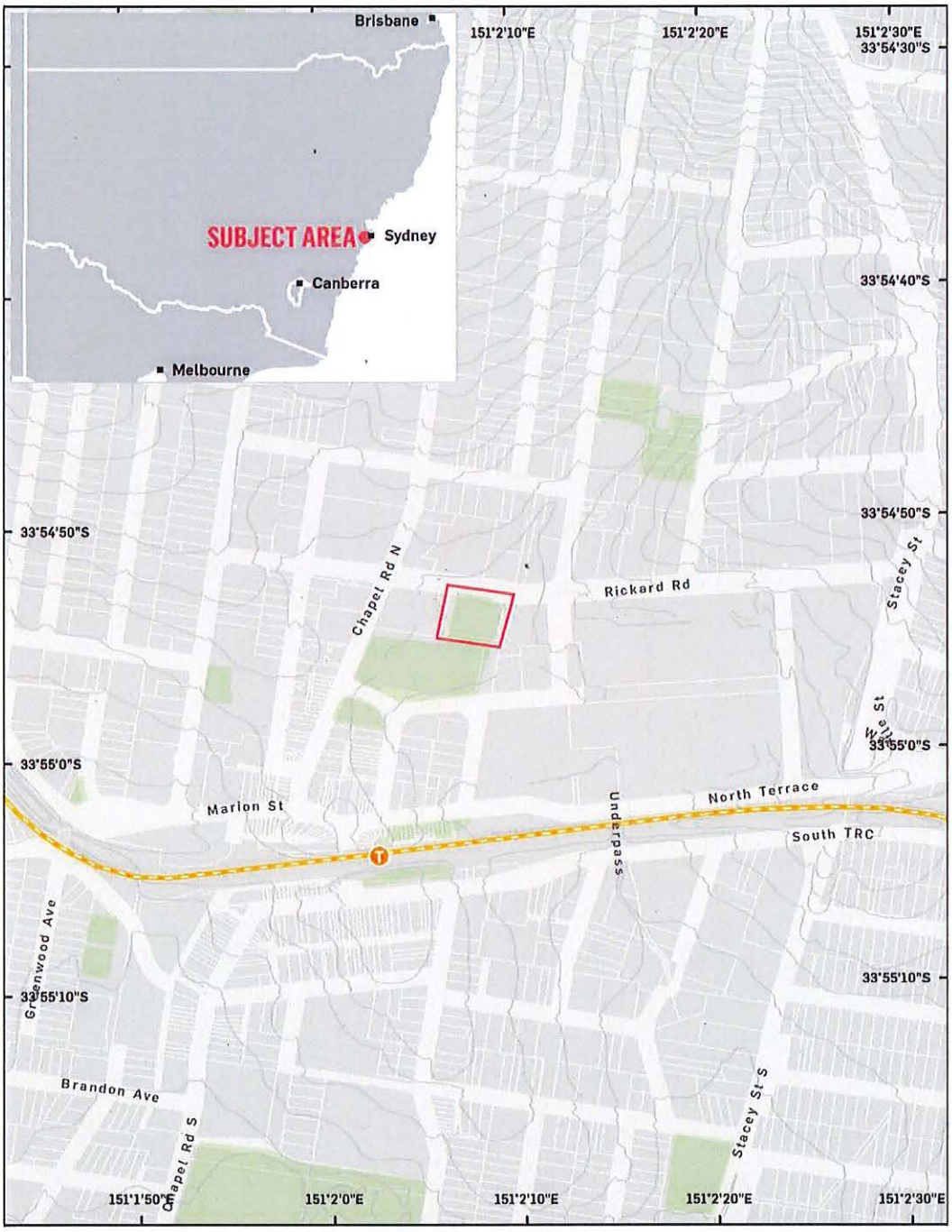
The proponent will write to each Aboriginal person or group whose details are provided to notify them of the proposed project and invite them to register an interest in the community consultation process.

Please be advised that, as per the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, the Proponent is required to forward the names of Aboriginal persons and groups who register an interest (Registered Aboriginal Parties) to Gandangara Local Aboriginal Land Council and OEH unless the person or group specifies, that they do not want their details released.

Yours sincerely,

Balazs Hansel
Associate Director

URBIS



Subject Area

GDA 1994 MGA Zone 56

400 M

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74 Rickard Rd, Bankstown-WSU new Bankstown Campus - ACHAR
WSU
Project Manager BH / Project No SA7500

FIGURE 1: REGIONAL LOCATION

LIST OF ABORIGINAL STAKEHOLDERS FOR THE GREATER SYDNEY BRANCH HELD BY OEH FOR THE PURPOSES OF THE *ABORIGINAL CULTURAL HERITAGE CONSULTATION REQUIREMENTS FOR PROPONENTS 2010*

These lists are provided to proponents in accordance with section 4.1.2 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (the "Consultation Requirements") which commenced on 12 April 2010.

The consultation process involves getting the views of, and information from, Aboriginal people and reporting on these. It is not to be confused with other field assessment processes involved in preparing a proposal and an application. Consultation does not include the employment of Aboriginal people to assist in field assessment and/or site monitoring. Aboriginal people may provide services to proponents through a contractual arrangement however, this is separate from consultation. The proponent is not obliged to employ those Aboriginal people registered for consultation. Consultation as per these requirements will continue irrespective of potential or actual employment opportunities for Aboriginal people.

A copy of the Consultation Requirements can be found on the OEH website at: http://www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf.

Under the Consultation Requirements; a proponent is required to provide Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places as relevant to the proposed project area, with an opportunity to be involved in consultation. Section 3.3.1 of the Consultation Requirements states that Aboriginal people who can provide this information are, based on Aboriginal lore and custom, the traditional owners or custodians of the land that is the subject of the proposed project.

The Consultation Requirements also state that:

Traditional owners or custodians with appropriate cultural heritage knowledge to inform decision making who seek to register their interest as an Aboriginal party are those people who:

- *continue to maintain a deep respect for their ancestral belief system, traditional lore and custom*
- *recognise their responsibilities and obligations to protect and conserve their culture and heritage and care for their traditional lands or Country*
- *have the trust of their community, knowledge and understanding of their culture, and permission to speak about it.*

Please note: the placement of an organisation's name on any OEH Aboriginal stakeholder list for the Consultation Requirements does not override a proponent's requirement to also advertise in the local newspaper and to seek from other sources the names of any other Aboriginal people who may hold cultural knowledge as required under clause 80C of the National Parks and Wildlife Regulation 2009.

How to use this list

1. **Determine which Local Government Area/s (LGA/s) your project area falls into**
2. **Identify which organisations and individuals on the list have an interest in the LGA/s relevant to your project – identified in column 6 of the list**
3. **Contact the organisations/individuals who have indicated an interest in the relevant LGA/s and invite them to register an interest in your project**

Do not reproduce the attached list in publicly available reports and other documents. Your report should only contain the names of the organisations and individuals who you have invited to register an interest in your project and those who have registered as stakeholders for your project.

PLEASE NOTE: THE STAKEHOLDER LIST HAS NOT BEEN UPDATED TO INCLUDE THE RECENT COUNCIL MERGERS AND NAME CHANGES. PLEASE CONSIDER THE PRE-MERGER COUNCIL BOUNDARIES WHEN DETERMINING WHO SHOULD BE INVITED TO REGISTER FOR YOUR PROJECT. Last update is 25th March 2019

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
Deerubbin Local Aboriginal Land Council	Kevin Cavanagh	(02) 4724 5600	Not provided	2/9 Tindale St, Penrith NSW 2750	Hawkesbury Blacktown Penrith Fairfield Holroyd Blue Mountains The Hills Shire Parramatta	
Tharawal Local Aboriginal Land Council	Rebecca Ede (CEO)	(02) 46810059	ceo@tharawal.com.au reception@tharawal.com.au	PO Box 245 Thirlmere NSW 2572	Camden Campbelltown Wollondilly Sutherland Liverpool	
Metropolitan Local Aboriginal Land Council	Nathan Moran	(02) 83949666	Not provided	PO Box 1103 Strawberry Hills NSW 2016	The Hills Shire Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	
Gandangara Local Aboriginal Land Council	Not provided	(02) 96025280	Not provided	PO Box 1038 Liverpool NSW 2170	Liverpool Fairfield Holroyd Parramatta Auburn Bankstown Sutherland	
La Perouse Local Aboriginal Land Council	Chris Ingrey	(02) 9311 4282	Not provided	PO Box 365 Matraville NSW 2036	Sutherland Randwick Botany Bay Waverly Woollahra Sydney Rockdale	
Parramatta City Council Aboriginal Advisory Committee	Parramatta City Council	(02)9806 5050	Not provided	PO Box 32, Parramatta, NSW, 2124	Parramatta	
Holroyd City Council Advisory Committee	Holroyd City Council	(02) 9840 9840	Not provided	P.O. Box 42, Merrylands, NSW 2160	Holroyd	
Darug Custodian Aboriginal Corporation	Justine Coplin	0414 962 766	justinecoplin@optusnet.com.au	PO Box 81, Windsor NSW 2756	Hawkesbury Blacktown Penrith Fairfield Holroyd Blue Mountains Camden Campbelltown The Hills Shire Liverpool Parramatta	
Darug Tribal Aboriginal Corporation	Not provided	02 9622 4081	Not provided	PO Box 441, Blacktown NSW 2148	Hawkesbury Blacktown Penrith Fairfield Holroyd Blue Mountains Camden Campbelltown The Hills Shire Liverpool Parramatta	
Darug Aboriginal Cultural Heritage Assessments	Gordon Morton	02 9410 3665 or 0422 865 831	Not provided	Unit 9, 6 Chapman Avenue, Chatswood, NSW 2067	Hawkesbury Blacktown Penrith Fairfield Holroyd Blue Mountains Camden Campbelltown The Hills Shire Strathfield Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney	

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's		Additional information
					Liverpool Parramatta Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown	Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	
Darug Land Observations	Jamie Workman and Anna Workman	0418 494 951 0413 687 279	daruglandobservations@gmail.com	PO Box 173, Ulladulla, NSW 2539	Ashfield Auburn Bankstown Blacktown Blue Mountains Botany Bay Burwood Camden Campbelltown Canada Bay Canterbury Fairfield Hawkesbury The Hills Holroyd Hornsby Hunter's Hill Hurstville Kogarah Ku-ring-gai Lane Cove	Leichhardt Liverpool Manly Marrickville Mosman North Sydney Parramatta Penrith Pittwater Randwick Rockdale Ryde Strathfield Sutherland Sydney Warringah Waverley Willoughby Woollahra Wollondilly	
Des Dyer		0408 360 814	Not provided	18a Perigee Close, Doonside 2767	Hawkesbury Blacktown Penrith Fairfield Holroyd	Camden Campbelltown The Hills Shire Liverpool Parramatta	
Ken Foster		0411 818 091	Not provided	68 Australia St Matraville	Sutherland		
La Perouse Botany Bay Corporation	Yvonne Simms	04660 94491	Fax (02) 9311 3440	10 Murrong Place, La Perouse NSW 2036	Sutherland		
Norma Simms		04660 94491	Not provided	10 Murrong Place, La Perouse NSW 2036	Sutherland		
Matthew and Andrew Coe		(08)83442196	Not provided	37 Derlanger Avenue, Collingswood, South Australia 5081	Sutherland		
Gundungurra Aboriginal Heritage Association Inc	Merl Williams	02 4757 3223	Not provided	PO Box 31, Lawson NSW 2783	Blue Mountains		
Gundungurra Tribal Council Aboriginal Corporation	Sharon Brown	02 4729 3713	Not provided	PO Box 7244, Leura NSW 2780	Blue Mountains		
Trevor Robinson		Not provided	Not provided	PO Box 73, Peak Hill, NSW 2869	Blue Mountains		

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
Tania Matthews		0409 193 612/ (02) 67924038	aboriginalhistoryhunter@gmail.com	U2 11 Walowa Street, Narrabri, NSW 2390	Blue Mountains	
A1 Indigenous Services	Carolyn Hickey	0411 650 057	cazadirect@live.com	10 Marie Pitt Place Glenmore Park 2745 NSW.	Blue Mountains Ashfield Auburn Bankstown Blacktown Blue Mountains Botany Bay Burwood Camden Campbelltown Canada Bay Canterbury Fairfield Hawkesbury The Hills Holroyd Hornsby Hunter's Hill Hurstville Kogarah Ku-ring-gai Lane Cove Leichhardt Liverpool Manly Marrickville Mosman North Sydney Parramatta Penrith Pittwater Randwick Rockdale Ryde Strathfield Sutherland Sydney Warringah Waverley Willoughby Woollahra Wollondilly	Carolyn is Wonnarua
Cubbitch Barta	Glenda Chalker	0427 218 425	Not provided	55 Nightingale Rd, Pheasants Nest NSW 2574	Camden Campbelltown Liverpool Wollondilly	
	Rebecca Chalker	Not Provided	Not provided	99 Menangle street, Picton 2571		

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's		Additional information
Eric Keidge		04311 66423	Not provided	11 Olsson Close Hornsby Heights NSW 2077	The Hills Shire Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Burwood Ashfield Auburn Canada Bay	Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	
Gunjeewong Cultural Heritage Aboriginal Corporation	Cherie Carroll Turrise	(02) 6355 4110 0456 116 408	cheriecarroll68@yahoo.com	1 Bellvue Place, Portland NSW, 2847	Hawkesbury Blacktown Penrith Fairfield	Holroyd Camden Campbelltown Parramatta	Cherie is a Ngunnawal Elder however lived in the Western Sydney area during her childhood. She recognises she is not from the area but has associations
	Contact details have changed as the above contact details have been hacked as of January 2018	0438 428 805 or 0409 558 846	Gunjeewong53@hotmail.com				
Merrigarn Indigenous Corporation	Shaun Carroll	0435 040 842	Not provided	GPO Box 158, Canberra City, ACT, 2601	Hawkesbury Blacktown Penrith Fairfield	Holroyd Camden Campbelltown Parramatta	Shaun is Ngunnawal and is Cherie's brother. **NOTE:** It has been reported to OEH that the contact details for this group are incorrect; however, OEH has not been provided with revised contact details.
Corroboree Aboriginal Corporation	Marilyn Carroll-Johnson	0415911159	corroboreecorp@bigpond.com	PO Box 3340, Rouse Hill, NSW 2155	Western Sydney Camden	Campbelltown Parramatta	Ngunnawal and lives in Western Sydney
Murra Bidgee Mullangari Aboriginal Corporation	Darleen Johnson	0490 051 102	Not provided	PO Box 246, Seven Hills, NSW, 2147	Hawkesbury Blacktown Penrith Fairfield	Holroyd Camden Campbelltown Parramatta	Ngunnawal and lives in Western Sydney
Muragadi Heritage Indigenous Corporation	Jesse Johnson	0447 970 049	Not provided	5 Hession Road, Nelson, NSW 2765	Western Sydney Camden	Campbelltown Parramatta	Ngunnawal and lives in Western Sydney
Bidjawong Aboriginal Corporation	James Carroll	0433 224 324	Not provided	PO Box 124, Round Corner, NSW 2158	Hawkesbury Blacktown Penrith Fairfield	Holroyd Camden Campbelltown Parramatta	
Phil Kahn		0434 545 982	Not provided	78 Forbes Street, Emu Plains, NSW 2750	Hawkesbury Blacktown Penrith Fairfield Holroyd	Camden Campbelltown Liverpool Parramatta	
Wurrumay Consultancy	Kerrie Slater	0423 935 556	wurrumay@hotmail.com; Vicki.slater@hotmail.com	89 Pyramid street, Emu Plains NSW	Hawkesbury Blacktown	Camden Campbelltown	

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's		Additional information
					Penrith Fairfield Holroyd	Liverpool Parramatta Wollondilly	
Warragil Cultural Services	Aaron Slater (Manager)	0481 280 067	Warragil_c.s@hotmail.com		Hawkesbury Blacktown Penrith Fairfield	Holroyd Camden Campbelltown Liverpool Parramatta	
Kawul Cultural Services	Vicky Slater (Manager)	0431 720 887	Vicki.slater@hotmail.com	PO Box 414 Emu Plains NSW 2750	Hawkesbury Blacktown Penrith Fairfield Holroyd Blue Mountains Sutherland Liverpool	Camden Campbelltown Parramatta Wollondilly The Hills Shire Auburn Bankstown	
Tocomwall	Scott Franks	0404 171 544	Not provided	PO Box 76, Caringbah NSW 1495	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown The Hills Shire Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown	Strathfield Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	
D'harawal Mens Aboriginal Corporation	Elwyn Brown	0401920982	Not provided	187 Riverside Drive, Airds NSW 2560	Camden Campbelltown	Wollondilly	
Amanda Hickey Cultural Services	Amanda Hickey	0434 480 588	amandahickey@live.com.au	57 Gough st emu plains 2750	Blue Mountains Ashfield Auburn Bankstown Blacktown Blue Mountains Botany Bay Burwood Camden Campbelltown Canada Bay Canterbury Fairfield Hawkesbury The Hills Holroyd	Strathfield Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Liverpool Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay	Amanda is Wonnarua

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's		Additional information
					Hornsby Hunter's Hill Hurstville Kogarah Ku-ring-gai Lane Cove	Ryde Warringah Willoughby Penrith Parramatta Marrickville Wollondilly	
Widescope Indigenous Group	Steven Hickey and Donna Hickey	0425 230 693 (Steven) 0425 232 056 (Donna)	Not provided	73 Russell Street, Emu Plains, NSW 2750	Hawkesbury Blacktown Penrith	Fairfield Holroyd Parramatta Blue Mountains	
HSB Consultants	Patricia Hampton	0424 142 216	Not provided	62 Ropes Crossing Boulevard, Ropes Crossing 2760	Hawkesbury Blacktown Penrith	Fairfield Holroyd Parramatta	
Rane Consulting	Tony Williams	02 88246991	ajw1901@bigpond.com	1 Pyrenees Way Beaumont Hills NSW 2155	Hawkesbury Blacktown Penrith	Fairfield Holroyd Parramatta	
Anthony Williams		0456 399 687	Not provided	Unit 2 / 24 Goodwin Street Narrabeen NSW 2101	Hawkesbury Blacktown Penrith	Fairfield Holroyd Parramatta	
Dhinawan-Dhigaraa Culture & Heritage Pty Ltd	Ricky Fields	0402 942 572	dhinawan.fields@gmail.com	Not provided	Hawkesbury Blacktown Penrith	Fairfield Holroyd Parramatta	
	Athol Smith	0449 665 715	Not provided	16 Yantara Place, Woodcroft, NSW, 2767			
Gunyuu	Kylie Ann Bell	Not provided	gunyuuchts@gmail.com	Not provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield	Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River.
Walbunja	Hika Te Kowhai	0402 730 612	walbunja@gmail.com	Not provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool	Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	
Badu	Karia Lea Bond	0476 381 207	Not provided	11 Jeffery Place, Moruya, NSW 2537	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
Goobah Developments	Basil Smith	0405 995 725	Not provided	66 Grantham Road, Batehaven NSW, 2536	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
Wullung	Lee-Roy James Boota	0403 703 942	Not provided	54 Blackwood Street, Gerringong, NSW, 2534	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's		Additional information
					Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield	Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	
Yerramurra	Robert Parson	Not provided	yerramurra@gmail.com	Not provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield	Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
Nundagurri	Newton Carriage	Not Provided	nundagurri@gmail.com	Not Provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield	Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
Murrumbul	Mark Henry	Not provided	murrumbul@gmail.com	Not provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool	Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River.

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	
Jerringong	Joanne Anne Stewart	0422 800 184	jerringong@gmail.com	Not provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
Pemulwuy CHTS	Pemulwuy Johnson	0425 066 100	pemulwuyd@gmail.com	14 Top Place, Mt Annan	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown The Hills Shire Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
Bilinga	Simalene Carriage	Not provided	bilingachts@gmail.com	Not provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River.

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	
Munyunga	Kaya Dawn Bell	Not provided	munyungachts@gmail.com	Not provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River.
Wingikara	Hayley Bell	Not provided	wingikarachts@gmail.com	Not provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River.
Minnamunnung	Aaron Broad	0402 526 888	Not provided	1 Waratah Avenue, Albion Park Rail NSW 2527	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Burwood Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney	

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby	
Walgalu	Ronald Stewart	Not provided	walgaluchts@gmail.com	Not provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
Thauaira	Shane Carriage	Not provided	thauairachts@gmail.com	Not provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
Dharug	Andrew Bond	Not provided	dharugchts@gmail.com	Not provided	Hawkesbury Blacktown Ashfield Auburn	This group states that their boundaries (Murrin

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's		Additional information
					Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra	Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	Peoples) extend from the Hawkesbury River to the Snowy River
Bilinga Cultural Heritage Technical Services	Robert Brown	Not Provided	bilinga@mirramajah.com	Not Provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra	Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	This group is a member of the Mirramajah Group of RAPs
Gunyuu Cultural Heritage Technical Services	Darlene Hoskins-McKenzie	Not Provided	gunyuu@mirramajah.com management@mirramajah.com (management & administrative email address for the Mirramajah Group of RAPs).	Not Provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale	Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde	This group is a member of the Mirramajah Group of RAPs

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	
Munyunga Cultural Heritage Technical Services	Suzannah McKenzie	Not Provided	munyunga@mirrmajah.com	Not Provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	This group is a member of the Mirramajah Group of RAPs
Murrumbul Cultural Heritage Technical Services	Levi McKenzie-Kirkbright	Not Provided	murrumbul@mirramajah.com	Not Provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	This group is a member of the Mirramajah Group of RAPs
Wingikara Cultural Heritage Technical Services	Wandai Kirkbright	Not Provided	wingikara@mirramajah.com	Not Provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Ashfield Auburn Canada Bay Leichhardt Manly	This group is a member of the Mirramajah Group of RAPs

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	
Gulaga	Wendy Smith	Not Provided	gulagachts@gmail.com	Not Provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
Biamanga	Seli Storer	Not Provided	biamangachts@gmail.com	Not Provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Strathfield Randwick Woollahra Burwood The Hills Waverly Wollondilly	
Callendulla	Corey Smith	Not Provided	cullendullachts@gmail.com	Not Provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
Murramarang	Roxanne Smith	Not Provided	murramarangchts@gmail.com	Not Provided	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	This group states that their boundaries (Murrin Peoples) extend from the Hawkesbury River to the Snowy River
DJMD Consultancy	Darren Duncan	0410 510 397	darrenjohnduncan@gmail.com	Not Provided	Hawkesbury Blacktown Penrith Parramatta Sydney Marrickville Strathfield Warringah Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove	Darren is associated with Metro and Deerubbin LALCs

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's		Additional information
					Willoughby Blue Mountains Burwood The Hills Ryde	Hunters Hill Hornsby Ku-Ring-Gai Pittwater	
Butucarbin Aboriginal Corporation	Jennifer Beale	(02)9832 7167	koori@ozemail.com.au	PO Box E18, Emerton, NSW 2770	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra	Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	Preferred contact via email
Didge Ngunawal Clan	Lillie Carroll Paul Boyd	0426 823 944	didgengunawalclan@yahoo.com.au	33 Carlyle Crescent Cambridge Gardens NSW 2747	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra	Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	
Ginninderra Aboriginal Corporation	Steven Johnson and Krystle Carroll	0406991221	Ginninderra.corp@gmail.com	PO BOX 3143 Grose Vale NSW 2754	Hawkesbury Blacktown Penrith Fairfield Holroyd	Ashfield Auburn Canada Bay Leichhardt Manly	

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	
Garrara Aboriginal Corporation	Raymond Ingrey		raymond@bariyu.org.au		Sutherland Liverpool Camden Campbelltown Wollondilly	
Nerrigundah	Newton Carriage	0421 253 677	nerrigundachts@gmail.com		Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly	
Duncan Falk Consultancy	Duncan Falk	0406 610 644	duncanfalk@hotmail.com	34 Robinia Drive, Bowral NSW 2576	Camden Campbelltown	
Sharon Hodgetts		0405288814	sharonhodgetts@hotmail.com	21/29 Central Coast Hwy West Gosford 2250	Hawkesbury	
Wailwan Aboriginal Group	Philip Boney	0436 483 210	waarlan12@outlook.com		Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove	

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly	
Guntawang Aboriginal Resources Incorporated	Wendy Morgan	0414 964 657 9601 7183	Wenlissa01@hotmail.com	113 Reservoir Road Mt Pritchard NSW 2170	Camden Campbelltown Liverpool Fairfield Holroyd Wollondilly Blue Mountains	
Barking Owl Aboriginal Corporation	Mrs Jody Kulakowski (Director)	0426 242 015	barkingowlcorp@gmail.com	2-65/69 Wehlow St. Mt Druitt	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	
Yulay Cultural Services	Arika Jalomaki (Manager)	0411 048 794	yulayculturalservices@gmail.com	15 Rowley Place, Airds NSW 2560	Deerubbin LALC Tharawal LALC Gandangarra LALC	LGAs of interest not specified, rather, LALC boundaries within which the organisation wish to be consulted
Thoorga Nura	John Carriage (Chief Executive Officer)	0401 641 299	thoorganura@gmail.com	50B Hilltop Crescent, Surf Beach, 2536, NSW	Ashfield Auburn Bankstown Blacktown Blue Mountains Botany Bay Burwood Camden Leichhardt Liverpool Manly Marrickville Mosman North Sydney Parramatta Penrith	

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Campbelltown Canada Bay Canterbury Fairfield Hawkesbury The Hills Holroyd Hornsby Hunter's Hill Hurstville Kogarah Ku-ring-gai Lane Cove Pittwater Randwick Rockdale Ryde Strathfield Sutherland Sydney Warringah Waverley Willoughby Woollahra Wollondilly	
Barraby Cultural Services	Lee Field (Manager)	0423 906 606	barrabyculturalservices@gmail.com	6 Macgibbon Parade, Old Erowal Bay, NSW 2540	Tharawal LALC Gandagarra LALC	LGAs of interest not specified, rather, LALC boundaries within which the organisation wish to be consulted
Yurrandaali Cultural Services	Bo Field (Manager)	0457 546 643	yurrandaali_cs@hotmail.com	3 Sheeran Street, Old Erowal Bay NSW 2540	Tharawal LALC Gandagarra LALC	LGAs of interest not specified, rather, LALC boundaries within which the organisation wish to be consulted
Darug Boorooberongal Elders Aboriginal Corporation	Gordon Workman	0415 663 763	fax 02 9831 8868 boorooberongal@outlook.com	73 Judith Anderson Drive, Doonside NSW 2767	Ashfield Auburn Bankstown Blacktown Blue Mountains Botany Bay Burwood Camden Campbelltown Canada Bay Canterbury Fairfield Hawkesbury The Hills Holroyd Hornsby Hunter's Hill Hurstville Kogarah Ku-ring-gai Lane Cove Leichhardt Liverpool Manly Marrickville Mosman North Sydney Parramatta Penrith Pittwater Randwick Rockdale Ryde Strathfield Sutherland Sydney Warringah Waverley Willoughby Woollahra Wollondilly	

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
B.H. Heritage Consultants	Ralph Hampton Nola Hampton	0435 785 138 0401 663 531	hamptonralph46@gmail.com nhampton77@gmail.com	184 Captain Cook Drive Willmot 2770 NSW 95 Mount Ettalong Road Umina Beach 2257 NSW	Hawkesbury Blacktown Penrith Fairfield Holroyd Camden Campbelltown Liverpool Parramatta Sutherland Sydney Kogarah Hurstville Rockdale Canterbury Marrickville Bankstown Strathfield Randwick Woollahra Ashfield Auburn Canada Bay Leichhardt Manly Mosman North Sydney Lane Cove Hunters Hill Hornsby Ku-Ring-Gai Pittwater Botany Bay Ryde Warringah Willoughby Blue Mountains Burwood The Hills Waverly Wollondilly	Nola and Ralph would BOTH like to be notified of all projects
Ngambaa Cultural Connections	Kaarina Slater	0417861882	ngambaaculturalconnections@hotmail.com	6 Natchez Cresent, Greenfield Park NSW 2167	Ashfield Auburn Bankstown Blacktown Blue Mountains Botany Bay Burwood Camden Campbelltown Canada Bay Canterbury Fairfield Hawkesbury The Hills Holroyd Hornsby Hunter's Hill Hurstville Kogarah Ku-ring-gai Lane Cove Leichhardt Liverpool Manly Marrickville Mosman North Sydney Parramatta Penrith Pittwater Randwick Rockdale Ryde Strathfield Sutherland Sydney Warringah Waverley Willoughby Woollahra Wollondilly	LALC boundaries within which the organisation wish to be consulted: Deerubbin LALC Gandangarra LALC Tharawal LALC
Goodradigbee Cultural & Heritage Aboriginal Corporation,	Caine Carroll	0410974236	goodradigbee1@outlook.com	1 Morilla Road, East Kurrajong NSW 2758	Ashfield Auburn Bankstown Blacktown Blue Mountains Botany Bay Burwood Camden Campbelltown Canada Bay Leichhardt Liverpool Manly Marrickville Mosman North Sydney Parramatta Penrith Pittwater Randwick Rockdale	

Organisation/ Individual	Contact Name	Phone Number	Email Address/ Fax	Postal Address	LGA's	Additional information
					Canterbury Fairfield Hawkesbury The Hills Holroyd Hornsby Hunter's Hill Hurstville Kogarah Ku-ring-gai Lane Cove Ryde Strathfield Sutherland Sydney Warringah Waverley Willoughby Woollahra Wollondilly	
Mura Indigenous Corporation,	Phillip Carroll	0448824188	mura.indigenous.com.bigpond.com	11 Nargal Street Flinders NSW 2529	Ashfield Auburn Bankstown Blacktown Blue Mountains Botany Bay Burwood Camden Campbelltown Canada Bay Canterbury Fairfield Hawkesbury The Hills Holroyd Hornsby Hunter's Hill Hurstville Kogarah Ku-ring-gai Lane Cove Leichhardt Liverpool Manly Marrickville Mosman North Sydney Parramatta Penrith Pittwater Randwick Rockdale Ryde Strathfield Sutherland Sydney Warringah Waverley Willoughby Woollahra Wollondilly	

Appendix B

Summary of the consultation process

Stage 1

Notification of project proposal and registration of interest

Proponents must compile a list of Aboriginal people who may have an interest in the proposed project area and hold knowledge relevant to determining the cultural significance of Aboriginal *objects* and/or *places* from reasonable sources of information, which include writing to:

a. the relevant DECCW EPRG regional office
b. the relevant Local Aboriginal Land Council(s) (LALC)
c. the Registrar, *Aboriginal Land Rights Act*
d. the National Native Title Tribunal
e. Native Title Services Corporation (NTSCorp)
f. relevant local council(s)
g. relevant catchment management authorities.

Proponent writes to the Aboriginal people whose names were provided by organisations **a** to **g** and LALC(s) to notify them of the proposed project and opportunity to be involved in consultation and places notification in the local newspaper.

The notification by letter and in the newspaper must include:

a. the name and contact details of the proponent
b. a brief overview of the proposed project that may be the subject of an application for an AHIP, including the location of the proposed project
c. a statement that the purpose of community consultation with Aboriginal people is to assist the proposed applicant in preparing an application for an AHIP and to assist the Director General of DECCW in his or her consideration and determination of the application
d. an invitation for Aboriginal people who hold knowledge relevant to determining the cultural significance of Aboriginal object(s) and/or place(s) in the area of the proposed project to register an interest in a process of community consultation with the proposed applicant regarding the proposed activity
e. a closing date for the registration of interests.

Aboriginal people have a minimum of 14 days after the letter was sent or the notice was published in the newspaper to register an interest.

Proponent records names of Aboriginal people who have registered an interest in being involved in consultation – the 'registered Aboriginal parties'.

Stage 2

Presentation of information about the proposed project

Proponent presents and/or provides proposed project information to registered Aboriginal parties.

Proponent may create an opportunity for registered Aboriginal parties to visit the proposed project site.

Proponent records or documents that information on the proposed project has been presented. This record or documentation should include any agreed outcomes and/or contentious issues that may require further discussion (where applicable).

Proponent should provide a copy of this record or documentation to registered Aboriginal parties.

Proponent provides a copy of the notification and record of the registered Aboriginal parties to DECCW and relevant LALC within 28 days of the closing date for registering an interest.

Stage 3

Gathering information about cultural significance

Proponent presents and/or provides the proposed methodology(s) for the cultural heritage assessment to the registered Aboriginal parties for comment.

Registered Aboriginal parties have a minimum of 28 days after the proponent provides the methodology(s) to provide written or oral comment.

Proponent considers input provided by registered Aboriginal parties and finalises methodology for implementation. Proponent documents how the input has been considered.

Proponent seeks information from registered Aboriginal parties to identify:

a. whether there are any Aboriginal objects of cultural value
b. whether there are places of cultural value (whether or not they are Aboriginal places declared under Section 84 of the NPW Act).

Proponent seeks input from registered Aboriginal parties on potential management options.

Stage 4

Review of draft cultural heritage assessment report

Proponent prepares draft cultural heritage assessment report and provides it to the registered Aboriginal parties for review and comment.

Registered Aboriginal parties have a minimum of 28 days after the proponent provides the draft report to review and provide written or oral comment.

Proponent finalises cultural heritage assessment report. The final report is submitted to DECCW for consideration with the proponent's AHIP application.

Proponent provides/makes available the final cultural heritage assessment report and AHIP application to the registered Aboriginal parties and relevant LALCs within 14 days of an AHIP application being made to DECCW.

OFFICE OF THE REGISTRAR
ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

3 April 2019

By email: BHansel@urbis.com.au

Mr Balazs Hansel
Associate Director
Urbis
Level 8, Angel Place
123 Pitt Street
SYDNEY NSW 2000

Dear Mr Hansel,

Request - Search for Registered Aboriginal Owners

We refer to your letter dated 1 April 2019 regarding an Aboriginal Cultural Heritage Assessment for the proposed development at Lot 5 DP 777510, Part Lot 6 & Lot 7 DP 777510, Lot 12 DP 566924 and Lot 3 DP 773698 and adjoining road reserves at 74 Rickard Road and part of 375 Chapel Street, Bankstown, NSW.

Under Section 170 of the *Aboriginal Land Rights Act 1983* the Office of the Registrar is required to maintain the Register of Aboriginal Owners (RAO). A search of the RAO has shown that there are not currently any Registered Aboriginal Owners in the project area.

We suggest you contact Gandangara Local Aboriginal Land Council on 02 9602 5280 as they may be able to assist you in identifying Aboriginal stakeholders who wish to participate.

Yours sincerely

Eloane

Elizabeth Loane
Project Officer, Aboriginal Owners
Office of the Registrar, ALRA

Address: Level 3, 2 – 10 Wentworth Street, PARRAMATTA NSW 2150
Post: P.O Box 5068, PARRAMATTA NSW 2124
Phone: 02 8633 1266

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Notices

General Notices

Development of new Bankstown City Campus of Western Sydney University, Bankstown, NSW
Aboriginal Cultural Heritage Assessment – Community consultation Stage 1

Western Sydney University (WSU) (the Proponent) is proposing to undertake a development for the construction of the new Bankstown City Campus at 74 Rickard Rd, Bankstown, NSW (hereafter referred as the Subject Area). The Proponent is undertaking an Aboriginal Cultural Heritage Assessment (ACHA) to inform the Environmental Impact Statement (EIS) to support the State Significant Development Application (SSDA).

The proponent can be contacted directly via:
Stuart McIntosh
Planning Manager
Western Sydney University
Locked Bag 1797 Penrith NSW 2751

In accordance with Section 4.1.3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010)* and Clause 80C of the *NSW National Parks and Wildlife Regulation 2009*, the Proponent is seeking the registration of Aboriginal persons or groups who may hold cultural knowledge relevant to determining the significance of Aboriginal object(s) and/or place(s) that may be present in the Subject Area.

The purpose of community consultation with Aboriginal people is to assist the Proponent in the preparation of the ACHA and the assessment of the cultural heritage significance of the Subject Area.

Please register your interest in writing to the contact details provided below by 5.00pm 3 May 2019.
Balazs Hansel
Urbis Pty Ltd
Level 8, Angel Place
123 Pitt Street
Sydney, 2000 NSW
Mobile: 0499 986 833
Email: bhansel@urbis.com.au

Please be advised that the Proponent is required to forward the names of Aboriginal persons and groups who register an interest to the Office of Environment and Heritage and the Gandangara Local Aboriginal Land Council; unless the person or group specifies that they do not want their details released.

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NSW GOVERNMENT

Roads and Maritime Services

Aboriginal Heritage
Henry Lawson Drive – M5 Motorway to Hume Highway

Roads and Maritime Services invites Aboriginal people and Aboriginal groups who hold cultural knowledge relevant to determining the significance of Aboriginal objects and places for the proposed Henry Lawson Drive Upgrade – M5 Motorway to Hume Highway to register to be consulted.

Henry Lawson Drive is located within the Canterbury Bankstown LGA. The purpose of the project is to improve travel times, journey time reliability and road safety outcomes for all road users.

Please email: henrylawsondrive@rms.nsw.gov.au or call 1800 951 218 to view a map of the study area.

The proposal may result in the Roads and Maritime Services:

- Applying for an Aboriginal Heritage Impact Permit (AHIP) under Part 6 of the *National Parks and Wildlife Act 1974*, and/or
- Undertaking investigations in accordance with the *Code of practice for archaeological investigations in NSW 2010*, and/or
- Undertaking an environmental impact assessment under the *Environmental Planning & Assessment Act* 1979.

BLZ165095

To register your interest, please contact:
Lee Davison, Aboriginal Cultural Heritage Officer
Phone: 1800 951 218
Email: henrylawsondrive@rms.nsw.gov.au
Mail: Henry Lawson Drive Project team, Roads and Maritime Services, 27 Argyle Street, Parramatta NSW 2150

Registrations must be received by phone or in writing by Wednesday 8 May 2019.

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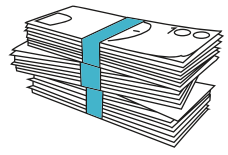
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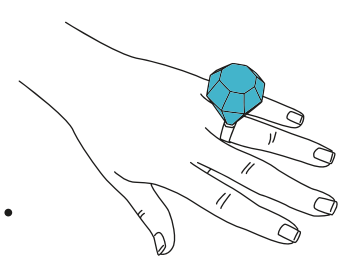
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URBIS

ANGEL PLACE
LEVEL 8, 123 PITT STREET
SYDNEY NSW 2000

URBIS.COM.AU
Urbis Pty Ltd
ABN 50 105 256 228

16 April 2019

Dear Sir or Madam,

RE: STAGE 1 REGISTRATION OF INTEREST - ABORIGINAL COMMUNITY CONSULTATION FOR THE DEVELOPMENT OF THE NEW BANKSTOWN CITY CAMPUS OF WESTERN SYDNEY UNIVERSITY, BANKSTOWN, NSW

Please be advised that your contact details have been provided by the NSW Office of Environment and Heritage (OEH) in accordance with Section 4.1.2 of the *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010)* (hereafter referred as the Consultation Requirements) as a potential Aboriginal stakeholder who may have interest in registering to the abovementioned project.

Urbis has been commissioned by Western Sydney University (WSU) (the Proponent) to prepare an Aboriginal Cultural Heritage Assessment (ACHA) to inform an Environmental Impact Statement (EIS) to support a State Significant Development Application (SSDA) for the proposed construction of the new Bankstown City Campus at 74 Rickard Rd, Bankstown, NSW (hereafter referred as the Subject Area) (Figure 1).

The Proponent can be directly contacted via:

Stuart McIntosh
Planning Manager
Western Sydney University
Locked Bag 1797 Penrith NSW 2751

In accordance with Section 4.1.3 of the Consultation Requirements and Clause 80C of the *NSW National Parks and Wildlife Regulation 2009*, WSU will conduct a community consultation process with registered Aboriginal people to assess any Aboriginal cultural heritage that may exist within the Subject Area, to assist with the preparation of the ACHA to inform the EIS and comply with the *Department of Planning's Secretary's Environmental Assessment Requirements* (SEARS – SSD 9831) including:

- Address Aboriginal Cultural Heritage (ACH) in an Aboriginal Cultural Heritage Report (ACHAR) to be prepared in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (OEH 2010), Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW).
- The EIS must demonstrate attempts to avoid any impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.

Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal object(s) and/or place(s) that may be present in the Subject Area are invited to register an interest in the process of community consultation with the Proponent.

Written registration should include the following:

- Name and contact details, including phone number, email address and postal address of the individual/organisation.
- If the registration is made by an organisation, contact details of a nominated individual who will be the contact person for the organisation throughout the project.

Written registration should be forwarded **by 5pm on 3 May 2019** to:

Keira De Rosa
Urbis Pty Ltd
Level 8
Angel Place
123 Pitt Street
Sydney, 2000 NSW
Email: kderosa@urbis.com.au

Please be advised that in accordance to Section 3.4 of the Consultation Requirements, inclusion in the consultation process does not automatically result in paid site assessment. The decision on who is engaged for delivering particular services is decided by the proponent and will be based on a range of considerations including skills, relevant experience, and providing necessary certificates of currency.

Please be advised that, as per the Consultation Requirements the Proponent is required to forward the names of Aboriginal persons and groups who register an interest to the OEH and the Gandangara Local Aboriginal Land Council (GLALC), unless the person or group specifies, that they do not want their details released.

Please provide written confirmation of your registration by 5pm on 3 May 2019 to the address or email address above. Registrations received after this date may be excluded from the consultation process due to tight time frames of the project.

Yours sincerely,

Balazs Hansel

Associate Director
0499 986 833

Subject Area

GDA 1994 MGA Zone 56

400 M

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74 Rickard Rd, Bankstown-WSU new Bankstown Campus - ACHAR
WSU
Project Manager BH / Project No SA7500

FIGURE 1: REGIONAL LOCATION

From:	Caza X
To:	Balazs Hansel
Subject:	Re: Aboriginal community consultation Stage 1:Registration of interest-ACHA for WSU
Date:	Sunday, 5 May 2019 11:28:18 AM
Attachments:	image001.jpg image002.jpg image003.gif image004.png image005.png image006.png image007.png image008.png

---

A1

Indigenous Services

Contact: Carolyn

M: 0411650057

E: Cazadirect@live.com

A: 10 Marie Pitt Place, Glenmore Park, NSW 2745

ABN: 20 616 970 327

Hi,

A1 would like to register for consultation and an field work for this project.

I am a traditional owner and hold cultural knowledge and connection to this area

Thank you

Carolyn Hickey

From: Balazs Hansel <bhansel@urbis.com.au>
Sent: Tuesday, 16 April 2019 4:14 PM
To: Balazs Hansel
Cc: Keira De Rosa
Subject: Aboriginal community consultation Stage 1:Registration of interest-ACHA for WSU

Dear All,

Please be advised that your contact details have been provided by the NSW Office of Environment and Heritage (OEH) in accordance with Section 4.1.2 of the *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010)* (hereafter referred as the Consultation Requirements) as a potential Aboriginal stakeholder who may have interest in registering to the abovementioned project.

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Stuart McIntosh

Planning Manager

Western Sydney University
Locked Bag 1797 Penrith NSW 2751

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Urbis Pty Ltd
Level 8
Angel Place
123 Pitt Street
Sydney, 2000 NSW
Email: kderosa@urbis.com.au

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Please provide written confirmation of your registration by 5pm on 3 May 2019 to the address or email address above. Registrations received after this date may be excluded from the consultation process due to tight time frames of the project.

Yours sincerely,

From:	Amanda Hickey
To:	Balazs Hansel
Cc:	Keira De Rosa
Subject:	Re: Aboriginal community consultation Stage 1:Registration of interest-ACHA for WSU
Date:	Monday, 22 April 2019 9:02:04 AM
Attachments:	image001.jpg image002.jpg image003.gif image004.png image005.png image006.png image007.png image008.png

---

Hi Balazs
Thank you for the email
AHCS would like to register a interest in the project Bankstown City Campus at 74 Rickard Rd, Bankstown.
AHCS holds cultural knowledge towards determining indigenous artefacts and cultural is towards the land.
If there is anything else you need please let me know
Have a great day
Amanda AHCS

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From: Balazs Hansel <bhansel@urbis.com.au>
Sent: Tuesday, April 16, 2019 4:14:11 PM
To: Balazs Hansel
Cc: Keira De Rosa
Subject: Aboriginal community consultation Stage 1:Registration of interest-ACHA for WSU

Dear All,

Please be advised that your contact details have been provided by the NSW Office of Environment and Heritage (OEH) in accordance with Section 4.1.2 of the *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010)* (hereafter referred as the Consultation Requirements) as a potential Aboriginal stakeholder who may have interest in registering to the abovementioned project.
Urbis has been commissioned by Western Sydney University (WSU) (the Proponent) to prepare an Aboriginal Cultural Heritage Assessment (ACHA) to inform an Environmental Impact Statement (EIS) to support a State Significant Development Application (SSDA) for the proposed construction of the new Bankstown City Campus at 74 Rickard Rd, Bankstown, NSW (hereafter referred as the Subject Area) (Figure 1).

The Proponent can be directly contacted via:
Stuart McIntosh
Planning Manager
Western Sydney University
Locked Bag 1797 Penrith NSW 2751

In accordance with Section 4.1.3 of the Consultation Requirements and Clause 80C of the *NSW National Parks and Wildlife Regulation 2009*, WSU will conduct a community consultation

E bhansel@urbis.com.au

Urbis Website

ANGEL PLACE, LEVEL 8, 123 PITT STREET
SYDNEY, NSW 2000, AUSTRALIA

Urbis recognises the traditional owners of the land on which we work.
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process with registered Aboriginal people to assess any Aboriginal cultural heritage that may exist within the Subject Area, to assist with the preparation of the ACHA to inform the EIS and comply with the *Department of Planning's Secretary's Environmental Assessment Requirements* (SEARS – SSD 9831) including:

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Written registration should be forwarded **by 5pm on 3 May 2019** to:

Keira De Rosa
Urbis Pty Ltd
Level 8
Angel Place
123 Pitt Street
Sydney, 2000 NSW
Email: kderosa@urbis.com.au

-

Please be advised that in accordance to Section 3.4 of the Consultation Requirements, inclusion in the consultation process does not automatically result in paid site assessment. The decision on who is engaged for delivering particular services is decided by the proponent and will be based on a range of considerations including skills, relevant experience, and providing necessary certificates of currency.
Please be advised that, as per the Consultation Requirements the Proponent is required to forward the names of Aboriginal persons and groups who register an interest to the OEH and the Gandangara Local Aboriginal Land Council (GLALC), unless the person or group specifies, that they do not want their details released.
Please provide written confirmation of your registration by 5pm on 3 May 2019 to the address or email address above. Registrations received after this date may be excluded from the consultation process due to tight time frames of the project.

Yours sincerely,

From: lee field
To: Balazs Hansel
Cc: Keira De Rosa
Subject: Re: Aboriginal community consultation Stage 1:Registration of interest-ACHA for WSU
Date: Tuesday, 23 April 2019 3:22:37 PM
Attachments: image001.jpg

Dear Keira

Barraby Cultural Services would like to register our interest in this project.

Kind Regards
Lee Field
Barraby Cultural Services
11 Waterhouse place
Airds NSW 2560
0431 314 892

On Tue, 16 Apr. 2019, 4:14 pm Balazs Hansel, <bhansel@urbis.com.au> wrote:

> Dear All,
>
> Please be advised that your contact details have been provided by the NSW Office of Environment and Heritage (OEH) in accordance with Section 4.1.2 of the *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010)* (hereafter referred as the Consultation Requirements) as a potential Aboriginal stakeholder who may have interest in registering to the abovementioned project.
>
> Urbis has been commissioned by Western Sydney University (WSU) (the Proponent) to prepare an Aboriginal Cultural Heritage Assessment (ACHA) to inform an Environmental Impact Statement (EIS) to support a State Significant Development Application (SSDA) for the proposed construction of the new Bankstown City Campus at 74 Rickard Rd, Bankstown, NSW (hereafter referred as the Subject Area) (Figure 1).
>
> The Proponent can be directly contacted via:
>
> Stuart McIntosh
> Planning Manager
> Western Sydney University
> Locked Bag 1797 Penrith NSW 2751
>
> In accordance with Section 4.1.3 of the Consultation Requirements and Clause 80C of the *NSW National Parks and Wildlife Regulation 2009*, WSU will conduct a community consultation process with registered Aboriginal people to assess any Aboriginal cultural heritage that may exist within the Subject Area, to assist with the preparation of the ACHA to inform the EIS and comply with the *Department of Planning's Secretary's Environmental Assessment Requirements* (SEARS – SSD 9831) including:
>
> ▪ Address Aboriginal Cultural Heritage (ACH) in an Aboriginal Cultural Heritage Report (ACHAR) to be prepared in accordance with the Code of Practice for

Archaeological Investigations of Aboriginal Objects in NSW (OEH 2010), Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW).

▪ The EIS must demonstrate attempts to avoid any impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.

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Written registration should be forwarded **by 5pm on 3 May 2019** to:

Keira De Rosa
Urbis Pty Ltd
Level 8
Angel Place
123 Pitt Street
Sydney, 2000 NSW
Email: kderosa@urbis.com.au

Please be advised that in accordance to Section 3.4 of the Consultation Requirements, inclusion in the consultation process does not automatically result in paid site assessment. The decision on who is engaged for delivering particular services is decided by the proponent and will be based on a range of considerations including skills, relevant experience, and providing necessary certificates of currency.

Please be advised that, as per the Consultation Requirements the Proponent is required to forward the names of Aboriginal persons and groups who register an interest to the OEH and the Gandangara Local Aboriginal Land Council (GLALC), unless the person or group specifies, that they do not want their details released.

Please provide written confirmation of your registration by 5pm on 3 May 2019 to the address or email address above. Registrations received after this date may be excluded from the consultation process due to tight time frames of the project.

Yours sincerely,

Barking Owl Aboriginal Corporation

ICN: 8822 ABN: 88241973761

2-65/69 Wehlow St MT DRUITT NSW 2770

barkingowlcorp@gmail.com

1 May 2019

Dear Keira,

RE: 74 RICKARD RD BANKSTOWN ABORIGINAL CULTURAL HERITAGE ASSESSMENT

We would like to register interest for full consultation and involvement in the study area.

Registering Aboriginal Party:	**Barking Owl Aboriginal Corporation**
Contact Person:	**Jody Kulakowski**
Phone:	**0426 242 015**
Email:	**barkingowlcorp@gmail.com (preferred contact method)**

We are able to provide fit and hardworking site officers to assist with work that may involve physical labour with current white cards and all PPE equipment.

We can provide copies of relevant certificates of currency for business insurances on request.

Members put forward have experience in a variety of community consultation projects.

Please feel free to contact by email barkingowlcorp@gmail.com if you require any further information.

Kind regards

Jody Kulakowski
Barking Owl Aboriginal Corporation

From: Turkan Aksoy
To: Balazs Hansel
Cc: Keira De Rosa
Subject: RE: SA7500-WSU Bankstown City Campus-Stage 2/3 information, methodology
Date: Wednesday, 8 May 2019 9:05:51 AM
Attachments: image017.png
image018.png
image019.gif
image020.png
image021.png
image022.png
image023.png
image024.png
image001.png
image002.jpg
image003.jpg
image004.jpg
image005.jpg

Hi

I am happy to forward my feedback however I would highly recommend a presentation be given to the ATSI Reference Group as part of this consultations as our local Elders need to be part of these discussions

We have a meeting set for the 21 May 10.30am at Bankstown

If this is possible can you please let me know asap so I can ensure to add it to the agenda

Cheers

Turkan Aksoy - Cultural and Inclusion Officer
T 02 9707 9863 **M** 0447 150 587
E turkan.aksoy@cbcity.nsw.gov.au
www.cbcity.nsw.gov.au

CBCity Highlights

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From: Balazs Hansel [mailto:bhansel@urbis.com.au]
Sent: Wednesday, 8 May 2019 8:44 AM
To: Balazs Hansel <bhansel@urbis.com.au>
Cc: Keira De Rosa <kderosa@urbis.com.au>
Subject: SA7500-WSU Bankstown City Campus-Stage 2/3 information, methodology

Dear All,

Thank you for registering you interest for the abovementioned project. Please find the Stage 2 project information and methodology provided as an attachment.

Please provide your written comments, information to the questionnaire and requested documents before 5 pm Thursday, 6 June 2019. Please note that due to the tight time frame for the approval process, any comments received after this date might be excluded from the Draft ACHAR.

Please provide your written feedback to:

Keira De Rosa
Urbis Pty Ltd
Level 8
Angel Place
123 Pitt Street
Sydney, 2000 NSW
Email: kderosa@urbis.com.au

If you would like to discuss the project, please do not hesitate to contact myself on:
Mobile: 0499 986 833
Email: bhansel@urbis.com.au

Kind Regards,

BALAZS HANSEL
ASSOCIATE DIRECTOR

D +61 2 8233 7668
T +61 2 8233 9900
M +61 499 986 833
E bhansel@urbis.com.au

Urbis Website

ANGEL PLACE, LEVEL 8, 123 PITT STREET
SYDNEY, NSW 2000, AUSTRALIA

Urbis recognises the traditional owners of the land on which we work.
Learn more about our **Reconciliation Action Plan.**

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DARUG LAND
OBSERVATIONS PTY LTD
ABN 27 602 765 453

EMAIL: DARUGLANDOBSERVATIONS@GMAIL.COM
PO BOX 173 ULLADULLA NSW 2539
MOBILE: 0413 687 279

22nd April 2019

Keira De Rosa
Urbis
Level 8, Angel Place
123 Pitt Street
SYDNEY NSW 2000

Email: kderosa@urbis.com.au

Notification and Registration of ALL Aboriginal Interests

RE: WESTERN SYDNEY UNIVERSITY – NEW BANKSTOWN CITY CAMPUS,
47 RICKARD ROAD, BANKSTOWN
Aboriginal Cultural Heritage Assessment

Dear Rosa,

Please be advised that Darug Land Observations Pty Ltd is seeking to be involved in any and all consultation meetings and fieldwork.

This office specialises in Aboriginal and community consultations, and has a membership that comprises of Traditional owners from the area in question. Those retain strong story, song lines, oral history and continued contact.

We would also like to state that we do not accept or support any person or organisation that are NOT from the DARUG Nation that comments regarding the said area.

Please also be advised that this Aboriginal organisation does not do volunteer work or attend unpaid meetings. I hope that you advise your client of this so that, 'This Group', will not be discriminated against and refused paid fieldwork. DLO's rate is $440 half day (less than 4 hours) and $880 per day (flat rate), including GST.

All correspondence should be emailed to: daruglandobservations@gmail.com and any further consultation during this project can be directed to Anna O'Hara on mobile 0413 687 279.

Yours sincerely,

Jamie Workman
Darug Land Observations Pty Ltd

Uncle Gordon Workman
Darug Elder

From: lilly carroll
To: Balazs Hansel
Subject: Re: Aboriginal community consultation Stage 1:Registration of interest-ACHA for WSU
Date: Tuesday, 16 April 2019 8:27:50 PM
Attachments: image007.png
image008.png
image003.gif
image004.png
image005.png
image006.png
image001.jpg
image002.jpg

Hi Balazs,

DNC would like to register an interest into WSU,

Name and contact details include Paul Boyd of 33 Carlisle Crescent Cambridge Gardens 2747, phone number is 0426823944 is the main contact for our organisation, - DIDGE NGUNAWAL CLAN

Kind regards
Paul Boyd & Lilly Carroll
Directors DNC

Sent from Yahoo Mail for iPhone

On Tuesday, April 16, 2019, 4:14 pm, Balazs Hansel <bhansel@urbis.com.au> wrote:

Dear All,

Please be advised that your contact details have been provided by the NSW Office of Environment and Heritage (OEH) in accordance with Section 4.1.2 of the *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010)* (hereafter referred as the Consultation Requirements) as a potential Aboriginal stakeholder who may have interest in registering to the abovementioned project.

Urbis has been commissioned by Western Sydney University (WSU) (the Proponent) to prepare an Aboriginal Cultural Heritage Assessment (ACHA) to inform an Environmental Impact Statement (EIS) to support a State Significant Development Application (SSDA) for the proposed construction of the new Bankstown City Campus at 74 Rickard Rd, Bankstown, NSW (hereafter referred as the Subject Area) (Figure 1).

The Proponent can be directly contacted via:

Stuart McIntosh
Planning Manager
Western Sydney University
Locked Bag 1797 Penrith NSW 2751

In accordance with Section 4.1.3 of the Consultation Requirements and Clause 80C of the *NSW National Parks and Wildlife Regulation 2009*, WSU will conduct a community consultation process with registered Aboriginal people to assess any Aboriginal cultural heritage that may exist within the Subject Area, to assist with the preparation of the ACHA to inform the EIS and comply with the *Department of Planning's Secretary's Environmental Assessment Requirements* (SEARS – SSD 9831) including:

- Address Aboriginal Cultural Heritage (ACH) in an Aboriginal Cultural Heritage Report (ACHAR) to be prepared in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (OEH 2010), Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW).
- The EIS must demonstrate attempts to avoid any impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.

Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal object(s) and/or place(s) that may be present in the Subject Area are invited to register an interest in the process of community consultation with the Proponent.

Written registration should include the following:

- Name and contact details, including phone number, email address and postal address of the individual/organisation.
- If the registration is made by an organisation, contact details of a nominated individual who will be the contact person for the organisation throughout the project.

Written registration should be forwarded **by 5pm on 3 May 2019** to:

Keira De Rosa
Urbis Pty Ltd
Level 8
Angel Place
123 Pitt Street
Sydney, 2000 NSW
Email: kderosa@urbis.com.au

Please be advised that in accordance to Section 3.4 of the Consultation Requirements, inclusion in the consultation process does not automatically result in paid site assessment. The decision on who is engaged for delivering particular services is decided by the proponent and will be based on a range of considerations including skills, relevant experience, and providing necessary certificates of currency.

Please be advised that, as per the Consultation Requirements the Proponent is required to forward the names of Aboriginal persons and groups who register an interest to the OEH and the Gandangara Local Aboriginal Land Council

GINNINDERRA ABORIGINAL CORPORATION
PRESERVATION FOR ABORIGINAL HERITAGE
LAND MANAGEMENT AND CONSERVATION
PO BOX 3143
GROSE VALE NSW
PH 0451016224
ginninderra.corp@gmail.com

2 May 2019

Keira De Rosa
Urbis Pty Ltd
Level 8, Angel Place
123 Pitt Street
SYDNEY 2000 NSW

RE: EXPRESSION OF INTEREST: WSU, Bankstown City Campus

Dear Keira,

Our Ginninderra Aboriginal Corporation members are interested in consulting and assisting with all aspects of the above-mentioned project at WSU, Bankstown City Campus (74 Rickard Road, Bankstown). We have several members who have cultural ties to the area.

All of our members have vast knowledge and experience in the identification, salvage, and preservation of aboriginal artefacts. White cards, and the required certificates of insurance(s) can be sent through at your request.

Please register us for participation in all aspects going forward. Our nominated representative to receive all future correspondence for this project is Krystle Carroll. Her contact phone number is 0451016224.

Yours sincerely,

Lisa Green
Ginninderra Aboriginal Corporation
E: ginninderra.corp@gmail.com

From: Goobah
To: Keira De Rosa
Subject: Aboriginal community consultation Stage 1:Registration of interest-ACHA for WSU
Date: Tuesday, 30 April 2019 6:17:43 AM

Hi Keira

This is Goobahs expression of interest to register for the above project.

Our postal address is 25/26-28 Native Way, Moruya Heads.

We wish to be kept informed of any further developments thank you.
--
Regards Basil Smith
Chief Executive Officer
Goobah PH 0405995725

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From:	Melissa Williams
To:	Balazs Hansel
Cc:	Tony Scholes
Subject:	FW: ESTABLISHMENT OF WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS – ACHA, ABORIGINAL CONSULTATION STAGE 1 – NOTIFICATION
Date:	Wednesday, 3 April 2019 2:57:51 PM
Attachments:	image001.gif image003.png image005.png image007.png image009.png image011.png image012.png SA7500_S1_GLALC_ltr_FNL01_20190401.pdf

---

Dear Balazs,

Thank you for contacting GLALC.
Can we discuss a time which suits for you to discuss requirements as part of a broader consultation with GLALC and members.
GLALC has the following functions in relation to Aboriginal Culture and Heritage:

(a) to take action to protect the culture and heritage of Aboriginal persons in the Council's area

(b) to promote awareness in the community of the culture and heritage of Aboriginal persons in the Council's area.

In relation to our Community, Land and Business Plan the following key priority areas:

(i) Engaging with Our Members and its objective, ('Opening the doors of our Land Council to our members')

(ii) Culture and Heritage' and its two objectives (protection of Aboriginal sites; promotion, celebration of Aboriginal identity and culture and heritage)

(iii The provision and management of community benefit schemes' and its objectives (sustainable, quality, and affordable services)

(iv) The acquisition, management and development of land and other assets' and the objectives (strategic acquisition, management and development)

(v) Business enterprises and investment' and its objectives (new employment opportunities to Aboriginal people, sustainable operation of services)

(vi) The identity of, and particulars of any encumbrance affecting, any parcel of land of the Council

GLALC is committed to raising awareness of and giving respect to cultural, social and religious systems practiced by Aboriginal peoples to work alongside and engage with Aboriginal peoples in a culturally respectful way.
Please let me know times and dates which suit for a meeting to discuss the local requirements and engagement protocols ?

Melissa Williams

Chief Executive Officer

Gandangara Local Aboriginal Land Council

64 Macquarie Street, LIVERPOOL NSW 2170 I PO Box 1038 Liverpool BC 1871

Ph: (02) 9602 5280 Fax: (02) 9602 2741 Mobile: 0477 706 280 E: mwilliams@glalc.org.au W: www.glalc.org.au

Gandangara LALC acknowledges the Cabrogal Clan and the Darug Nation as the traditional custodians of the land and as such pays deep respect to the Elders past and present. We also

acknowledge that the Dhurawal and Darug Nations continue to have a long standing relationship with this country and its people.

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From: Balazs Hansel <bhansel@urbis.com.au>
Sent: Monday, 1 April 2019 3:15 PM
To: Melissa Williams <MWilliams@glalc.org.au>
Subject: ESTABLISHMENT OF WESTERN SYDNEY UNIVERSITY BANKSTOWN CITY CAMPUS – ACHA, ABORIGINAL CONSULTATION STAGE 1 – NOTIFICATION

Dear Gandangarra Local Aboriginal Land Council,

Urbis has been commissioned by Western Sydney University (WSU) (the Proponent) to conduct an Aboriginal Cultural Heritage Assessment (ACHA) for the establishment of the new Bankston City Campus on the entire of Lot 5/DP 777510 and part of Lot 6 and Lot 7/DP 777510, Lot 12/DP566924 and Lot 3/DP 773698, and adjoining road reserves at 74 Rickard Road and part of 375 Chapel Street, Bankstown NSW (hereafter referred as the Subject Area) (Figure 1). The Planning Secretary's Environmental Assessment Requirements (SEARs – SSD 9831) have been released and an ACHA is required to accompany the Environmental Impact Statement (EIS) which will be submitted to support a State Significant Development Application (SSDA).

The Proponent is seeking the names and contact details of Aboriginal persons and groups who hold cultural knowledge relevant to, or who have a right or interest in determining the cultural heritage significance of Aboriginal object(s) and/or place(s) in the Subject Area.

Should you be aware of any Aboriginal persons and/or organisations that might be interested in the project, please provide their details at your earliest convenience and preferably by 5pm on 10 April 2019 in writing to:

Mr Balazs Hansel
Urbis
Level 8, Angel Place
123 Pitt Street
Sydney NSW 2000
M: 0499 986 833
E: bhansel@urbis.com.au

Please find the formal notification letter attached to this email.

Kind Regards,

BALAZS HANSEL
ASSOCIATE DIRECTOR
D +61 2 8233 7668
T +61 2 8233 9900
M +61 499 986 833
E bhansel@urbis.com.au

Urbis Website

LEVEL 8, ANGEL PLACE, 123 PITT STREET
SYDNEY, NSW 2000, AUSTRALIA

Urbis recognises the traditional owners of the land on which we work.
Learn more about our **Reconciliation Action Plan.**

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Tocomwall Pty Ltd
PO Box 76 Caringbah NSW 1495
Tel: 02 9542 7714 Fax: 02 9524 4146
Email: info@tocomwall.com.au www.tocomwall.com.au
ABN: 13 137 694 618

01 May 2019

Dear keira De Rosa,

Urbis

RE: Aboriginal Cultural Heritage Assessment at (74 Rickard Road, Bankstown, NSW)

Registration of Interest (ROI)

Thank you for your notification regarding the Registration of Interest for the <Western Sydney University>. Tocomwall respectfully requests primary involvement in all consultation meetings and fieldwork associated with the project.

Tocomwall represents traditional owners associated with the project area and retains local knowledge and oral history that will add significant value to the Project's heritage assessment. We have no objection to our information being provided to the Office of Environment and Heritage or the Local Aboriginal Land Council.

Tocomwall is also able to assist with input that can be incorporated into a written assessment of cultural values of the area. We employ a well-structured team with the capacity to support all necessary field work for the project. We can provide our schedule of rates and copies of relevant certificates of currency for business insurances upon request.

Tocomwall is a small business that relies upon a consistent cash flow that ensures we can continue to fulfil our client's needs. Unfortunately, the Tocomwall team is not in a position to provide volunteer work or attend meetings on a gratuitous basis. Tocomwall respectfully requests payment terms of 14 days from date of invoice. We would appreciate a copy of the contract and terms and conditions prior to commencement of the project.

Please provide all correspondence to Danny Franks at danny@tocomwall.com.au and info@tocomwall.com.au or to the above postal address.

Should you have any further questions regarding this ROI please contact me directly on 0415 226 725.

Yours Sincerely

Danny Franks

Cultural Heritage Manager

From: Phillip Boney
To: Keira De Rosa
Subject: Bankstown City Campus of Western Sydney University, Bankstown, NSW
Date: Monday, 22 April 2019 1:26:30 PM

Hi Sir/Madam,

My name is Phil Boney of Wailwan Aboriginal Group. I would like to register my interest of the said project. if I am a successful stakeholder for this project I look forward to working with you in the future. my contact details are as follows

Phil Boney
Wailwan Aboriginal Group
Number: 0436 483 210
Address: 49 Captain Cook Drive, Willmot, 2770

If there is anymore information you need, please do not hesitate to contact me. Thank you.

With regards, Phil Boney
Wailwan Aboriginal Group

URBIS

ANGEL PLACE
LEVEL 8, 123 PITT STREET
SYDNEY NSW 2000

URBIS.COM.AU
Urbis Pty Ltd
ABN 50 105 256 228

8 May 2019

To Whom it May Concern,

RE: ABORIGINAL COMMUNITY CONSULTATION FOR THE DEVELOPMENT OF THE NEW BANKSTOWN CITY CAMPUS OF WESTERN SYDNEY UNIVERSITY, BANKSTOWN, NSW – STAGE 2 PRESENTATION OF INFORMATION AND STAGE 3 GATHERING INFORMATION ABOUT CULTURAL SIGNIFICANCE

Thank you for registering your interest in the Aboriginal Cultural Heritage Assessment (ACHA) for the proposed development of the new Bankstown City Campus of Western Sydney University (WSU), Bankstown, NSW. In accordance with Section 4.2 and 4.3 of the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW, 2010) (hereafter referred as the Consultation Requirements), please find information on the proposed development and the protocol for providing cultural heritage information during the ACHA below.

1. LOCATION OF THE DEVELOPMENT

The proposed development is located on Lot 5/DP 777510 and part of Lot 6 and Lot 7/DP 777510, Lot 12/DP566924, Lot 3/DP 773698, and adjoining road reserves at 74 Rickard Road and part of 375 Chapel Street, Bankstown NSW (hereafter referred as the Subject Area). The site boundaries are defined by Rickard Road (to the north), proposed continuation of Appian Way (to the east), Paul Keating Park (to the south) and Chapel Road colloquially referred to as 'Library Road' (to the west). (Figure 1and Figure 2)

2. DESCRIPTION OF THE DEVELOPMENT

Western Sydney University is proposing to construct a self-contained vertical campus within the Bankstown CBD. The site is referred to as 74 Rickard Road, Bankstown, the subject area includes a small portion of 375 Chapel Street and is legally known as Lot 5 on DP777510 and part Lot 6 on DP777510 (Figure 3).

The site is currently utilised in part as a public car park with 59 car parking spaces and in part as landscaped open space (Figure 2).

The proposed development will have various impact on the existing ground surface and will involve:

- The demolition of all structures and hardstand within the site along with the removal of all vegetation.
- Excavation to a maximum depth of 8.5m (RL 17000).
- Construction of an 18 storey building (maximum height of 83m) with an additional 2 levels of basement.
- Associated public domain and civil works.

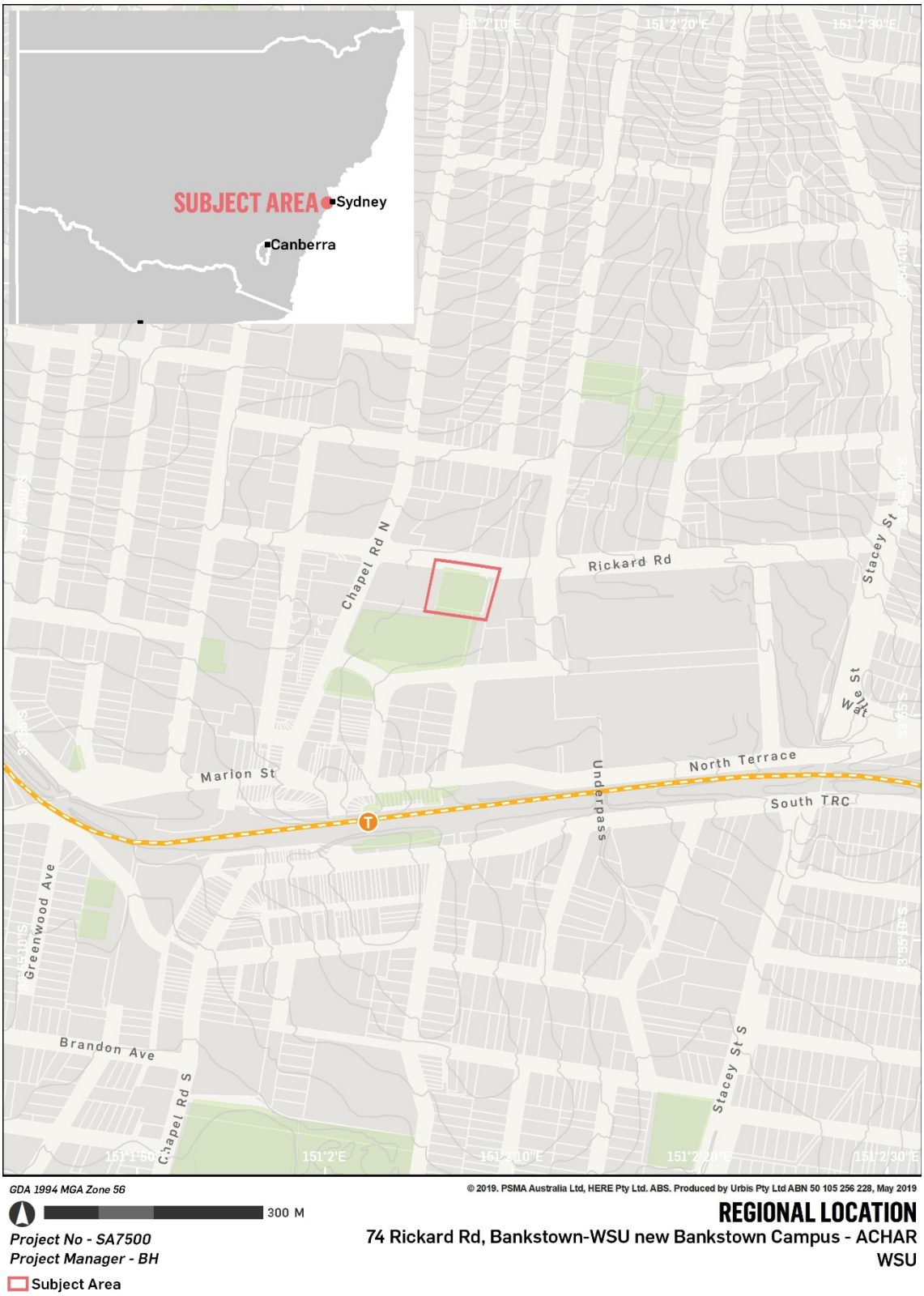

Figure 1 - Regional Location

Figure 2 – Location of the Subject Area

Figure 3 – Proposed Activity/Development

3. ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS)

The search of the Aboriginal Heritage Information Management System (AHIMS) was carried out on the 14 March 2019 (AHIMS Client Service ID: 406244) for an area of 12 kilometre (km) by 9 km. Altogether 115 Aboriginal sites were identified by the AHIMS search. The search found no registered Aboriginal sites within or near the Subject Area. The nearest registered Aboriginal site is located approximately 2 km to the south-east of the Subject Area (Figure 4). Details of the AHIMS search is provided in Table 1 below and the original extensive search results provided in Appendix 1.

Table 1 – Results of AHIMS search (Client Service ID: 407088).

Site Type	Total
Artefact Scatter	41
Midden	5
Scarred Tree	10
Isolated find	10
PAD	8
Shelter with Deposit	9
Artefact Scatter, PAD	4
Shell	2
Shelter with Midden and Deposit	2
Axe Grinding Grooves	1
Aboriginal Resource Gathering, PAD	1
Artefact Scatter, Shell	1
Isolated Find, PAD	1
Rock Engraving	1
Shelter with Artefact Scatter and Deposit	1
Shelter with Art and Deposit	1
Shelter with Art and Deposit, Shell	1

Site Type	Total
Not a Site	16
Total	**115**

It is highly unlikely that any unregistered Aboriginal sites survive within or near the Subject Area.

GEOLOGY, SOILS AND HYDROLOGY

The Subject Area is located on the edge of the Cumberland Lowlands and situated on the geological formation of Hawkesbury Sandstone which is overlain by Ashfield and Bringelly Shale (Figure 5). The soils of the Subject Area consist of the Blacktown residual (REbt) and Glenorie erosional (ERgn) soil landscapes. The Blacktown residual soil landscape consists of shallow to moderately deep red and brown podzoic soils on crests, upper slopes and well drained areas; and yellow podzoic soils on lower slope and in areas of poor drainage. On Figure 5, the Subject Area is marked as almost adjacent to Disturbed Terrain (DTxx) and it is very likely that the Subject Area itself has the same level of disturbance in accordance with the results of the recently carried out geotechnical investigation (Douglas Partners, 2018). Consequently, we believe that no original soil profiles are left within the Subject Area that would have potential for sub-surface Potential Archaeological Deposit (PAD). Details of the geotechnical investigation are provided in Section 4 below.

4. HISTORICAL LAND USE

The Subject Area and surrounds have been subject to high level of disturbance since the time of first European colonisation. Significant disturbance, including clearing of vegetation, the construction of buildings, roads, associated infrastructure and constant changing of the built environment have changed the original environment and resulted in an artificial, urban landscape (Figure *6*). Furthermore, the geotechnical investigation carried out by Douglas Partners Pty Ltd has confirmed that no original top-soil is left within the Subject Area and that the existing soil profile comprises various introduced fill, concrete, asphalt and re-deposited, introduced hard clay (Douglas Partners, 2018). None of the 13 boreholes that were investigated within the Subject Area have samples containing remains of the original top soil profile. Relevant excerpts of the geotechnical report are provided in Appendix 2.

GDA 1994 MGA Zone 56

© 2019. PSMA Australia Ltd, HERE Pty Ltd. ABS. Produced by Urbis Pty Ltd ABN 50 105 256 228, May 2019

1 km

ABORIGINAL HERITAGE CONSTRAINS MAP

74 Rickard Rd, Bankstown-WSU new Bankstown Campus - ACHAR

WSU

Project No - SA7500

Project Manager - BH

Subject Area

Conservation Area - General

Item - General

Conservation Area - Aboriginal

Conservation Area - Landscape

Item - Aboriginal

Item - Archaeological

Item - Landscape

Artefact Scatter

Artefact Scatter and Shell

PAD

Scarred Tree

Figure 4 – Aboriginal Heritage Constraints Map

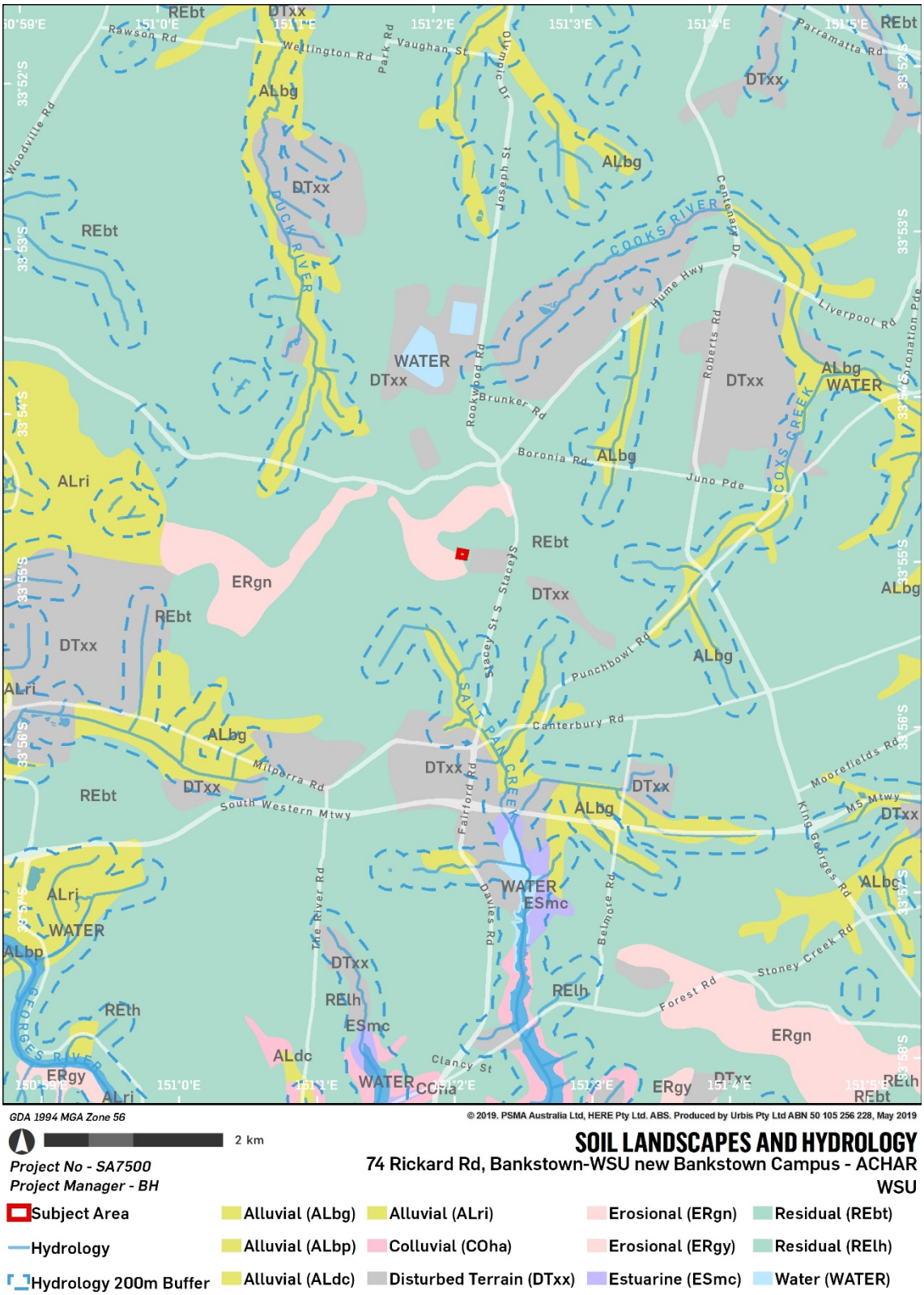

Figure 5 – Soil Landscapes and Hydrology

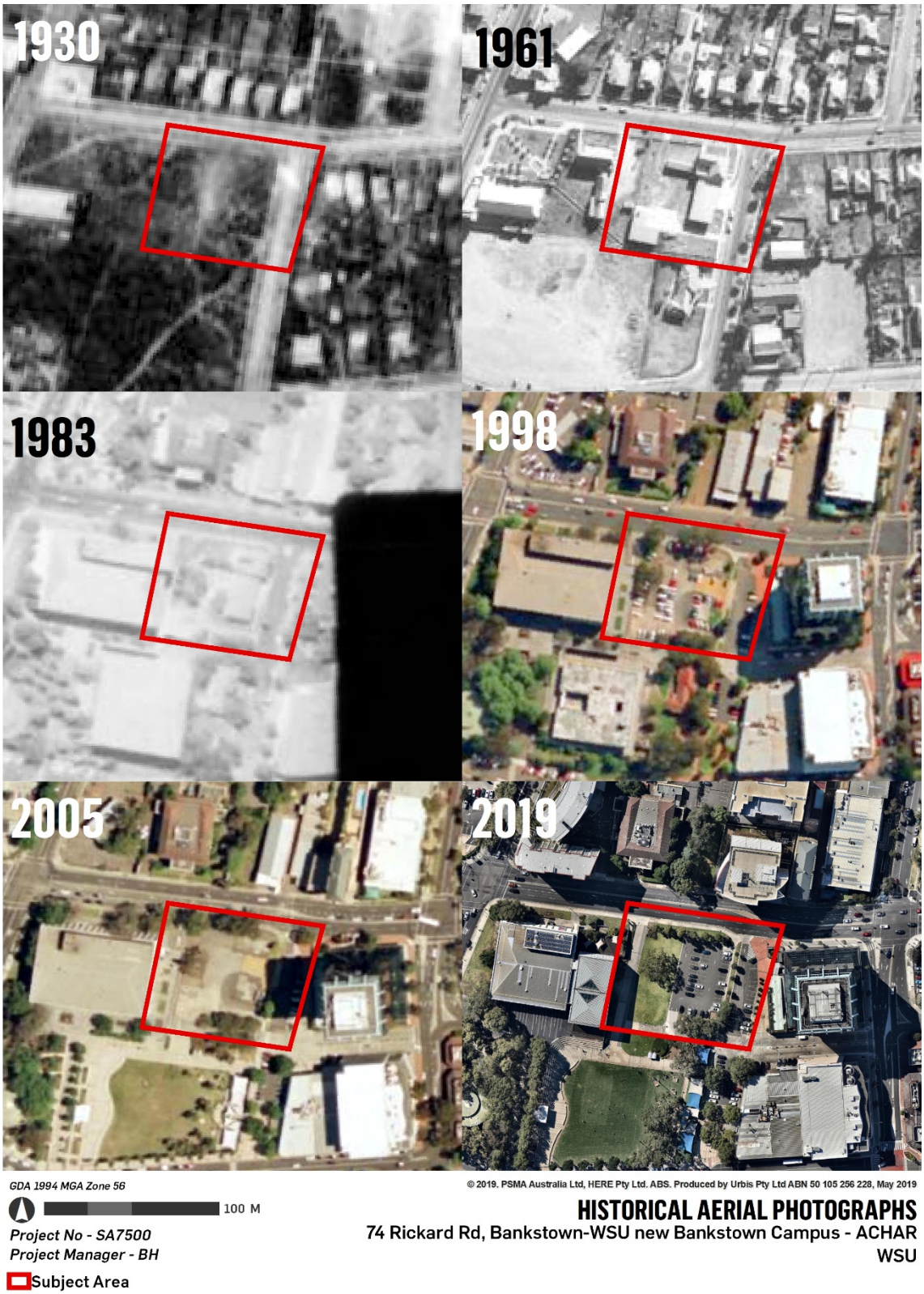

Figure 6 – Historical Aerial Photographs

5. METHODOLOGY FOR THE ACHA

The ACHA will be prepared in accordance with the legislative requirements of the *National Parks and Wildlife Act 1974* (NPW Act) and the following guidelines:

- *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010).*
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010).*
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales (OEH, 2011).*
- *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013.*

The ACHA will:

- Synthetise the results of the technical investigation including the environment, existing Aboriginal cultural heritage and archaeological resources in and near the Subject Area.
- The historical land use and it's impacts on the Subject Area.
- Detail the community consultation process and any Aboriginal cultural heritage values identified, in compliance with the Consultation Requirements.
- Include an assessment of significance of any Aboriginal objects or Aboriginal cultural heritage values that may exist within the Subject Area.
- Include an impact assessment and provide management and mitigation measures to inform the SSD application.

The ACHA will follow the general methodology described below:

- Desktop assessment, including synthetising and evaluating background information.
- Consultation with the Registered Aboriginal Parties (RAPs) throughout the preparation of the ACHA.
- Site inspection of the Subject Area.
- Preparation of draft ACHA synthetising all information collected during the process and providing the draft to the Proponent and the RAPs for comments.
- Incorporate all comments and finalise the ACHA.

6. ABORIGINAL COMMUNITY INPUT POINTS FOR THE ACHA PROCESS

Urbis welcomes input and information from the RAPs at any stage throughout the entire process of the ACHA. In line with the Consultation Requirements, the main input points for the consultation are the following:

- During Stage 2 - Presentation of information about the proposed project (this project information and methodology).
- During Stage 3 - Gathering information about cultural significance (this methodology and throughout the assessment process).
- During site inspection in consultation and approval from the Proponent.

- During Stage 4 - Review of the draft ACHA.

SITE INSPECTION

The rationale for inviting the RAPs to the site inspection will be discussed with the RAPs in consultation with the Proponent given the highly disturbed nature and the low ground surface visibility (GSV) within the Subject Area. The entire Subject Area is covered by artificial landscape including an existing carpark and associated landscaped areas. The primary aim of the site inspection (if needed) would be to investigate and further document the impact of historical land use on the Subject Area, and its impact on the original landform.

7. GATHERING INFORMATION ABOUT CULTURAL SIGNIFICANCE

In accordance to Section 4.3 of the Consultation Requirements, Urbis welcomes any information on cultural heritage and cultural significance of the Subject Area. Urbis is seeking information on cultural values and archaeological significance of the Subject Area, including:

- Whether there are any Aboriginal objects of cultural value to Aboriginal people in and near the Subject Area.
- Whether there are any places of cultural value to Aboriginal people in the area of the proposed project (whether they are Aboriginal places declared under s.84 of the NPW Act or not). This will include places of social, spiritual and cultural value, historic places with cultural significance, and potential places/areas of historic, social, spiritual and/or cultural significance.

Please also consider the following when providing information:

- Do you have information on any Aboriginal objects within or near the Subject Area?
- Do you or somebody you know have information of cultural values, stories in relation to the Subject Area and if that information can be shared.

In order to comply with the Consultation Requirements, to streamline information provided during Stage 2 and 3, and to inform the Proponent for the field inspection component, Urbis would like to collect information in relation to the following:

1. Cultural connection: Please describe the nature of your cultural connection to the country on which the Subject Area is situated. Please include any relevant cultural knowledge or knowledge of Aboriginal objects or places within the Subject Area. Have you ever lived in or near the Subject Area? If you are a Traditional Owner please state this clearly.

2. Representing your community members: Please state who you or your organisation represents. Do you or your organisation represent other members of the Aboriginal community? If so, please describe how information is provided to the other members, and how their information and knowledge may be provided back to the WSU and Urbis.

3. Previous experience: Please list your relevant (for example, in the area of the proposed project) previous experience in providing cultural heritage advice and survey participation.

4. Schedule of Rates: Please provide your Certificate of Currency including Product and Public Liability Insurance and Worker's Compensation. Please also schedule of rates (hourly/half day/day) for fieldwork participation, and include any expenses you may expect to incur, and the rate at these will be sought to be reimbursed.

Please find the above list at the end of this document in Appendix 3 for your convenience to fill-out and send back to Urbis.

Please note that in accordance with Section 3.4 of the Consultation Requirements consultation does not include the employment of Aboriginal people to assist in field assessment and/or site monitoring. Aboriginal people may provide services to the Proponent through a contractual arrangement; however, this is separate from consultation. The Proponent is not obliged to employ those Aboriginal people registered for consultation. Consultation as per these requirements will continue irrespective of potential or actual employment opportunities for Aboriginal people.

8. SENSITIVE CULTURAL INFROMATION – MANAGEMENT PROTOCOL

If your or your organisation has sensitive or restricted public access information for determining or managing the heritage values of the Subject Area, it is proposed that the WSU will manage this information (if provided by the Aboriginal community) in accordance with a sensitive cultural information management protocol. It is anticipated that the protocol will include making note of and managing the material in accordance with the following key limitations as advised by Aboriginal people at the time of the information being provided:

- Any restrictions on access of the material
- Any restrictions on communication of the material (confidentiality)
- Any restrictions on the location/storage of the material
- Any cultural recommendations on handling the material
- Any names and contact details of persons authorised within the relevant Aboriginal group to make decisions concerning the Aboriginal material and degree of authorisation.
- Any details of any consent given in accordance with customary law
- Any access and use by the RAPs of the cultural information in the material.

Please consider the above list when providing your recommendations regarding any culturally sensitive information.

9. CRITICAL TIMELINES

Critical timelines for the ACHA are outlined in Table 2 below. Please note that some of these timeframes are estimates at this stage in the process and are provided to allow forward planning of personnel and resources.

Table 2 – Critical timelines.

Project Stage	Due Date
Stage 2 and 3: Provision of comments on the provided project information and proposed methodology (this document).	**Within 28 days from delivery of this document, by 5pm Thursday, 6 June 2019.**
Stage 3: Site survey (if needed).	Early June.
Stage 4: Provision of the draft ACHA report (including the proposed management and mitigation measures) to the RAPs.	Within one - two weeks of the completion of Stage 2 and 3.

Project Stage	Due Date
Stage 4: Provision of comments on draft ACHA report.	Within 28 days from delivery of the draft ACHA report to the RAPs.
Stage 4: Finalisation of the ACHA report including the consideration of all comments and feedback.	Within one - two weeks of the closing of the comment period for the draft ACHA report.

10. WHO TO CONTACT

Please provide the requested information by 5 pm 6 June 2019. Comments received after this date might be excluded from the draft ACHA. Please provide your comments in writing to:

Keira De Rosa
Urbis Pty Ltd
Level 8
Angel Place
123 Pitt Street
Sydney, 2000 NSW
Email: kderosa@urbis.com.au

If you would like to discuss the project, please do not hesitate to contact myself on:

Mobile: 0499 986 833
Email: bhansel@urbis.com.au

Yours sincerely,

Balazs Hansel
Associate Director

Meggan Walker

From: Caza X <cazadirect@live.com>
Sent: Sunday, 19 May 2019 1:38 PM
To: Keira De Rosa
Subject: Re: SA7500-WSU Bankstown City Campus-Stage 2/3 information, methodology

A1

Indigenous Services
Contact: Carolyn
M: 0411650057
E: Cazadirect@live.com
A: 10 Marie Pitt Place, Glenmore Park, NSW 2745
ABN: 20 616 970 327

Hi ,
A1 supports the ACHAR Methodology .
Thank you
Carolyn Hickey

From: Balazs Hansel <bhansel@urbis.com.au>
Sent: Wednesday, 8 May 2019 8:44 AM
To: Balazs Hansel
Cc: Keira De Rosa
Subject: SA7500-WSU Bankstown City Campus-Stage 2/3 information, methodology

Dear All,

Thank you for registering you interest for the abovementioned project. Please find the Stage 2 project information and methodology provided as an attachment.

Please provide your written comments, information to the questionnaire and requested documents before 5 pm Thursday, 6 June 2019. Please note that due to the tight time frame for the approval process, any comments received after this date might be excluded from the Draft ACHAR.

Please provide your written feedback to:

Keira De Rosa
Urbis Pty Ltd
Level 8
Angel Place
123 Pitt Street
Sydney, 2000 NSW
Email: kderosa@urbis.com.au

If you would like to discuss the project, please do not hesitate to contact myself on:
Mobile: 0499 986 833
Email: bhansel@urbis.com.au

Kind Regards,

BALAZS HANSEL
ASSOCIATE DIRECTOR

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E bhansel@urbis.com.au

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Meggan Walker

From: Balazs Hansel
Sent: Wednesday, 5 June 2019 7:55 PM
To: Turkan Aksoy
Cc: Keira De Rosa
Subject: RE: SA7500-WSU Bankstown City Campus-Stage 2/3 information, methodology

Hi Aksoy,

Thank you for your email. I think we need to clarify a few things via the phone going forward. Urbis drives several components of the Bankstown Campus job including planning, community engagement and cultural heritage. Our community engagement team will have an open day which will suit your purposes better. I'll give you a call tomorrow.

Regards,

BALAZS HANSEL
ASSOCIATE DIRECTOR

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E bhansel@urbis.com.au

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From: Turkan Aksoy <Turkan.AKSOY@cbcity.nsw.gov.au>
Sent: Wednesday, 5 June 2019 6:50 PM
To: Balazs Hansel <bhansel@urbis.com.au>
Cc: Keira De Rosa <kderosa@urbis.com.au>
Subject: RE: SA7500-WSU Bankstown City Campus-Stage 2/3 information, methodology

Hey Hansel

This look very comprehensive

It would be advised that we ensure any further engagement be made face to face with our local Aboriginal community

Let me know when you are ready for this level of engagement and I can follow up on my end

I have attached copies of our local cultural sites of significance that was identified back over 10 years ago .. we currently do not have updated information on these

Cheers

Turkan Aksoy - Cultural and Inclusion Officer
T 02 9707 9863 **M** 0447 150 587
E Turkan.Aksoy@cbcity.nsw.gov.au
www.cbcity.nsw.gov.au

CANTERBURY BANKSTOWN

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From: Balazs Hansel [mailto:bhansel@urbis.com.au]
Sent: Friday, 31 May 2019 3:30 PM
To: Balazs Hansel <bhansel@urbis.com.au>
Cc: Keira De Rosa <kderosa@urbis.com.au>
Subject: FW: SA7500-WSU Bankstown City Campus-Stage 2/3 information, methodology

Dear All,

Hope you are all doing well. Please be advised that there is only one week left to provide your feedback and any information in relation to this project. Comment period for Stage 2 and stage 3 closes at 5pm on 6 June 2019.

Please provide any information in writing before that date.

Kind Regards,

BALAZS HANSEL
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E bhansel@urbis.com.au

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From: Balazs Hansel <bhansel@urbis.com.au>
Sent: Wednesday, 8 May 2019 8:44 AM
To: Balazs Hansel <bhansel@urbis.com.au>
Cc: Keira De Rosa <kderosa@urbis.com.au>
Subject: SA7500-WSU Bankstown City Campus-Stage 2/3 information, methodology

Dear All,

Thank you for registering you interest for the abovementioned project. Please find the Stage 2 project information and methodology provided as an attachment.

Please provide your written comments, information to the questionnaire and requested documents before 5 pm Thursday, 6 June 2019. Please note that due to the tight time frame for the approval process, any comments received after this date might be excluded from the Draft ACHAR.

Please provide your written feedback to:

Keira De Rosa
Urbis Pty Ltd
Level 8
Angel Place
123 Pitt Street
Sydney, 2000 NSW
Email: kderosa@urbis.com.au

If you would like to discuss the project, please do not hesitate to contact myself on:
Mobile: 0499 986 833
Email: bhansel@urbis.com.au

Kind Regards,

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ANGEL PLACE
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URBIS.COM.AU
Urbis Pty Ltd
ABN 50 105 256 228

29 May 2019

Gandangara Local Aboriginal Land Council
PO Box 1038
Liverpool BC NSW 1871
mwilliams@glalc.org.au

To Whom it May Concern,

RE: PROPOSED DEVELOPMENT OF THE NEW BANKSTOWN CITY CAMPUS OF WESTERN SYDNEY UNIVERSITY, BANKSTOWN, NSW – ABORIGINAL COMMUNITY CONSULTATION STAGE 1, LIST OF REGISTERED ABORIGINAL PARTIES

In accordance with Section 4.1.6 of the *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010)*, please find below the compiled list of Registered Aboriginal Parties (RAPs) for the abovementioned project.

Table 1 – Registered Aboriginal Parties

Name of RAP	Contact Person
Canterbury Bankstown Aboriginal and Torres Strait Islander Reference Group (CBATRG)	Turkan Aksoy
Darug Land Observations	Jamie Workman and Anna Workman
A1 Indigenous Services	Carolyn Hickey
Tocomwall	Scott Franks and Danny Franks
Amanda Hickey Cultural Services	Amanda Hickey
Goobah Developments	Basil Smith
Didge Ngunawal Clan	Lillie Carroll and Paul Boyd
Ginninderra Aboriginal Corporation	Krystle Carroll
Wailwan Aboriginal Group	Phillip Boney

Name of RAP	Contact Person
Barking Owl Aboriginal Corporation	Mrs Jody Kulakowski
Barraby Cultural Services	Lee Field

Yours sincerely,

Balazs Hansel
Associate Director

URBIS

ANGEL PLACE
LEVEL 8, 123 PITT STREET
SYDNEY NSW 2000

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Urbis Pty Ltd
ABN 50 105 256 228

29 May 2019

Office of Environment and Heritage
Greater Sydney Branch
Communities and Greater Sydney Division
PO Box 644
Parramatta NSW 2124
gs.ach@environment.nsw.gov.au

To Whom it May Concern,

RE: PROPOSED DEVELOPMENT OF THE NEW BANKSTOWN CITY CAMPUS OF WESTERN SYDNEY UNIVERSITY, BANKSTOWN, NSW – ABORIGINAL COMMUNITY CONSULTATION STAGE 1, LIST OF REGISTERED ABORIGINAL PARTIES

In accordance with Section 4.1.6 of the *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010)* please find below the compiled list of Registered Aboriginal Parties (RAPs) for the abovementioned project. Please also find rectified contact details where relevant.

Table 1 – Registered Aboriginal Parties

Name of RAP	Contact Person	Rectified Contact Details
Canterbury Bankstown Aboriginal and Torres Strait Islander Reference Group (CBATRG)	Turkan Aksoy	N/A
Gandangara Local Aboriginal Land Council	Melissa Williams and Darren Duncan	N/A
Darug Land Observations	Jamie Workman and Anna Workman	N/A
A1 Indigenous Services	Carolyn Hickey	N/A
Tocomwall	Scott Franks and Danny Franks	Scott: 0404 171 544 scott@tocomwall.com.au

Name of RAP	Contact Person	Rectified Contact Details
		Danny: 0415 226 725 danny@tocomwall.com.au
Amanda Hickey Cultural Services	Amanda Hickey	N/A
Goobah Developments	Basil Smith	goobahchts@gmail.com
Didge Ngunawal Clan	Lillie Carroll and Paul Boyd	N/A
Ginninderra Aboriginal Corporation	Krystle Carroll	0451 016 224
Wailwan Aboriginal Group	Phillip Boney	N/A
Barking Owl Aboriginal Corporation	Mrs Jody Kulakowski	N/A
Barraby Cultural Services	Lee Field	0431 314 892

Yours sincerely,

Balazs Hansel
Associate Director

Meggan Walker

From: Balazs Hansel
Sent: Monday, 19 August 2019 1:03 PM
To: Meggan Walker
Subject: FW: WSU Bankstown City Campus-ACHAR Draft-Stage 4 review

FYI

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From: Balazs Hansel
Sent: Monday, 22 July 2019 8:36 AM
To: Turkan Aksoy <Turkan.AKSOY@cbcity.nsw.gov.au>
Subject: RE: WSU Bankstown City Campus-ACHAR Draft-Stage 4 review

Good Morning Turkan,

Thank you for your email in re the drat ACHAR. I will include your response in our consultation log and also in the report.

We will be in touch in relation to further opportunities for the Aboriginal community as part of the design stage of the building. I will be talking to our Planning Team and WSU directly and will provide the relevant contact details to get in contact.

Regards,
Balazs

BALAZS HANSEL
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E bhansel@urbis.com.au

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From: Turkan Aksoy <Turkan.AKSOY@cbcity.nsw.gov.au>
Sent: Monday, 22 July 2019 8:31 AM
To: Balazs Hansel <bhansel@urbis.com.au>
Cc: Keira De Rosa <kderosa@urbis.com.au>; Joanna Stobinski <Joanna.Stobinski@cbcity.nsw.gov.au>
Subject: WSU Bankstown City Campus-ACHAR Draft-Stage 4 review

Hi Balazs

I have reviewed the attached document and have no further comments or amendments that are needed
The file/ report is comprehensive

I still strongly advise that Aboriginal specific consultations at later stages of this projects in order to ensure visibility and transparency with our community stakeholders and look forward to hearing back from you at a later date when time has been set for this

Regards

CANTERBURY BANKSTOWN

Turkan Aksoy - Cultural and Inclusion Officer
T 02 9707 9863 **M** 0447 150 587
E Turkan.Aksoy@cbcity.nsw.gov.au
www.cbcity.nsw.gov.au

@ourcbcity
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From: Balazs Hansel [mailto:bhansel@urbis.com.au]
Sent: Wednesday, 10 July 2019 9:43 AM
To: Balazs Hansel <bhansel@urbis.com.au>
Cc: Keira De Rosa <kderosa@urbis.com.au>
Subject: WSU Bankstown City Campus-ACHAR Draft-Stage 4 review

Dear All,

- Thank you for your contribution to the above mentioned project. We have come to Stage 4 for the review of the ACHAR. The ACHAR has been carried out according to the relevant guidelines and legislative tools. We have sent a link via 'sharepoint' with the draft ACHAR including the appendices to you today. Please follow the instructions on the link to access and download the document.

For your convenience, please find the small version of the draft ACHAR (without the appendices) attached for your review as per Stage 4 of the consultation process. The two documents are the same, with only the appendices excluded from the one attached to this email.

Please provide your comments in writing before 5 pm the 10 August 2019.

The most important findings of the ACHAR were:

- The Subject area is highly disturbed and there is a high potential that the entire original soil profile has been removed and replaced by imported fill.
- No Aboriginal objects and/or sites are located within and in close proximity to the Subject Area.
- The Proponent, Western Sydney University would like to involve all RAPs in the work with the Design Team to explore the opportunities of incorporating Aboriginal cultural heritage into the interior designs of the new building. Urbis will be in touch with all of you during the review period to provide further information on the process.

Please as always, do not hesitate to call or email us should you have any questions or discussing the report further.

Regards,

BALAZS HANSEL
ASSOCIATE DIRECTOR

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APPENDIX C GEOTECHNICAL REPORT

Douglas Partners

Geotechnics / Environment / Groundwater

Integrated Practical Solutions

Report on Geotechnical Investigation

Proposed Multistorey Building
Bankstown City Campus
74 Rickard Rd, Bankstown

Prepared for
Western Sydney University

Project 86462.00
August 2018

Douglas Partners
Geotechnics / Environment / Groundwater

Document History

Document details

Project No.	86462.00	Document No.	R.002
Document title	Report on Geotechnical Investigation Proposed Multistorey Building Bankstown City Campus		
Site address	74 Rickard Road, Bankstown		
Report prepared for	Western Sydney University		
File name	86462.00.R.002.Rev0 Geotechnical Investigation		

Document status and review

Status	Prepared by	Reviewed by	Date issued
Draft 1	Brendan O'Kane	Michael J Thom	8th August 2018
Rev 0	Brendan O'Kane	Michael J Thom	13th August 2018

Distribution of copies

Status	Electronic	Paper	Issued to
Draft 1	1	0	Western Sydney University
Rev 0	1	0	Western Sydney University

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

	Signature	Date
Author		13th August 2018
Reviewer		13th August 2018

bsi. ISO 9001 Quality Management

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ABN 75 053 980 117
www.douglaspartners.com.au
96 Hermitage Road
West Ryde NSW 2114
PO Box 472
West Ryde NSW 1685
Phone (02) 9809 0666
Fax (02) 9809 4095

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Appendix B: Drawings
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Report on Geotechnical Investigation
Bankstown City Campus Development
74 Rickard Rd, Bankstown

1. Introduction

This report presents the results of a geotechnical investigation undertaken by Douglas Partners Pty Ltd (DP) for the Western Sydney University's Bankstown City Campus Development at 74 Rickard Road, Bankstown. The study was commissioned by Ms Michelle Lee of Western Sydney University and was undertaken in general accordance with Douglas Partners' proposal SYD180473 dated 21 May 2018.

The aim of this report is to provide information on the subsurface soil and rock profile and groundwater conditions across the site for design and planning purposes. The site extends from the existing Library building on the corner of Rickard and Chapel Roads to the Canterbury Bankstown Council building in the east, and from the northern edge of Paul Keating Park along the southern boundary to Rickard Road in the north. The total site area is approximately 3,300 square metres. At this stage the final details of the development have not been confirmed, but DP understands that the development will probably occupy the entire site and could include up to six basement levels requiring excavation to about 20 m below current site levels.

The investigation comprised the drilling of five rock cored boreholes and seven shallow auger boreholes. Three groundwater monitoring wells were installed to enable field testing of permeability and measurement of groundwater levels. Laboratory testing was carried out on selected soil and rock samples. Details of the field and laboratory work are provided in this report, together with comments relating to design and construction issues.

This report supersedes the previously issued Desktop Geotechnical Study (Ref: 86462.00.R.001.Rev1 dated 12 July 2018), which included a review of previous nearby investigations undertaken by DP in the surrounding area. DP carried out a contamination assessment at the site concurrently with the geotechnical study and the results reported separately (Ref: 86462.00.R.003).

2. Site Description

The location of the site is shown on Figure 1. It is located on the southern side of Rickard Road.

The site is currently used as a council car park and is mostly covered by an asphalt pavement with a limited grassed area on the western side. There are several mature eucalypt trees growing in the landscaped areas.

The site is located in gently undulating terrain where natural surface slopes are estimated to be about 5% towards the south. The surface contours in the area of the site (Figure 2) indicate that the site is located within a slight drainage depression into which surface waters from the north and north-east drain.

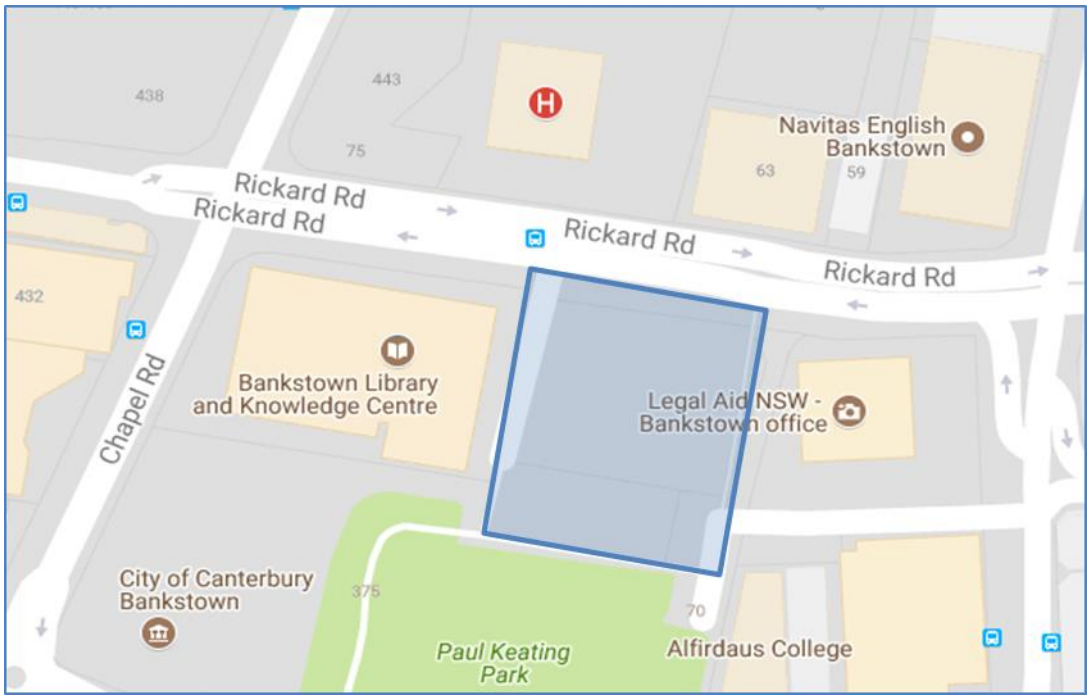


Figure 1: Site Area

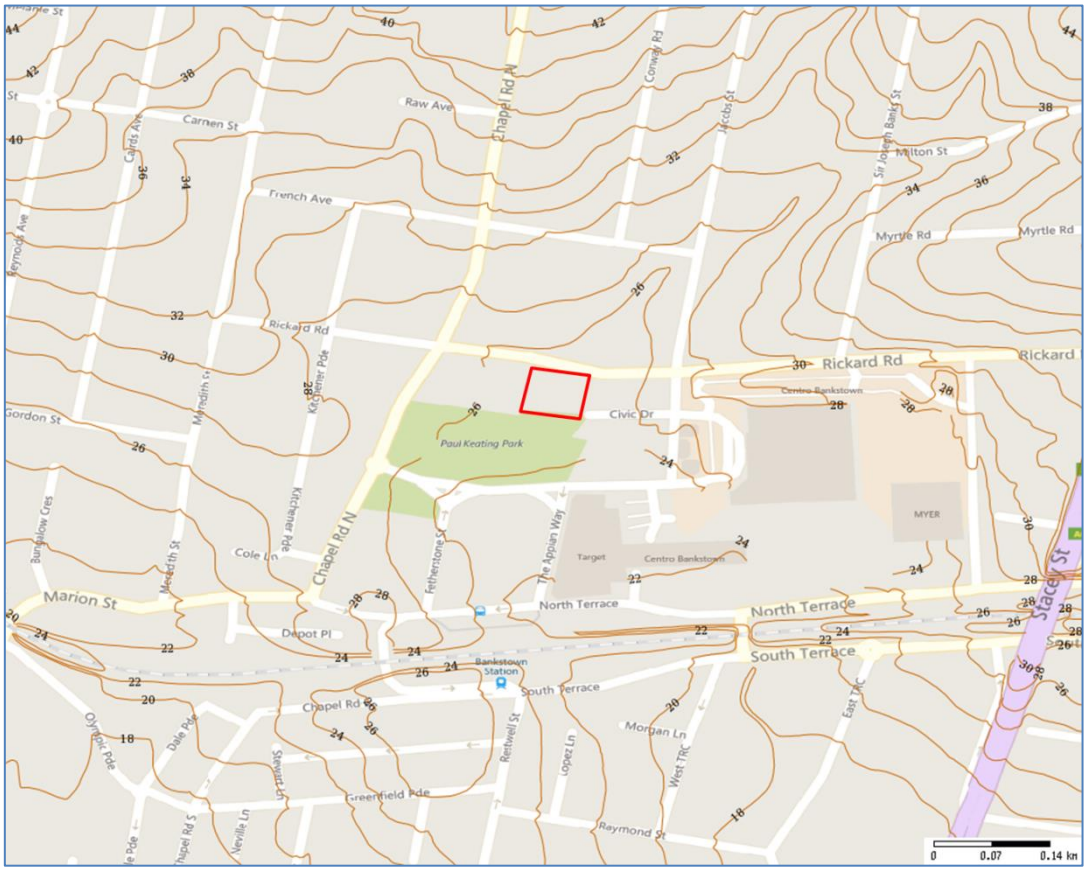


Figure 2: Surface Contours

3. Previous Investigations

DP has previously conducted several geotechnical and contamination investigations in this area. A brief summary of the subsurface conditions encountered during these investigations is given in Table 1.

Table 1: Previous relevant nearby geotechnical investigations

Date	Project No.	Address	Investigation Scope	Summary of closest tests to site
Nov-82	7809	61 Rickard Rd.	4 bores	Filling to 0.3 - 0.4m
				Stiff to very stiff clay to 3m
				Weathered shale to termination depth at 4.8m
				GW at 4m rising to 1.15m after 1 hour
Dec-83	8194	cnr Jacob & Rickard	5 bores	Topsoil & filling to 0.3 - 0.8m
				Clay to about 3m then weathered shale
				MS shale below about 4.5m
				GW at 1.3 - 1.5m
Aug-88	11458	69 Rickard Rd	6 cored bores	Filling to 1.2m max
				Stiff to very stiff clay to 4.5m
				LS - MS shale to 6m
				MS shale below about 6m
				GW not observed while augering
Sep-98	27577	59 Rickard Rd	5 cored bores	0.2 m filling
				Firm to stiff clay to 2.5 - 3m
				LS shale with some ELS bands to 4.5m
				MS shale below 4.5m
				GW at 2.0 - 3.5 m
May-06	43798A	NW cnr Rickard & Chapel	11 auger bores	Filling to 0.3 - 1.0 m away from UST
				Stiff to very stiff silty clay to 4.5 - 5.0 m
				ELS shale below 5m
				GW at 2.5 - 4.0 m
Sep-10	71940	SE cnr Rickard & Chapel (Bankstown City Hall)	1 bore, pile inspections and pile analysis	Filling to 0.7 m
				Silty clay to 3.9 m
				MS siltstone to 6.7m
				HS laminite below 6.7m
				GW not observed while augering to 3.9 m

Date	Project No.	Address	Investigation Scope	Summary of closest tests to site
Nov-17	86077	Bankstown Central Square Development	Deep cored bores	Filling to 0.7m
				Very stiff clay to 1.5 m
				ELS and VLS shale to 4.8m
				LS shale to 6.6 m
				MS shale to 13.5 m with some LS and VLS beds
				VHS sandstone to termination at 17.0 m
				GW not observed while augering to 2.1m

Notes: GW = groundwater, ELS = extremely low strength, VLS = very low strength, LS = low strength, MS = medium strength, HS = high strength, VHS = very high strength

The locations of the previous DP investigations that have been used in this assessment are shown on Figure 3.

Figure 3: Location of other DP projects around the site

4. Regional Geology

The 1:100,000 series geological map for Sydney (Geological Series Sheet 9130) and the accompanying notes indicate that the site is underlain by rocks of the Ashfield Shale formation of the Wianamatta Group. The Ashfield Shale typically comprises siltstones, claystones, fine grained sandstones and finely interlaminated beds of siltstone and sandstone, known locally as laminites.

An extract of the regional geological map is shown on Figure 4 with the dark green shading (Rwa) representing areas of Ashfield Shale. A higher rock unit known as the Bringelly Shale is shown to the north of the site (light green shading Rwb).

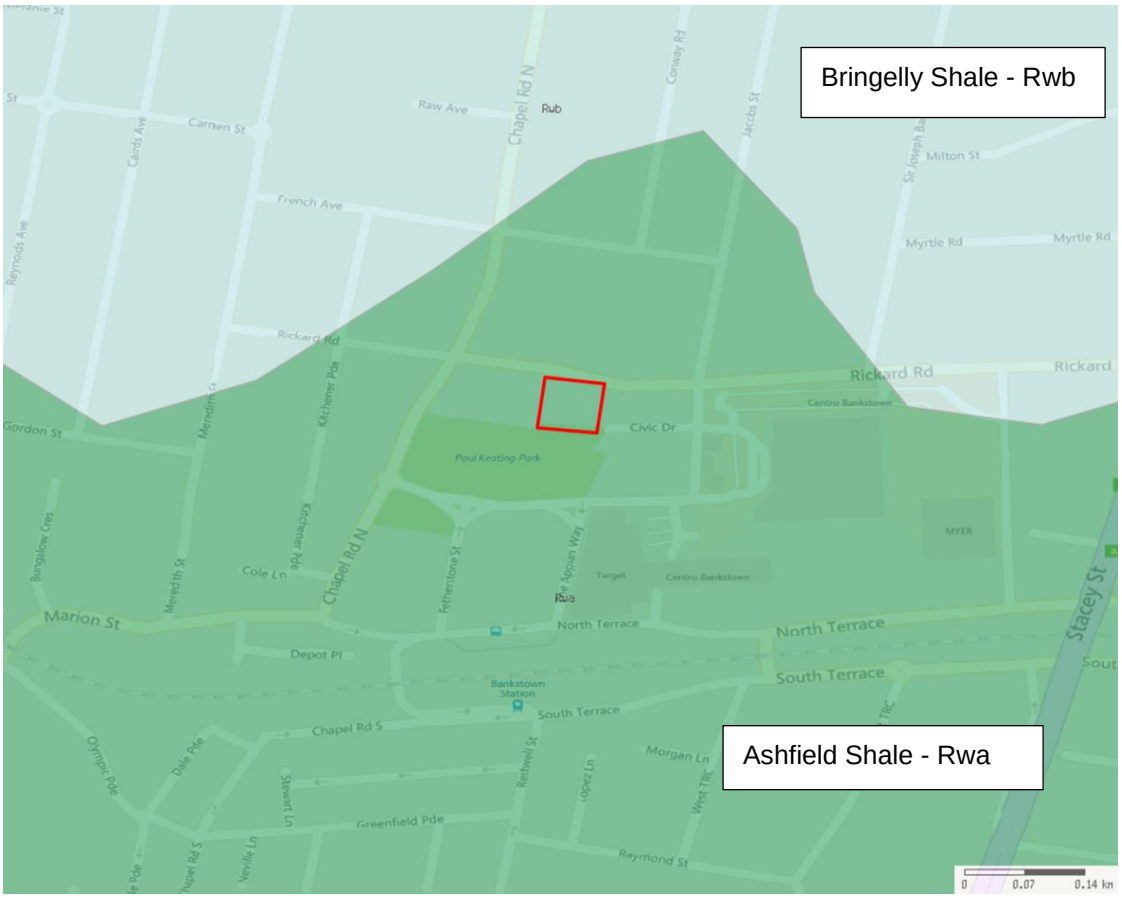


Figure 4: Regional Geology

There are no igneous dykes or major faults shown on the geological map in the area of the site.

Reference to the Acid Sulphate Soil (ASS) risk maps for the area published by the Department of Conservation and Land Management suggests that it is very unlikely that there are actual or potential acid sulphate soils occurring in the area of the site.

The Soils Landscapes of the Sydney 1:100,000 sheet indicates that the site straddles a boundary between soils of the Blacktown soil landscape group and soils of the Glenorie soil landscape group (Figure 5). The Blacktown group soils are residual soils derived from weathering of the Wianamatta

Group rocks and typically occur on gently undulating rises. The soil profiles are typically between 1 m and 3 m thick and the soils are moderately reactive and highly plastic, with low soil fertility and poor soil drainage. The Glenorie group soils are erosional soils developed on undulating hills also underlain by Wianamatta Group shales. The soils are typically more than 2 m thick on lower slopes, have a high soil erosion hazard and are moderately reactive.

Figure 5: Soil Landscapes

5. Field Work Methods

The field work for the current investigation included the drilling of five rock cored boreholes (Boreholes BH1 to BH5) and seven shallow augered boreholes (Boreholes BH6 to BH12).

The test locations are shown on Drawing 1 in Appendix B. The boreholes were drilled with a truck mounted drilling rig using spiral flight augers and rotary drilling methods through the soils. The rock cored boreholes were then continued to depths of about 25 m using diamond core drilling equipment to obtain continuous core samples of the bedrock. Standard Penetration Tests (SPTs) were carried out within the boreholes at 1.5 m depth intervals to assess the soil strength and to obtain samples for strata identification.

The boreholes were logged and sampled by an experienced geotechnical engineer. The rock cores recovered from the boreholes were photographed, followed by Point Load Strength Index (Is_{50}) testing on selected samples.

Groundwater monitoring wells were installed in three of the deep boreholes (BH1, BH4 and BH5) to allow for the measurement of groundwater levels and permeability testing. The wells typically comprised Class 18 machine slotted PVC with gravel backfill to about 1 m above the slotted section, a bentonite plug above the gravel section and then grout backfill to the surface. Details of the levels of the installed wells and the screened depths are given in Appendix C.

Standing groundwater levels were measured in the wells after the wells had been installed and developed by removing at least three borehole volumes of water. Rising head permeability tests were also carried out within the wells. In these tests the water within the wells was pumped out and the rate of inflow (recharge) was measured and used to calculate permeability.

The locations and surface levels of each of the boreholes were surveyed using a Differential Global Positioning System (DGPS). The levels and co-ordinates of each of the tests are provided on the detailed logs.

6. Field Work Results

Details of the subsurface conditions encountered are given in the borehole logs in Appendix C, together with colour photographs of the rock core and notes defining classification methods and descriptive terms.

In summary, the ground profile encountered during the current investigation generally comprised:

- Filling – pavement materials were encountered in the carpark test locations and typically comprised of between 50 mm to 150 mm thick asphaltic concrete surface overlying road base of between 100 mm and 400 mm thickness; this was overlain by clayey filling with minor proportions of gravel, to depths ranging from 0.8 m and 2.0 m depth;
- Residual soil – comprising clay or silty clay with minor proportions of ironstone gravel that is of generally stiff to very stiff consistency to depths of between 2.7 m and 3.8 m; overlying
- Bedrock – the upper bedrock layers typically comprising shale or laminite with some interbedded sandstone showed considerable variation between test locations. A generalised profile is summarised below:
    - extremely low and very low strength to depths of between 4.2 m and 6.8 m,
    - variable strength, typically low to medium strength with significant thicknesses of very low and low strength as well as medium and high strength layers
    - medium to high strength siltstone and sandstone with some very high strength layers below depths of between 12.2 m and 14.8 m.

The variation in conditions encountered across the site is illustrated on the interpreted sections on Drawings 2 and 3 in Appendix B.

Free groundwater was not observed in any bore during auger drilling. The use of water as a drilling fluid during washboring of soils and NMLC diamond coring of the bedrock precluded further observation of the groundwater levels during the initial field work. The groundwater levels and in situ permeability measurements obtained from the standpipe monitoring wells installed at Boreholes BH1, BH4 and BH5, following their development, are summarised in Table 22.

In situ permeability testing in the standpipe monitoring wells was carried using the rising or falling head test method, whereby the standing water in each well was first measured then water pumped out of or into the well so as to lower or raise the standing water level in the well, whereupon its depth was again measured to commence the test. The water depth in each well was then measured at regular time intervals as it fell back to the initial groundwater level. The equation of Hvorslev (1949) was then used to estimate the permeability of the subject strata, in this case, the bedrock. Plots of the recovery measured in the permeability tests are presented in Appendix D.

Table 2: Summary of Groundwater Level and Permeability Measurements

Borehole	Ground Surface Level (RL, AHD)	Groundwater Depth (and RL) (m)	Permeability (m/s)
		30 July 2018	
BH1	24.9 m	8.6 (RL 16.3 m)	6.0×10^{-6}
BH4	24.3 m	7.9 (RL 16.4 m)	6.2×10^{-6}
BH5	23.8 m	8.9 (RL 14.9 m)	5.7×10^{-8}

7. Laboratory Testing

The results of the current and previous laboratory testing on selected soil, rock and groundwater samples from test locations in and around are summarised in the following sections and the detailed results sheets for the current test results are given in Appendix E.

7.1 Acid Sulphate Soils

Samples of soil were screened for preliminary signs of actual acid sulphate soil (AASS) and potential acid sulphate soil (PASS). The screening involved the measurement of the pH value of each soil sample after the addition of distilled water (pH_F). Hydrogen Peroxide was then added to oxidise the sample and the pH value (pH_{FOX}) was measured again after at least 1 hour. The results for the pH screening are presented in Table 3.

The Acid Sulphate Soils Management Advisory Committee (ASSMAC) prepared an Acid Sulphate Soil Manual (August 1998) which includes guidelines for assessing AASS and PASS. The current ASS screening and laboratory testing regime has been developed in general accordance with the ASSMAC Acid Sulphate Soil Manual.

Table 3: PASS & AASS Screening Results

Borehole	Depth (m)	Material Description	Screening Tests			
			Natural pH_F	Oxidised pH_{FOX}	Change in pH	Reaction
BH1	2.5-2.95	Clay	6.5	5.8	-0.7	Slight
BH2	2.5-2.95	Clay	8.6	7.2	-1.4	Slight
BH3	1.5-1.6	Clay	8.9	8.5	-0.4	Slight
BH3	2.5-2.95	Clay	6.7	6.4	-0.3	High
BH4	2.4-2.5	Silty Clay	5.4	4.4	-1.0	High
BH5	2.5-2.95	Silty Clay	8.1	7.8	-0.3	Slight
BH6	2.5-2.95	Silty Clay	5.5	4.1	-1.4	Moderate

The screening test results were assessed for the possible presence of AASS or PASS on the basis of the following guidance indicators specified in the ASSMAC Guidelines:

- $pH_F \leq 4$ strongly indicates oxidation has occurred in the past and that AASS are likely to be present; and
- $pH_{FOX} < 3.5$ plus preferably one or more of the following strongly indicates the presence of PASS; a pH_{FOX} reading at least one pH unit below the corresponding pH_F, a strong reaction with peroxide, change in soil colour from grey tones to brown tones, or a release of sulphurous gases.

Following review of the screening results, some samples were selected for laboratory analysis of Suspension Peroxide Oxidation and Combined Acidity and Sulphate (SPOCAS). The results of the analysis for SPOCAS are provided in Table 4 together with action criteria as outlined in Table 4.4 of the ASSMAC guidelines (applicable for fine texture, medium to heavy clays).

Table 4: Results of Laboratory Analysis for SPOCAS

Borehole	Depth (m)	Material Description	pH_{KCl}	pH_{ox}	S_{POS} (%w/w)	TPA (Mol H^+/ tonne)	TSA (Mol H+/ tonne)
BH4	2.4-2.5	Silty Clay	4.3	4.3	0.01	42	16
BH6	2.5-2.95	Silty Clay	4.4	5.2	<0.005	15	<5
Action Criteria* (greater than 1000 tonnes disturbed)			<4	<3.5	0.03	18	18
Action Criteria* (less than 1000 tonnes disturbed)			<4	<3.5	0.1	62	62

Notes: Exceeds Action Criteria

* Action Criteria based on fine texture, medium top heavy clays

7.2 Soil Testing

Typical samples from the bores were tested in the laboratory for particle size distribution, moisture content, compaction properties and California Bearing Ratio. The detailed results are contained in Appendix D and are summarised in Tables 5 and 6 below.

Table 5: Summary of Particle Size Distribution and CBR Tests

Test No.	Depth (m)	% passing nominated sieves			FMC (%)	OMC (%)	SMDD (t/m^3)	CBR (%)
		2.36mm	0.075mm	0.002mm				
BH4	1.5-2.0	97	76	39	18.4	18.5	1.75	5
BH9	0.5-2.0	86	48	25	14.8	14.5	1.91	7
BH10	0.5-1.5	77	52	25	14.7	14.0	1.98	5
BH11	0.5-1.5	90	65	27	12.8	16.5	1.82	4.5

Note: FMC = Field Moisture Content, OMC = Optimum Moisture Content, SMDD = Standard Maximum Dry Density, CBR = California Bearing Ratio

Table 6: Summary of Plasticity Tests

Test No.	Depth (m)	W_L (%)	W_P (%)	PI (%)	LS (%)
BH4	1.5-2.0	44	15	29	13.5
BH9	0.5-2.0	48	15	33	14.5
BH10	0.5-1.5	49	15	34	14.5
BH11	0.5-1.5	37	15	22	12.0

Note: W_L = Liquid Limit, W_P = Plastic Limit, PI = Plasticity Index, LS = Linear Shrinkage

7.3 Chemical Testing of Groundwater

Samples of groundwater from some of the piezometers were tested for pH, chloride and sulphate concentrations. The results are summarised in Table 7.

Table 7: Summary of Aggressivity Test Results

Test No.	Sample Type	pH	Electrical Conductivity (uS/cm)	Chloride as Cl- (mg/kg)	Sulphate as SO4 (mg/kg)
BH1	Water	7.4	22,000	7,200	540
BH4	Water	7.3	21,000	7,100	640
BH5	Water	7.7	14,000	4,200	590

8. Interpreted Geotechnical Model

The subsurface profile is characterised by

- Filling and residual clays overlying extremely low and very low strength rock to depths between 4.2 m and 6.8 m, below which depth the rock becomes quite variable in strength between test locations, underlain by;
- Generally low to medium strength with significant thicknesses of very low to low and medium to high strength layers then;
- Medium and high to very high strength siltstone and sandstone which extends below depths between 12.2 m and 14.8 m.

From a geological perspective the subsurface profile may be subdivided into three main units, namely Bringelly Shale, Minchinbury Sandstone and Ashfield Shale. These three geological formations form the Wianamatta Group of sedimentary rocks.

Interpreted geotechnical cross-sections are given on Drawings 2 and 3 in Appendix B which illustrates the interpreted subsurface profile beneath the site.

Groundwater depths have been measured within the rock from monitoring wells on the site with depths ranging from 7.9 m to 8.9 m (RL 14.9 m to RL 16.4 m). Depending on how many basement levels are constructed for the building, there is a possibility basements could be below the groundwater level.

9. Proposed Development

It is understood that at this stage of the project the details of the development have not been finalised. During preliminary planning it is noted that the development is likely to comprise a high rise building over a two to three level basement, with the possibility of up to a six level basement, requiring excavation to about 20 m below current surface levels.

10. Comments

10.1 Excavations

10.1.1 Excavatability

Excavation on the site is likely to penetrate through a relatively thin surface filling layer, into stiff and very stiff residual clays and then weathered rock.

Excavation of the filling, soil and extremely low to very low strength rock should be achievable using conventional earthmoving equipment such as tracked excavators. Excavation of low strength rock may require moderate ripping, while medium and high strength rock will be hard and very hard ripping and will probably require rock hammering.

Trafficability on the clay and weathered rock during bulk earthworks will generally require the use of tracked plant and machinery. Trafficability after the bulk excavation is completed may be improved by placement of a layer of compacted crushed concrete or similar, which may subsequently be used as sub-base for the basement floor slab.

All excavated materials will need to be disposed of in accordance with the provisions of the current legislation and guidelines including the EPA Waste Classification Guidelines.

10.1.2 Support

It is expected that the excavations on the site will extend to the site boundaries. Vertical excavations within the filling, clays and weathered rock will require both temporary and permanent support. Normally, medium or higher strength rock can stand vertically, however, the rock cores recovered from the bores have numerous fractured zones and joints moderately to steeply dipping (ie. at between 30° to near vertical). These joints, if adversely orientated and 'daylighting' in the face of the excavation can form large wedges of rock that can become unstable. Therefore, shoring will generally be required to the medium and high strength siltstone and sandstone layer encountered between depths of 12.2 m and 14.8 m (dependant on excavation depth).

It is expected that a soldier pile shoring system would be suitable for the site. This system would include anchored soldier piles, drilled at 2 – 3 m spacings to below excavation level, with structural shotcrete panels between the soldiers progressively installed during excavation in lifts of approximately 2 m.

10.1.3 Design

The shoring systems will require lateral restraint to be provided by either ground anchors or internal props. Alternatively top-down construction may be adopted, particularly if anchors cannot be used or if it is necessary to reduce wall movements.

The number of rows of support required to provide lateral restraint to the shoring is dependent on the basement depth.

For a multi-propped wall, the magnitude of lateral earth pressure acting on perimeter shoring walls may be approximated as a uniform rectangular pressure of 6H (kPa), where H is the total height of the retained material in metres.

Additional pressures should be allowed where surcharging occurs either from loadings from traffic and/or other loadings associated with the use of the adjoining properties, or arising from construction plant. Unless positive drainage measures can be incorporated to prevent water pressure build-up behind the wall, the full hydrostatic head should be allowed for in design, allowing for the soil unit weight to reduce to buoyant conditions.

To estimate the passive resistance of the piles, it is suggested that an ultimate passive pressure of 2000 kPa is adopted for rock (low strength or better) over any "toe in" length developed at the base of the piles, from about 1 m below the base level of the excavation, or any service trench or other excavations adjacent to the wall.

In view of the possibility of steeply dipping joints within the medium and high strength rock, it is recommended that the walls and/or temporary ground anchors are also designed to support potential rock wedges. It is normally suggested that all earth and rock retaining walls should be designed to withstand a horizontal force per unit width of $4H^2$ (kN) where H is the total height in metres of the excavation.

10.1.4 Ground Anchors

If temporary ground anchors are used for the support of excavations and/or shoring systems, their design may be carried out on the basis of the maximum bond stresses given in Table 8.

Table 8: Recommended Bond Stresses for Temporary Rock Anchor Design

Material Description	Maximum Allowable Bond Stress (kPa)	Maximum Ultimate Bond Stress (kPa)
Stiff to Very Stiff Clay and Extremely Low and Very Low strength Rock	60 (unless smeared then 20)	100
Low to Medium Strength Rock	200	400
Medium and High Strength Rock	400	800

The parameters given in Table 8 assume that the drilled holes are clean and adequately flushed. The anchors should be bonded behind a line drawn up at 45 degrees from the bulk excavation, and "lift-off" tests should be carried out to confirm the anchor capacities. It is suggested that ground anchors should be proof loaded to 125% of the design working load and locked-off at no higher than 80% of the working load.

It is anticipated that the building will support the basement excavation over the long term and therefore the ground anchors are expected to be temporary only. The use of permanent anchors, if required, would require careful attention to corrosion protection for which further geotechnical advice should be sought.

It should be noted that permission will be required from adjacent property owners prior to installing bolts/anchors below their land. Due consideration should also be given to buried services and possibly basements on surrounding properties.

The parameters provided in Table 8 could also be used to design vertical anchors. In this case, the cone-pull out failure mechanism should be assessed in the design process.

10.1.5 Excavation Induced Ground Movement

If a relatively large excavation is proposed, there is likely to be some ground movements on the adjacent properties due to stress relief effects. In soils, precedence suggests that well-constructed and propped or anchored walls embedded below the excavation may experience lateral deflections of less than 0.1% to 0.5% of the excavation depth. There may also be some stress relief movements when excavating through the high strength laminite which may currently have high horizontal stresses.

It is recommended that survey monitoring of the shoring walls and adjacent buildings should be carried out in critical areas to measure the vertical and lateral movements. The monitoring should be carried out using precise levelling techniques to 0.5 mm accuracy, with measurements taken on a weekly basis during the basement construction period.

10.1.6 Vibrations

During excavation, it will be necessary to use appropriate methods and equipment to keep ground vibrations at adjacent buildings and structures within acceptable limits. The level of acceptable vibration is dependent on various factors including the type of building structure, its structural condition, the frequency range of vibrations produced by the construction equipment, the natural frequency of the building and the vibration transmitting medium.

Ground vibration can be strongly perceptible to humans at levels above 2.5 mm/s component peak particle velocity (PPVi). This is generally much lower than the vibration levels required to cause structural damage to buildings. The Australian Standard AS2670.2-1990 *"Evaluation of human exposure to whole-body vibrations – continuous and shock induced vibrations in buildings (1-80 Hz)"* indicates an acceptable day time limit of 8 mm/s component PPVi for human comfort.

Based on the experience of DP and reference to AS2670, it is suggested that a maximum component PPVi of 8 mm/sec (applicable at the foundation level of existing buildings) be employed at this site to reduce the risk of causing architectural damage to surrounding modern, well-constructed buildings. Separate specific advice should be sought on acceptable vibration levels for any heritage buildings in the area.

As the magnitude of vibration transmission is site specific, it is recommended that a vibration trial be undertaken at the commencement of rock excavation. The trial may indicate that smaller or different types of excavation equipment should be used for bulk (or detailed) excavation purposes.

10.2 Groundwater and Dewatering

The groundwater level measured within the rock from monitoring wells has been measured at depths between 7.9 m to 8.9 m below ground. Relatively high permeabilities have been recorded in the fractured rock. If the proposed basement level is below the groundwater level it is expected that water flows into unlined excavations could be significant.

While the cheapest option for temporary support of the excavation would be to use soldier piles with shotcrete infill panels, this system has no real capacity to prevent groundwater inflow to the site and there is a risk that there could be large groundwater inflows which would require disposal off site and potentially drawdown of groundwater surrounding the site.

If the basement is to be tanked then watertight, perimeter shoring walls tied into a hydrostatic floor slab would generally be required for the permanent (ie. final) basement structure. During excavation and construction, dewatering, possibly by 'sump-and-pump' methods, will be required inside the cut-off walls. The design groundwater uplift pressure for any hydrostatic slabs should be calculated taking into account the potential groundwater level rises. This uplift resistance may be applied by the weight of the building, friction piles or ground anchors or a combination of these. In normal circumstances the weight of the finished structure (for buildings of more than about four storeys) is used to resist uplift in

the long-term so temporary dewatering needs to continue until the dead load of the structure is sufficient to restrain the structure from upward movement. A tanked basement would generally require the incorporation of a hydrostatic raft slab to resist uplift loads and to support the column/building loads, possibly with locally deepened beams and pads.

10.3 Foundations

Depending on the depth of the excavation the material exposed at the bulk excavation level is likely to be very low strength shale or better. Typical design bearing capacities for the different rock strengths are summarised in Table 9.

Table 9: Typical Design Parameters for Foundation Design

Foundation Stratum	Maximum Allowable Pressure		Maximum Ultimate Pressure	
	End Bearing (kPa)	Shaft Adhesion (Compression) (kPa)	End Bearing (kPa)	Shaft Adhesion (Compression) (kPa)
Extremely low strength rock	700	70	2,500	100
Very low to low strength rock	1,500	150	5,000	200
Medium strength rock	3,500	350	20,000	1,000
Medium to high strength rock	8,000	800	100,000	2,500

Foundations proportioned on the basis of the allowable bearing pressures in Table 9 would be expected to experience total downward settlements of less than 1% of the footing or pile diameter under the applied compression working load, with differential settlements between adjacent columns expected to be less than half of this value.

All footings/piles should be inspected by a geotechnical engineer to confirm that foundation conditions are suitable for the design parameters. Spoon testing should be carried out in at least one third of the footings which are designed for an allowable end bearing pressure of 3500 kPa or greater. Spoon testing generally involves drilling a 50 mm diameter hole below the base of the footing, to a depth of 1.5 times the footing width, followed by testing to check for the presence of weak/clay bands. If weak seams are detected then footings may need to be taken deeper to reach better foundation material.

10.4 Acid Sulphate Soils

Reference to the Acid Sulphate Soil Risk Map (produced by the Department of Land and Water Conservation) indicates the site is within an area of no known occurrence of acid sulphate soils (ASS). The site however is located within 1 km of an area mapped as disturbed terrain, potentially containing Acid Sulphate Soil (ASS).

Based on the ASS mapping and the laboratory testing it is considered that the soils are unlikely to contain AASS or PASS.

10.5 Seismic Loading

In accordance with AS1170-2007 "Structural Design Actions, Part 4 : Earthquake Actions in Australia" a hazard factor (Z) of 0.08 and a site subsoil Class C_e is considered to be appropriate for the site. The site subsoil Class C_e has been selected on the basis that the depth to rock on the site is relatively shallow but there will be soils acting on the basement walls.

11. Limitations

Douglas Partners (DP) has prepared this report for this project at 74 Rickard Road, Bankstown. This report is provided for the exclusive use of Western Sydney University for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

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

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

The scope for work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of filling of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such filling may contain contaminants and hazardous building materials.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This

design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the (geotechnical / environmental / groundwater) components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About This Report

About this Report

Douglas Partners

Introduction

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

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

Copyright

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

Borehole and Test Pit Logs

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

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

Groundwater

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

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

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

Reports

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

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

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

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

About this Report

Site Anomalies

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

Information for Contractual Purposes

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

Site Inspection

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

Appendix B

Drawings

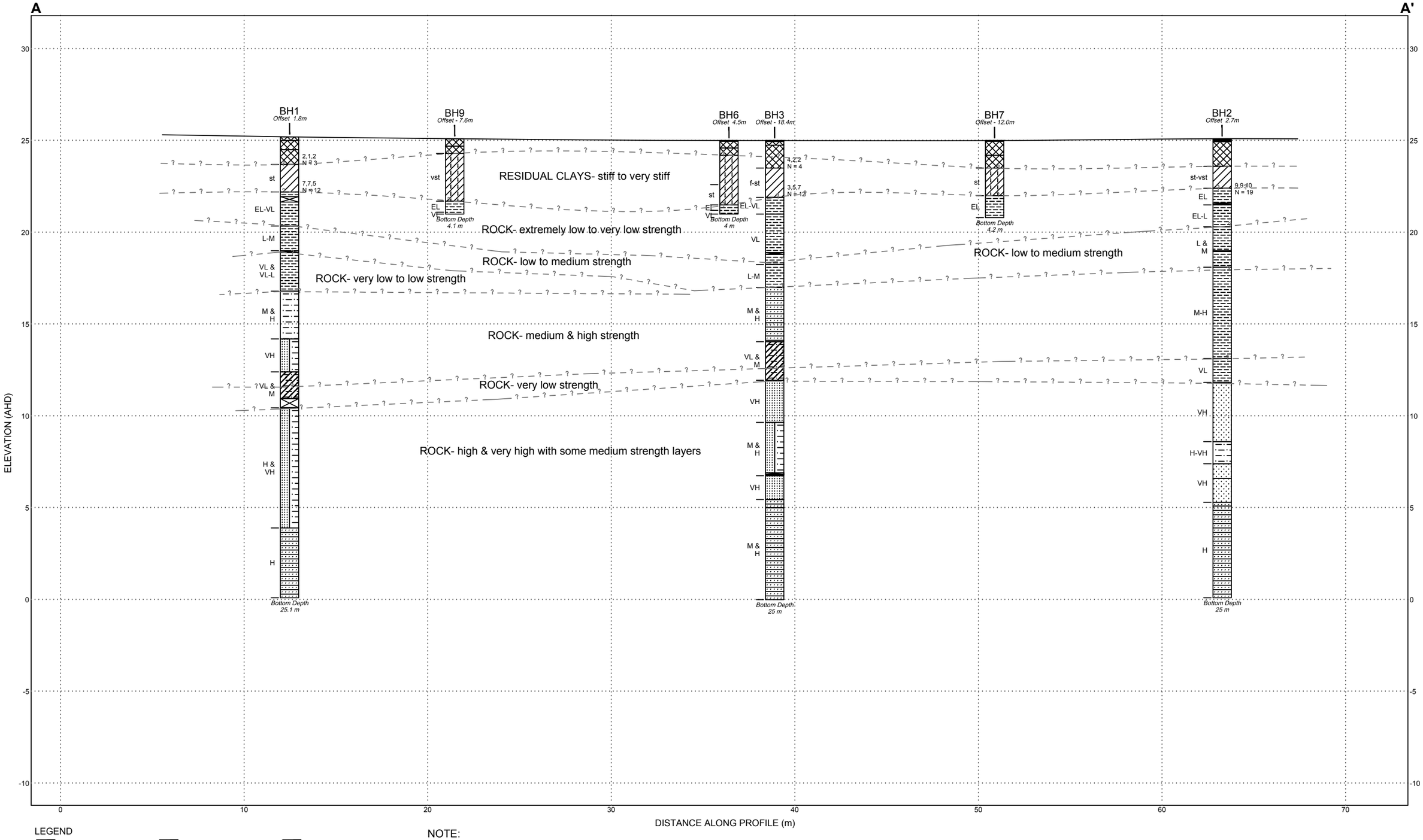
Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT:	Western Sydney University		
OFFICE:	Sydney	DRAWN BY:	AP
SCALE:	1:400 @ A3	DATE:	08/08/2018

TITLE: **Borehole Locations**
Bankstown City Campus Development
74 Rickard Road, Bankstown

N

PROJECT No:	86462.00
DRAWING No:	1
REVISION:	5



LEGEND

- Carbonaceous Siltstone
- Core Loss
- Asphaltic Concrete
- Clay
- Concrete
- Filling
- Laminite
- Sandstone
- Sandstone fine grained
- Shale
- Siltstone
- Silty Clay

NOTE:

1. Subsurface conditions are accurate at borehole locations. Variations in subsurface conditions may occur between borehole locations. Interpreted strata boundaries are approximate and should be used as a guide only.
2. Summary logs only. Should be read in conjunction with detailed logs.

ROCK STRENGTH
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High

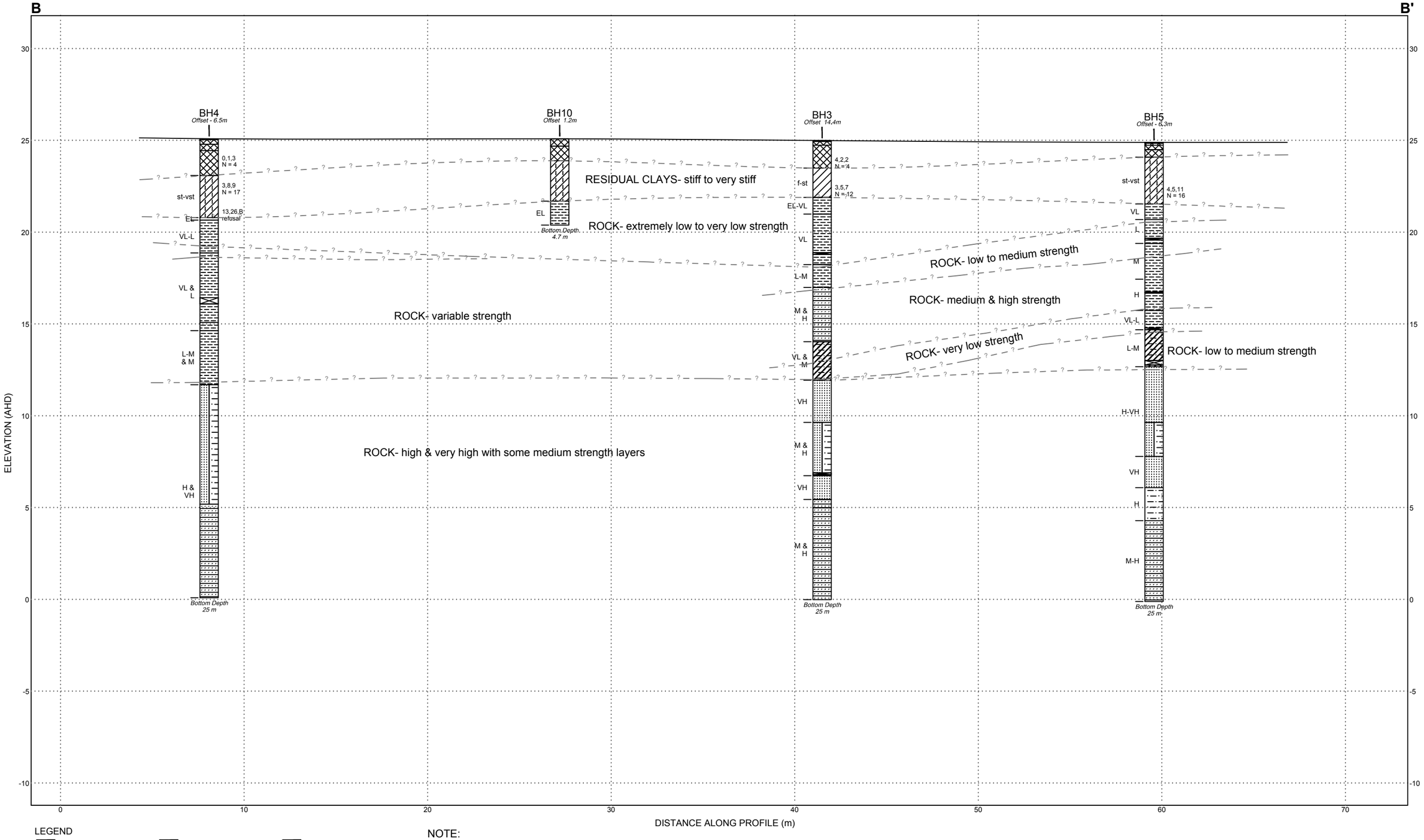
SOIL STRENGTH
f - firm
st - stiff
vst - very stiff

TESTS / OTHER
N - Standard penetration test value
- Water level
PP - Pocket penetrometer test value

0 4
Horizontal Scale (metres)
Natural Scale

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Western Sydney University		TITLE: **Interpreted Geotechnical Cross-Section A-A'**	PROJECT No: 86462.00
OFFICE: Sydney	DRAWN BY: JDB	**Bankstown City Campus Development**	DRAWING No: 2
SCALE: 1:200 (H) 1:200 (V) @ A3	DATE: 06.08.2018	**74 Rickard Rd, Bankstown**	REVISION: 0



LEGEND

- Carbonaceous Siltstone
- Core Loss
- Asphaltic Concrete
- Clay
- Filling
- Laminite
- Sandstone
- Shale
- Siltstone
- Silty Clay
- Topsoil

NOTE:

1. Subsurface conditions are accurate at borehole locations. Variations in subsurface conditions may occur between borehole locations. Interpreted strata boundaries are approximate and should be used as a guide only.
2. Summary logs only. Should be read in conjunction with detailed logs.

ROCK STRENGTH
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High

SOIL STRENGTH
f - firm
st - stiff
vst - very stiff

TESTS / OTHER
N - Standard penetration test value
▽ - Water level
PP - Pocket penetrometer test value

0 4
Horizontal Scale (metres)
Natural Scale

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Western Sydney University	TITLE: **Interpreted Geotechnical Cross-Section B-B'**	PROJECT No: 86462.00
OFFICE: Sydney / DRAWN BY: JDB	**Bankstown City Campus Development**	DRAWING No: 3
SCALE: 1:200 (H) 1:200 (V) @ A3 / DATE: 06.08.2018	**74 Rickard Rd, Bankstown**	REVISION: 0

Appendix C

Borehole Logs

Sampling

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

Disturbed samples taken during drilling provide information on colour, type, 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 into the soil and withdrawing it to obtain 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.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) 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 samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

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

The test results are reported in the following form.

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

  4,6,7
  N=13

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

  15, 30/40 mm

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.

Soil Descriptions

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Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard AS 1726-1993, Geotechnical Site Investigations Code. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	20 - 63
Medium gravel	6 - 20
Fine gravel	2.36 - 6
Coarse sand	0.6 - 2.36
Medium sand	0.2 - 0.6
Fine sand	0.075 - 0.2

The proportions of secondary constituents of soils are described as:

Term	Proportion	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	20 - 35%	Sandy Clay
Slightly	12 - 20%	Slightly Sandy Clay
With some	5 - 12%	Clay with some sand
With a trace of	0 - 5%	Clay with a trace of sand

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	vs	<12
Soft	s	12 - 25
Firm	f	25 - 50
Stiff	st	50 - 100
Very stiff	vst	100 - 200
Hard	h	>200

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	SPT N value	CPT qc value (MPa)
Very loose	vl	<4	<2
Loose	l	4 - 10	2 -5
Medium dense	md	10 - 30	5 - 15
Dense	d	30 - 50	15 - 25
Very dense	vd	>50	>25

Soil Descriptions

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Transported soils - formed somewhere else and transported by nature to the site; or
- Filling - moved by man.

Transported soils may be further subdivided into:

- Alluvium - river deposits
- Lacustrine - lake deposits
- Aeolian - wind deposits
- Littoral - beach deposits
- Estuarine - tidal river deposits
- Talus - scree or coarse colluvium
- Slopewash or Colluvium - transported downslope by gravity assisted by water. Often includes angular rock fragments and boulders.

Rock Strength

Rock strength is defined by the Point Load Strength Index ($Is_{(50)}$) and refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects. The test procedure is described by Australian Standard 4133.4.1 - 2007. The terms used to describe rock strength are as follows:

Term	Abbreviation	Point Load Index $Is_{(50)}$ MPa	Approximate Unconfined Compressive Strength MPa*
Extremely low	EL	<0.03	<0.6
Very low	VL	0.03 - 0.1	0.6 - 2
Low	L	0.1 - 0.3	2 - 6
Medium	M	0.3 - 1.0	6 - 20
High	H	1 - 3	20 - 60
Very high	VH	3 - 10	60 - 200
Extremely high	EH	>10	>200

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$. It should be noted that the UCS to $Is_{(50)}$ ratio varies significantly for different rock types and specific ratios should be determined for each site.

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Extremely weathered	EW	Rock substance has soil properties, i.e. it can be remoulded and classified as a soil but the texture of the original rock is still evident.
Highly weathered	HW	Limonite staining or bleaching affects whole of rock substance and other signs of decomposition are evident. Porosity and strength may be altered as a result of iron leaching or deposition. Colour and strength of original fresh rock is not recognisable
Moderately weathered	MW	Staining and discolouration of rock substance has taken place
Slightly weathered	SW	Rock substance is slightly discoloured but shows little or no change of strength from fresh rock
Fresh stained	Fs	Rock substance unaffected by weathering but staining visible along defects
Fresh	Fr	No signs of decomposition or staining

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with some fragments
Fractured	Core lengths of 40-200 mm with some shorter and longer sections
Slightly Fractured	Core lengths of 200-1000 mm with some shorter and longer sections
Unbroken	Core lengths mostly > 1000 mm

Rock Descriptions

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq \text{100 mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or better. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Symbols & Abbreviations

Douglas Partners

Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U_{50}	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

Symbols & Abbreviations

Graphic Symbols for Soil and Rock

General

- Asphalt
- Road base
- Concrete
- Filling

Soils

- Topsoil
- Peat
- Clay
- Silty clay
- Sandy clay
- Gravelly clay
- Shaly clay
- Silt
- Clayey silt
- Sandy silt
- Sand
- Clayey sand
- Silty sand
- Gravel
- Sandy gravel
- Cobbles, boulders
- Talus

Sedimentary Rocks

- Boulder conglomerate
- Conglomerate
- Conglomeratic sandstone
- Sandstone
- Siltstone
- Laminite
- Mudstone, claystone, shale
- Coal
- Limestone

Metamorphic Rocks

- Slate, phyllite, schist
- Gneiss
- Quartzite

Igneous Rocks

- Granite
- Dolerite, basalt, andesite
- Dacite, epidote
- Tuff, breccia
- Porphyry

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.9 AHD
EASTING: 318381
NORTHING: 6245551
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 86462.00
DATE: 11/7/2018
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW, HW, MW, SW, FS, FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
	0.2	FILLING: dark brown, sand filling (topsoil) with rootlets.							A			
		FILLING: dark brown, slightly gravelly sand filling with ash.							A			
	0.7	FILLING: poorly compacted, light grey-brown, gravelly clay filling, moist							A			
24	1								S			2,1,2 N = 3
	1.5	CLAY: stiff, orange-brown and pale grey clay, silty, moist							A			
23	2											
		2.5m: some ironstone gravel						Unless otherwise stated rock is fractured along planar rough bedding planes dipping at 0°-10°	A			
22	3								S			7,7,5 N = 12
	3.0	SHALE: extremely to very low then very low strength, highly weathered, fractured and slightly fractured, grey brown shale										
	3.55							3.25m: CORE LOSS: 300mm				
21	4							3.78m: J 45°-70°, cu, ro, fe 4.15-4.25m: Cs 4.33-4.35m: Ds	C	90	50	PL(A) = 0.1
	4.85	SHALE: low to medium and medium strength, slightly weathered, slightly fractured grey shale						4.80-4.85m: Ds				
20	5							5.06m: J 70°, pl, sm, fe 5.43-5.60m:J 85°, pl, sm, cln				PL(A) = 0.3
19	6							5.90-6.90m: J 35°&90°, pl, ro, cbs shale				
	6.2							6.2m: CORE LOSS: 100mm				
	6.3	SHALE: very low and very low to low strength, slightly weathered, fragmented to fractured and slightly fractured, pale grey shale 6.7-7.4m: medium strength										PL(A) = 0.1
18	7							7.2m: J 70°, pl, sm, cln 7.50-7.60m: fg	C	97	52	PL(A) = 0.4
17	8							8.06-8.16m: J 85°, pl, sm, cln 8.16-8.30m: fg 8.38m: B 0°, cly co				
		8.10-8.35m: carbonaceous shale band										
	8.4	SILTSTONE: medium then high strength, fresh, slightly fractured, grey siltstone						8.63m: J 30°, pl, ro, cln 8.73m: J 70°, pl, sm, cln 8.83-8.85m: fg				PL(A) = 0.4
16	9							9.05m: J 30°, un, ro, cln 9.22-9.45m: J 70°-85°, st/un, ro, cln 9.52m: J 45°, pl, ro, cln	C	100	95	PL(A) = 0.7
15												

RIG: Scout 2 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger (TC-Bit) to 2.5m, Wash bore to 3.25m, NMLC coring to 25.1m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: Standpipe installed to 25.1m (screen 4.1m to 25.1m, gravel 4.0m to 25.1m, bentonite 3.6m to 4.1m, backfill to GL with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.9 AHD
EASTING: 318381
NORTHING: 6245551
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 86462.00
DATE: 11/7/2018
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW, HW, MW, SW, FS, FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		SILTSTONE: medium then high strength, fresh, slightly fractured, grey siltstone *(continued)*						10.42m: J 60°, pl, sm, gravel				PL(A) = 2.9
14	11 / 11.0	INTERBEDDED SILTSTONE AND SANDSTONE: very high strength, fresh, slightly fractured and unbroken, pale grey fine grained sandstone (30%), interbedded and laminated with grey siltstone (70%)							C	100	95	PL(A) = 3.2
13	12	12.10-12.45m: very low to low strength, carbonaceous shale band						12.07-12.16m: fg				PL(A) = 3.1
12	12.8 / 13	CARBONACEOUS SHALE: very low and medium strength, highly and slightly weathered, fragmented and fractured, dark grey to black carbonaceous shale						12.8m: B 0°, fe 12.9m: B 0°, cbs co 1mm 13.35-13.55m: fg, cbs band 13.85-14.00m: fg, cbs band 14.00-14.15m: J sv, un, ro, cly 14.15-14.25m: Ds 14.25m: CORE LOSS: 500mm	C	80	60	PL(A) = 0.8
11	14											
10	14.75 / 15	INTERBEDDED SILTSTONE AND SANDSTONE: high and very high strength, fresh, slightly fractured and unbroken, light grey fine grained calcareous sandstone (70%), interbedded with grey siltstone (30%)						14.9m: J 45°, ti	C	100	100	PL(A) = 1.5
9	16											PL(A) = 5.1
8	17							16.56m: B 10°, fg 10mm 17.4m: J 45°, pl, sm, cln	C	100	100	PL(A) = 4.8 PL(A) = 3.7
7	18											
6	19							>>	C	100	100	PL(A) = 3.1 PL(A) = 2.5
5												

RIG: Scout 2 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger (TC-Bit) to 2.5m, Wash bore to 3.25m, NMLC coring to 25.1m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: Standpipe installed to 25.1m (screen 4.1m to 25.1m, gravel 4.0m to 25.1m, bentonite 3.6m to 4.1m, backfill to GL with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.9 AHD
EASTING: 318381
NORTHING: 6245551
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 86462.00
DATE: 11/7/2018
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW, HW, MW, SW, FS, FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		INTERBEDDED SILTSTONE AND SANDSTONE: high and very high strength, fresh, slightly fractured and unbroken, light grey fine grained calcareous sandstone (70%), interbedded with grey siltstone (30%) *(continued)*							C	100	100	PL(A) = 5.3
	21.3	LAMINITE: high strength, fresh, unbroken, pale grey fine grained sandstone (40%) interlaminated with grey siltstone (60%)						21.30-21.35m: fg				
												PL(A) = 2.6
												PL(A) = 1.7
									C	100	98	
								23.2m: J 45°, pl, ro, cln				
												PL(A) = 1.8
									C	100	100	PL(A) = 1.5
	25.1	Bore discontinued at 25.1m Target depth reached										

RIG: Scout 2 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger (TC-Bit) to 2.5m, Wash bore to 3.25m, NMLC coring to 25.1m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: Standpipe installed to 25.1m (screen 4.1m to 25.1m, gravel 4.0m to 25.1m, bentonite 3.6m to 4.1m, backfill to GL with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BORE: 1 PROJECT: BANKSTOWN JULY 2018

3.25 – 8.0m

BORE: 1 PROJECT: BANKSTOWN JULY 2018

8.0 – 13.0m

BORE: 1 PROJECT: BANKSTOWN JULY 2018

13.0 – 18.0m

BORE: 1 PROJECT: BANKSTOWN JULY 2018

18.0 – 23.0m

BORE: 1 PROJECT: BANKSTOWN JULY 2018

23.0 – 25.1m

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.5 AHD
EASTING: 318431
NORTHING: 6245542
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 86462.00
DATE: 19/7/2018
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
24	0.14	ASPHALTIC CONCRETE					
	0.16	CONCRETE					
		FILLING - removed using vacuum excavator truck					
23	1.5	CLAY: stiff to very stiff, orange mottled grey clay, slightly silty and a trace of ironstone gravel, moist. 2.0m: becoming grey mottled red at 2.0m with very low strength shale gravel. 2.2m: becoming stiff		E* E E			
22	2.7	SHALE: extremely low strength, grey shale.		S			9,9,10 N = 19
21	3.58	SHALE: extremely low then very low strength, extremely then highly weathered, highly fractured, grey-brown shale.	3.5m: CORE LOSS: 80mm; 3.60-4.29m: Ds; 4.29m: J 60°, pl,cln; 4.39m: J 45°, pl, cln; 4.4m: B 0°, pl, cly vn; 4.62-4.78m: Ds	C	98	76	PL(A) = 0.27
20	4.8	SHALE: low and medium strength, slightly weathered, slightly fractured, dark brown shale.	5.51m: J 65°, pl, cln				PL(A) = 0.65
19							PL(A) = 0.41
18	6.14	6.60-7.00m: carbonaceous shale band	6.04m: B 0°, pl, cly 5mm; 6.06m: B 0°, pl, cly 5mm; 6.11m: CORE LOSS: 30mm; 6.64-6.80m: J 85°-60°, st, cln				
17	7.0	SHALE: medium then high strength, fresh, slightly fractured then unbroken, grey shale.	7.46m: B 0°, pl, cly vn; 7.74m: B 0°, pl, cly 3mm; 8.21-8.25m: Cs; 8.76m: B 0°, pl, cly 8mm	C	99	97	PL(A) = 0.51; PL(A) = 2.6
16							
15				C	100	94	PL(A) = 1.6

Degree of Weathering: EW HW MW SW FS FR
Graphic Log
Rock Strength: Ex Low, Very Low, Low, Medium, High, Very High, Ex High
Water
Fracture Spacing (m): 0.01, 0.05, 0.10, 0.50, 1.00

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CLN/RB/SI **CASING:** HW to 2.5m

TYPE OF BORING: Diatube to 0.16m, Vacuum Truck to 1.5m, Solid flight auger (TC-Bit) to 2.5m, Wash bore to 3.5m, NMLC coring to 25.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: *BD2/20180719 taken from 1.7-1.8m.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.5 AHD
EASTING: 318431
NORTHING: 6245542
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 86462.00
DATE: 19/7/2018
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
		SHALE: medium then high strength, fresh, slightly fractured then unbroken, grey shale. *(continued)*					PL(A) = 0.9
14							
	11			C	100	94	
13							PL(A) = 1.2
	12 11.97	SHALE: very low strength, slightly weathered and fresh, fragmented to fractured, dark brown shale with medium strength shale bands.	11.99-12.21: Ds				
12			12.45m: B 0°, pl, cly 5mm 12.51-12.56m: fg 12.63-12.78m: Ds 12.87m: B 0°, pl, cly 8mm				PL(A) = 0.59
	13						
	13.27	SANDSTONE: very high strength, fresh, unbroken, light grey fine grained sandstone with some high strength siltstone bands.					PL(A) = 3.6
11				C	100	86	
	14						
10			14.30-14.31m: Ds				PL(A) = 1.2
	15						
9							PL(A) = 4.4
	16						
8	16.5	SILTSTONE: high to very high strength, fresh, unbroken dark grey siltstone with medium strength shale and very high fresh sandstone.					PL(A) = 6.4
	17		16.75m: B 0°, pl, cly 3mm	C	100	100	PL(A) = 0.64
7	17.7	SANDSTONE: very high strength, fresh, unbroken, fine grained sandstone with grey siltstone.					
	18						PL(A) = 2.6
6	18.5	SANDSTONE: very high strength, fresh, slightly fractured, pale grey, fine grained, calcareous sandstone.	18.36-18.43m: fg				
	19			C	100	98	PL(A) = 4.1
5	19.8						
	20.0	LAMINITE: (see next page)					PL(A) = 3.1

Degree of Weathering: EW HW MW SW FS FR
Graphic Log
Rock Strength: Ex Low, Very Low, Low, Medium, High, Very High, Ex High
Water
Fracture Spacing (m): 0.01, 0.05, 0.10, 0.50, 1.00

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CLN/RB/SI **CASING:** HW to 2.5m

TYPE OF BORING: Diatube to 0.16m, Vacuum Truck to 1.5m, Solid flight auger (TC-Bit) to 2.5m, Wash bore to 3.5m, NMLC coring to 25.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: *BD2/20180719 taken from 1.7-1.8m.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.5 AHD
EASTING: 318431
NORTHING: 6245542
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 86462.00
DATE: 19/7/2018
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW, HW, MW, SW, FS, FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		LAMINITE: high strength, fresh, unbroken, pale grey to grey laminite with approxmately 40% fine grained sandstone laminations.										PL(A) = 3.3
4									C	100	98	
	21							>>				
3												PL(A) = 2.4
	22								C	100	100	
2												PL(A) = 1.7
	23							23.11-23.19m: J 60°, pl, cln				
1												PL(A) = 1.1
	24								C	100	100	
0												PL(A) = 1.7
	25 25.0	Bore discontinued at 25.0m Limit of Investigation										
-1												
	26											
-2												
	27											
-3												
	28											
-4												
	29											
-5												

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CLN/RB/SI **CASING:** HW to 2.5m

TYPE OF BORING: Diatube to 0.16m, Vacuum Truck to 1.5m, Solid flight auger (TC-Bit) to 2.5m, Wash bore to 3.5m, NMLC coring to 25.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: *BD2/20180719 taken from 1.7-1.8m.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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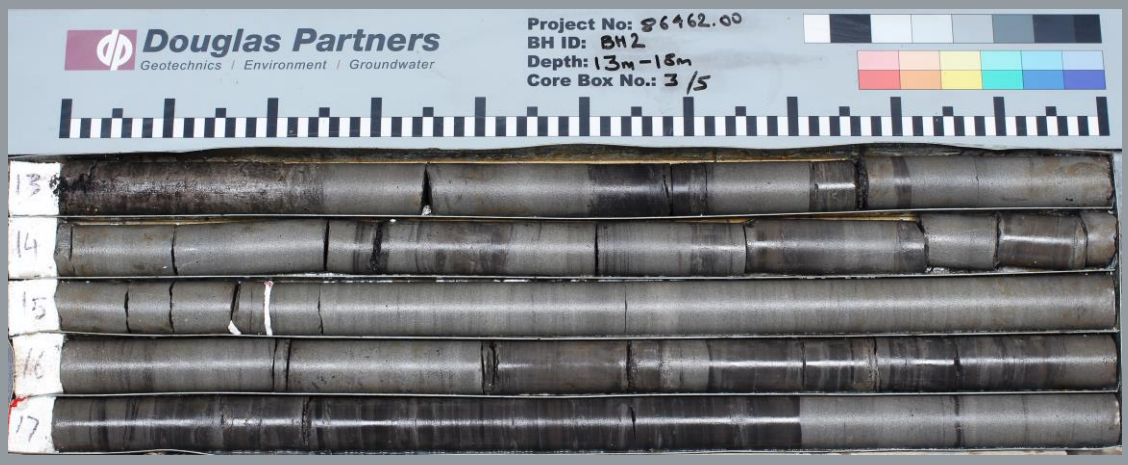
BORE: 2 PROJECT: BANKSTOWN JULY 2018

3.5 – 7.0m

BORE: 2 PROJECT: BANKSTOWN JULY 2018

8.0 – 13.0m

BORE: 2 PROJECT: BANKSTOWN JULY 2018



13.0 – 18.0m

BORE: 2 PROJECT: BANKSTOWN JULY 2018

18.0 – 23.0m

BORE: 2 PROJECT: BANKSTOWN JULY 2018

23.0 – 25.0m

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.5 AHD
EASTING: 318403
NORTHING: 6245526
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 86462.00
DATE: 10 - 11/7/2018
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Type	Core Rec. %	RQD %	Test Results & Comments
	0.05	ASPHALTIC CONCRETE				
	0.25	FILLING: roadbase gravel filling.				
24		FILLING: dark brown, sand filling with fine to medium igneous gravel and trace of plastic and sandstone gravel.	A			
	1		S			4,2,2 N = 4
23	1.5	CLAY: firm then stiff, red clay, slightly silty with a trace of ironstone gravel, moist.	A*			
	2					
22		2.7m: becoming red mottled grey	S			3,5,7 N = 12
	3					
	3.1	SHALE: extremely to very low strength, extremely to highly weathered, pale grey-brown shale.				
21						
	4					
	4.0	SHALE: very low strength, highly weathered, fractured and slightly fractured, grey-brown shale.				
20						PL(A) = 0.11
	5		C	97	0	
19						
	6					
	6.2					
18						PL(A) = 0.16
	6.75	SHALE: low to medium strength, slightly weathered, fragmented and slightly fractured, grey to dark grey shale with very low strength carbonaceous shale band from 6.6m.				
	7					PL(A) = 0.35
17			C	100	70	
	8					
	8.0	LAMINITE: medium and high strength, fresh, slightly fractured, pale grey and grey laminite with approximately 25% fine grained sandstone interlaminated with 75% siltstone.				
16						PL(A) = 1.8
	9					
15			C	100	96	PL(A) = 0.75

Degree of Weathering: EW HW MW SW FS FR
Graphic Log
Rock Strength: Ex Low, Very Low, Low, Medium, High, Very High, Ex High
Water
Fracture Spacing (m): 0.01, 0.05, 0.10, 0.50, 1.00

Discontinuities: B - Bedding, J - Joint, S - Shear, F - Fault

Unless otherwise stated rock is fractured along planar rough bedding planes dipping at 0°-10°

3.8m: J45°, pl, sm, cly
3.9m: J20°, pl, sm, cly
4.24m: J45°, pl, ro, fe, cly
4.75-4.78m: Cs
5.3m: J60°, pl, ro, fe, fg 50mm
5.50-6.10m; Ds
6.1m: CORE LOSS: 100mm
6.20-6.70m: B's, 5-10°, he, fe
6.5m: J35°, he, fe
6.9m: J45°, pl, ro, fe
7m: B0°, cly 10mm
7.25-7.35m: fg
7.62-7.70m; fg
7.85m: J85°, un, ro, cln
8m: B0°, cly 10mm
8.2m: J80°, pl, sm, cln
8.86m: B5°, cly co 3mm
9.25m: B0°, gravel inclusion

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CL/SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid lfight auger (TC-Bit) to 2.5m, Wash bore to 3.55m, NMLC coring to 25.0m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: *BD1/20180710 take from 1.5-1.6m. 70% water loss at 14.30m.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

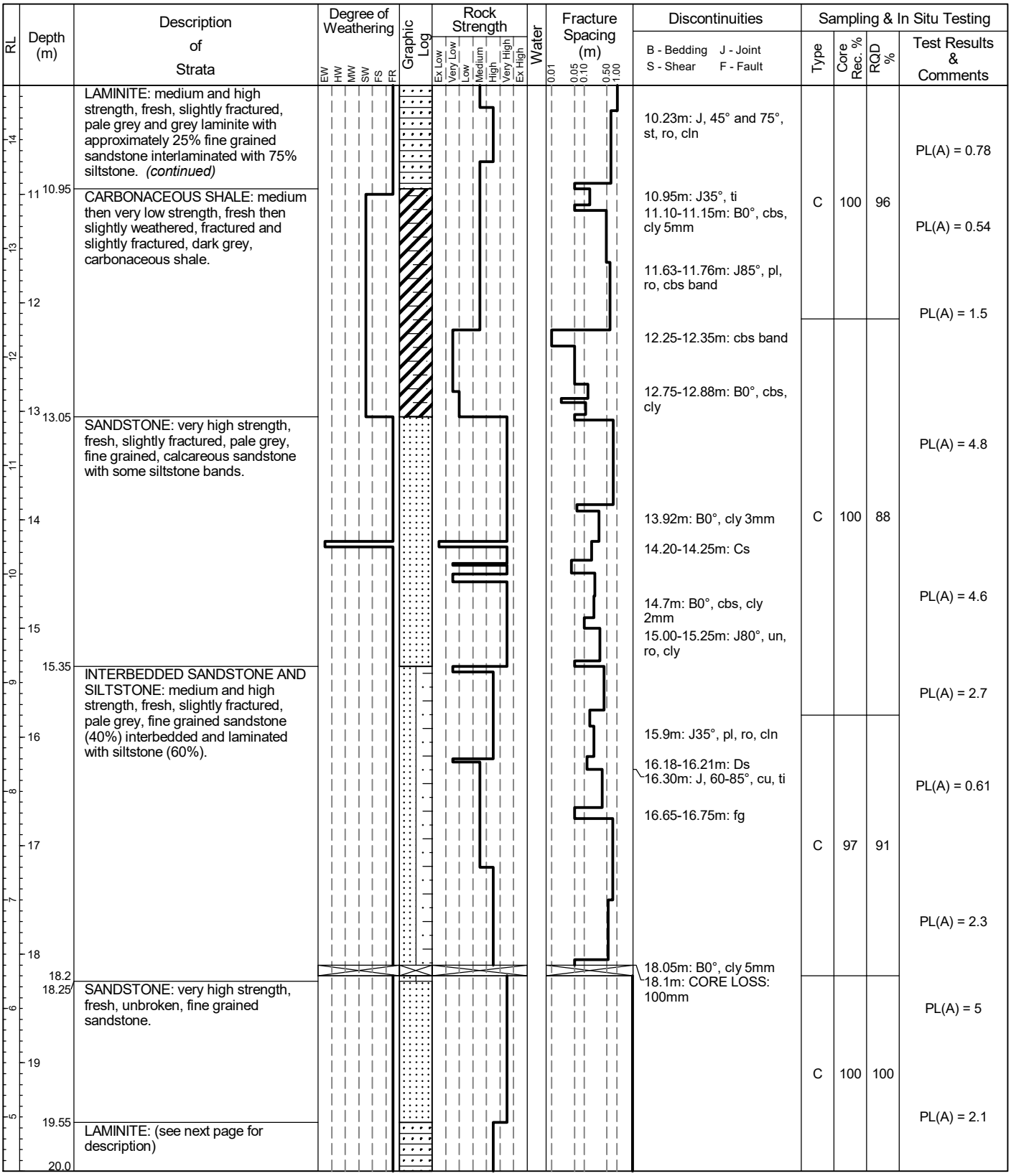
Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.5 AHD
EASTING: 318403
NORTHING: 6245526
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 86462.00
DATE: 10 - 11/7/2018
SHEET 2 OF 3



RIG: Scout 2 **DRILLER:** SS **LOGGED:** CL/SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid lfight auger (TC-Bit) to 2.5m, Wash bore to 3.55m, NMLC coring to 25.0m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: *BD1/20180710 take from 1.5-1.6m. 70% water loss at 14.30m.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.5 AHD
EASTING: 318403
NORTHING: 6245526
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 86462.00
DATE: 10 - 11/7/2018
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW, HW, MW, SW, FS, FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		LAMINITE: medium and high strength, fresh, slightly fractured and unbroken, pale grey to grey laminite with approximately 25% fine grained sandstone interlaminated with grey siltstone 75%.							C	100	100	PL(A) = 2.2
	21											PL(A) = 1.3
								21.20-21.25m: sand, possible drilling cuttings				
								21.78-28.81m: fg 21.81m: J30°, pl, sm, cln 21.91m: J30°, pl, ro, cly				
	22											PL(A) = 0.95
								22.55m: J20°, pl, sm, fg 10mm	C	100	94	
	23											
								23.25m: J65°, pl, ro, cln				PL(A) = 0.94
	24											
									C	100	100	PL(A) = 1.4
	25 25.0	Bore discontinued at 25.0m Target depth reached										
	26											
	27											
	28											
	29											

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CL/SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid lfight auger (TC-Bit) to 2.5m, Wash bore to 3.55m, NMLC coring to 25.0m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: *BD1/20180710 take from 1.5-1.6m. 70% water loss at 14.30m.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BORE: 3 PROJECT: BANKSTOWN JULY 2018

3.55 – 8.0m

BORE: 3 PROJECT: BANKSTOWN JULY 2018

8.0 – 13.0m

BORE: 3 PROJECT: BANKSTOWN JULY 2018

13.0 – 18.0m

BORE: 3 PROJECT: BANKSTOWN JULY 2018

18.0 – 23.0m

BORE: 3 PROJECT: BANKSTOWN JULY 2018

23.0 – 25.0m

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.3 AHD
EASTING: 318367
NORTHING: 6245510
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 86462.00
DATE: 9/7/2018
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Water	Fracture Spacing (m)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
24	0.05	TOPSOIL FILLING: dark grey, silty sand topsoil filling, moist.							A/E			
	0.3	FILLING: poorly compacted, dark brown, silty clay filling with some igneous gravel, 2-20mm, and some medium to coarse sand, moist.										
	0.65	FILLING: poorly compacted, brown mottled grey and orange-brown, silty clay filling with a trace of coarse sand and igneous gravel, 2-5mm, moist. Laminations observed in auger cuttings.							S			0,1,3 N = 4
23	1								E			
									B			
22	2.0	FILLING: poorly compacted, grey-brown, silty clay filling, with some shale gravel, 2-5mm, moist to wet. (Possibly natural)										
		SILTY CLAY: stiff to very stiff, grey mottled red-brown and brown, silty clay with some ironstone gravel, 2-5mm, MC > PL, moist.							E			
	3								S			3,8,9 N = 17
21		3.50m: becoming shaly clay										
	4								S			13,26,B refusal Bouncing
20	4.3											
	4.43	SHALE: extremely low strength, grey shale.										
		SHALE: very low to low strength, highly weathered, fractuerd and slightly fractured, grey-brown shale.						4.57m: B0°, pl, ro, cly 10mm				PL(A) = 0.1
19	5							5.41-5.70m: J(x6), 30-45°, pl, he, cly 2-5mm	C	100	0	PL(A) = 0.27
	6											
18	6.22	SHALE: very low and low strength, highly and moderately weathered, fractured and slightly fractured, grey shale with some dark grey, medium strength carbonaceous bands.						6.26-6.29m: J(x3), 45-55°, pl, ti, fe, cly 2-3mm 6.62-6.80m: Ds, 180mm				PL(A) = 0.43
	7							7.13m: J30°, pl, ro, cly 1mm 7.23-7.26m: Cz, 30mm 7.34m: J, 0° and 45°, st, ro, fe 7.45m: J40°, pl, ro, fe stn 7.47m: J, 20-30°, un, he, fe 7.54-7.60m: Ds, 60mm 7.67-7.70m: Cz, 30mm 7.89-7.90m: Cs, 10mm 7.9m: J90°, pl, ro, fe 8.10-8.16m: fg 8.37m: B0°, pl, ro, cly 1mm 8.45-8.49m: fg 8.55-8.63m: Sz, 80mm 8.66m: CORE LOSS: 340mm 9.00-9.09m: fg	C	88	21	PL(A) = 0.5
17	8											PL(A) = 0.62
16	9											
	9.0											
15									C	100	61	PL(A) = 0.66
	10.0											

RIG: Scout 2 **DRILLER:** SS **LOGGED:** LS/SI **CASING:** HW to 4.43m

TYPE OF BORING: Solid flight auger (TC-Bit) to 2.5m, Wash bore to 4.43m, NMLC coring to 25.0m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: Standpipe installed to 25.0m (screen 6.0m to 25.0m, gravel 5.5m to 25.0m, bentonite 5.0m to 5.5m, backfill to GL with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.3 AHD
EASTING: 318367
NORTHING: 6245510
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 86462.00
DATE: 9/7/2018
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
		SHALE: (continued)	9.23m: B0°, pl, ro, cly 3mm 9.30-9.60m: Ds, 300mm 9.68-9.73m: Ds, 50mm 10.14m: J30°, pl, ro, cly vn 10.20-10.24m: Ds, 40mm 10.40-10.45m: Cs, 50mm 11.20-11.25m: Ds, 50mm	C	100	61	PL(A) = 0.28 PL(A) = 0.72
	10.45	SHALE: low to medium and medium strength, moderately weathered then fresh, fragmented to fractured and slightly fractured, dark grey, carbonaceous shale with some fine grained sandstone laminations.	12.26-12.39m: Ds, 130mm 13.22m: B0°, pl, ro, cly 3mm 13.36-13.38m: Ds, 20mm	C	100	90	PL(A) = 0.33 PL(A) = 1.6 PL(A) = 7.4
	13.4	INTERBEDDED SANDSTONE AND SILTSTONE: high and very high strength, fresh, unbroken, pale grey, fine grained, slightly calcareous sandstone (60%) interbedded with grey siltstone (40%).		C	100	100	PL(A) = 2.1 PL(A) = 4.5 PL(A) = 1.9
				C	100	100	PL(A) = 3.8
	19.9			C	100	100	PL(A) = 4.6

Degree of Weathering: EW, HW, MW, SW, FS, FR
Graphic Log
Rock Strength: Ex Low, Very Low, Low, Medium, High, Very High, Ex High
Water
Fracture Spacing (m): 0.01, 0.05, 0.10, 0.50, 1.00

RIG: Scout 2 **DRILLER:** SS **LOGGED:** LS/SI **CASING:** HW to 4.43m

TYPE OF BORING: Solid flight auger (TC-Bit) to 2.5m, Wash bore to 4.43m, NMLC coring to 25.0m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: Standpipe installed to 25.0m (screen 6.0m to 25.0m, gravel 5.5m to 25.0m, bentonite 5.0m to 5.5m, backfill to GL with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.3 AHD
EASTING: 318367
NORTHING: 6245510
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 86462.00
DATE: 9/7/2018
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		LAMINITE: very high strength and high strength, fresh, unbroken, pale grey, fine grained sandstone (40%) interlaminated with grey siltstone (60%) *(continued)*										
4												PL(A) = 3.7
	21								C	100	100	
3												PL(A) = 1.6
	22											
2												PL(A) = 2.1
	23											
1									C	100	100	PL(A) = 2.1
	24											
0												PL(A) = 4.8
	25 25.0	Bore discontinued at 25.0m Target depth reached										
-1												
	26											
-2												
	27											
-3												
	28											
-4												
	29											
-5												

RIG: Scout 2 **DRILLER:** SS **LOGGED:** LS/SI **CASING:** HW to 4.43m

TYPE OF BORING: Solid flight auger (TC-Bit) to 2.5m, Wash bore to 4.43m, NMLC coring to 25.0m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: Standpipe installed to 25.0m (screen 6.0m to 25.0m, gravel 5.5m to 25.0m, bentonite 5.0m to 5.5m, backfill to GL with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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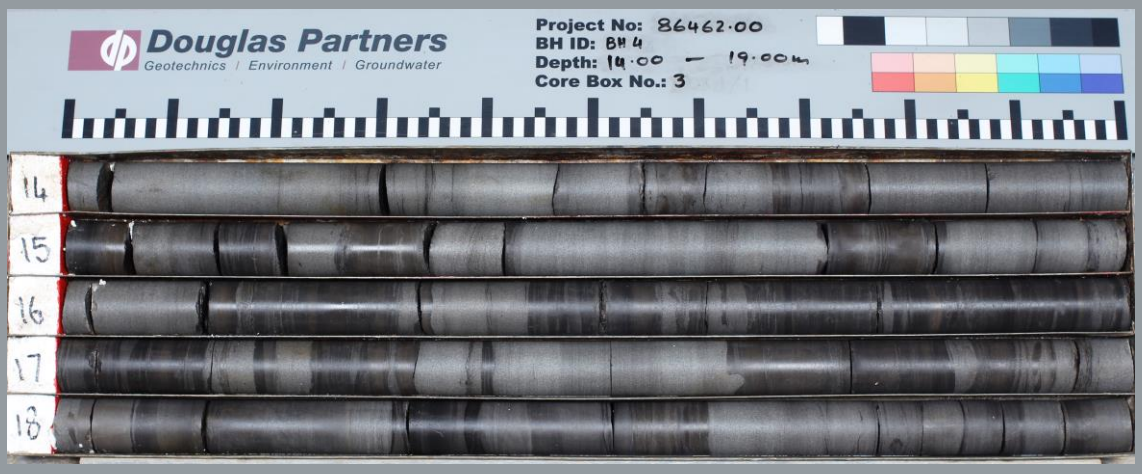
BORE: 4 PROJECT: BANKSTOWN JULY 2018

4.43 – 9.0m

BORE: 4 PROJECT: BANKSTOWN JULY 2018

9.0 – 14.0m

BORE: 4 PROJECT: BANKSTOWN JULY 2018



14.0 – 19.0m

BORE: 4 PROJECT: BANKSTOWN JULY 2018

19.0 – 24.0m

BORE: 4 PROJECT: BANKSTOWN JULY 2018

24.0 – 25.0m

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 23.8 AHD
EASTING: 318418
NORTHING: 6245503
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 86462.00
DATE: 17 - 18/7/2018
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW, HW, MW, SW, FS, FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
	0.05	ASPHALTIC CONCRETE							A			
	0.15	FILLING: grey-brown, gravelly (roadbase), cemented sand filling.							A			
	0.4	FILLING: orange-brown, silty sandy clay filling with some gravel.										
23	0.8	FILLING: orange-brown, silty clay filling with trace gravel (possible natural).							A			
	1	SILTY CLAY: stiff to very stiff, orange-brown, silty clay, MC ~ PL.							A			
22		1.2m: becoming mottled grey										
	2	1.8m: becoming stiff, grey mottled red							A			
		2.5m: with shale gravel							A			
21	3							Unless otherwise stated rock is fractured along rough planar bedding dipping at 0°-10°	S			4,5,11 N = 16
	3.35	SHALE: very low strength, extremely to highly weathered, fractured and slightly fractured, pale grey-brown shale						3.42-5.00m: fg 3.74-3.77m: Cs	A			PL(A) = 0.1
20	4							4.06m: B 0°, fg 10mm 4.16-4.20m: fg				
	4.2	SHALE: low strength, slightly weathered, slightly fractured, grey-brown shale										PL(A) = 0.2
19	5								C	97	55	
	5.32							5.16-5.22m: fg 5.22m: CORE LOSS: 100mm				
	5.5	SHALE: medium strength, slightly weathered, slightly fractured, grey shale										PL(A) = 0.6
18	6							5.90-6.25m: J 85°, pl, sm, cln				
								6.25m: B 0°, cly 5mm 6.35-6.85m: J (x3) 85°, 75°, 45°, st, sm, cln				PL(A) = 0.4
17	7							6.9m: J 60° ti 7.00-7.15m: J 80°, pl, sm, cln	C	99	92	
		7.45m: becoming high strength						7.27m: J 45° st, sm, cly 7.37m: J 25°, un, ro, cln 7.55m: J 80°, pl, ro, cly 7.7m: J 80°, pl, ro, cly				PL(A) = 2.2
16	8							7.88m: J 45°& 80°, st, ro, cly				
	8.15							8.15m: CORE LOSS: 50mm				
	8.2							8.3m: J 30°, pl, ro, cly 8.53-8.85m: J (x2) 70°, ti	C	100	100	PL(A) = 0.4
15	9							9.03-9.20m: J 45°& 85°, st, ro, cly 9.20-9.27m: Cs				
	9.15	SHALE: very low to low strength, slightly weathered, fractured, pale grey shale with some low strength bands						9.47-9.65m: J sv, un, ro, cly 9.60-10.00m: Ds	C	100	70	
14												

RIG: Scout 2 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 2.9m

TYPE OF BORING: Solid flight auger (TC-Bit) to 2.9m, Wash bore to 3.35m, NMLC coring to 25.0m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: Standpipe installed to 25.0m (screen 6.0m to 25.0m, gravel 5.5m to 25.0m, bentonite 4.9m to 5.5m, backfill to GL with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 23.8 AHD
EASTING: 318418
NORTHING: 6245503
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 86462.00
DATE: 17 - 18/7/2018
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
	10.2	CARBONACEOUS SHALE: low to medium strength, slightly weathered, fragmented to fractured, dark grey coal with some high strength shale bands at 11.3m	10.1m: CORE LOSS: 100mm 10.40-10.52m: J sv, pl, sm, cln 10.45-10.82m: fg, coal seam 11.00-11.20m: J 85°& 45°, st, sm, cln 11.40-11.86m: carbonaceous shale 11.88m: CORE LOSS: 240mm	C	86	50	PL(A) = 0.3 PL(A) = 1.3
	12.12 12.22	SANDSTONE: high to very high strength, slightly weathered, slightly fractured and unbroken, pale grey fine grained, calcareous sandstone with some siltstone bands	12.12m: J 30°, ti 13.65m: B 0°, cly vn 14.85m: B 0°, cly 3mm	C	100	92	PL(A) = 2.8 PL(A) = 4 PL(A) = 1.5
	15.25	INTERBEDDED SILTSTONE AND SANDSTONE: high to very high strength, fresh, unbroken, pale grey fine grained sandstone interbedded with grey medium strength siltstone	15.25m: J 90°, ti 16.00-16.10m: J 85°, pl, ro, cly 10mm	C	100	100	PL(A) = 0.9 PL(A) = 2.9
	17.1	SANDSTONE: very high strength, fresh, slightly fractured, grey fine grained sandstone	17.12m: J 20°, pl, sm, cln 17.62-17.65m: Ds				PL(A) = 2.9 PL(A) = 1
	18.8	SILTSTONE: high strength, fresh, unbroken, pale grey to grey siltstone	19.45m: B 0°, cly vn	C	100	100	PL(A) = 3.6 PL(A) = 1.3

RIG: Scout 2 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 2.9m

TYPE OF BORING: Solid flight auger (TC-Bit) to 2.9m, Wash bore to 3.35m, NMLC coring to 25.0m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: Standpipe installed to 25.0m (screen 6.0m to 25.0m, gravel 5.5m to 25.0m, bentonite 4.9m to 5.5m, backfill to GL with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 23.8 AHD
EASTING: 318418
NORTHING: 6245503
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 86462.00
DATE: 17 - 18/7/2018
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW, HW, MW, SW, FS, FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		SILTSTONE: high strength, fresh, unbroken, pale grey to grey siltstone *(continued)*							C	100	100	PL(A) = 1.1
	20.6	LAMINITE: medium to high strength, fresh, unbroken, pale grey to grey laminite with approximately 25% fine grained sandstone laminations						20.6m: J sv, pl, ro, cln				
3	21								C	100	100	PL(A) = 1.2
2	22											
1	23							>>				PL(A) = 0.9
0	24											PL(A) = 1.5
-1									C	100	100	PL(A) = 0.8
	25 25.0	Bore discontinued at 25.0m Limit of Investigation										
-2	26											
-3	27											
-4	28											
-5	29											
-6												

RIG: Scout 2 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 2.9m

TYPE OF BORING: Solid flight auger (TC-Bit) to 2.9m, Wash bore to 3.35m, NMLC coring to 25.0m.

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS: Standpipe installed to 25.0m (screen 6.0m to 25.0m, gravel 5.5m to 25.0m, bentonite 4.9m to 5.5m, backfill to GL with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BORE: 5 PROJECT: BANKSTOWN JULY 2018

3.35 – 8.0m

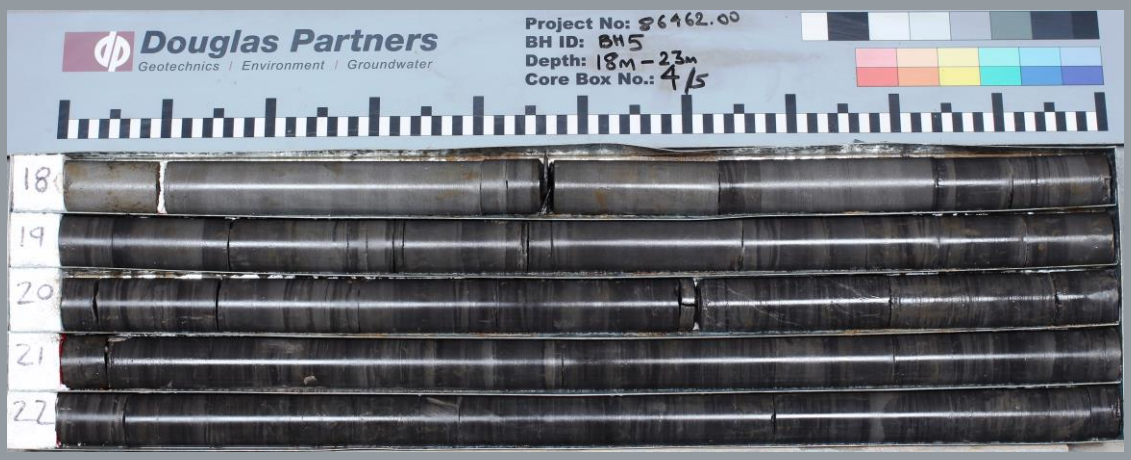
BORE: 5 PROJECT: BANKSTOWN JULY 2018

8.0 – 13.0m

BORE: 5 PROJECT: BANKSTOWN JULY 2018

13.0 – 18.0m

BORE: 5 PROJECT: BANKSTOWN JULY 2018



18.0 – 23.0m

BORE: 5 PROJECT: BANKSTOWN JULY 2018

23.0 – 25.0m

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.9 AHD
EASTING: 318405
NORTHING: 6245549
DIP/AZIMUTH: 90°/--

BORE No: BH6
PROJECT No: 86462.00
DATE: 13/7/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.04	ASPHALTIC CONCRETE		A	0.2				
	0.4	FILLING: grey brown, slightly gravelly (roadbase), cemented sand filling.		A	0.4				
	0.8	FILLING: orange and brown, clay filling with some sandstone gravel.		A	0.9				
24	1	SILTY CLAY: orange-brown mottled grey, silty clay, MC ~ PL.		A	1.4				
		1.5m: decomposed plant root							
23	2			A	2.4				
		2.4m: becoming stiff, light brown mottled grey							
22	3			A	3.0				
		3.0m: becoming more grey							
	3.5	SHALE extemely low strength, extremely weathered, grey shale.		A	3.5				
21	4	3.8m: becoming very low strength							
	4.0	Bore discontinued at 4.0m Limit of Investigation							
20	5								
19	6								
18	7								
17	8								
16	9								
15									

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CLN **CASING:** None

TYPE OF BORING: Solid flight auger (TC-Bit) to 4.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.5 AHD
EASTING: 318416
NORTHING: 6245530
DIP/AZIMUTH: 90°/--

BORE No: BH7
PROJECT No: 86462.00
DATE: 13/7/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.04	ASPHALTIC CONCRETE							
24		FILLING: grey-brown, slightly gravelly, cemented sand filling (roadbase) with basalt gravels.		A	0.2				
	0.8	FILLING: orange-brown, slightly gravelly, silty clay filling with some basalt gravels.		A	1.0				1
23	1.5	SILTY CLAY: stiff, orange-brown mottled grey, silty clay, MC ~ PL.		A	1.5				2
22		2.3m: becoming grey		A	2.5				
	3.0	SHALE: extremely low strength, extremely weathered, grey shale.		A	3.0				3
21		4.0m: becoming brown		A	4.0				4
	4.2	Bore discontinued at 4.2m Limit of Investigation							
20									5
19									6
18									7
17									8
16									9
15									

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CLN **CASING:** None

TYPE OF BORING: Solid flight auger (TC-Bit) to 4.2m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.6 AHD
EASTING: 318369
NORTHING: 6245529
DIP/AZIMUTH: 90°/--

BORE No: BH8
PROJECT No: 86462.00
DATE: 13/7/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING: dark brown, sand filling with some gravel and rootlets.		A	0.1				
	0.35	Bore discontinued at 0.35m Refusal on concrete at 0.35m							
24	1								1
23	2								2
22	3								3
21	4								4
20	5								5
19	6								6
18	7								7
17	8								8
16	9								9
15									

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CLN **CASING:** None

TYPE OF BORING: Solid flight auger (TC-Bit) to 0.35m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.6 AHD
EASTING: 318388
NORTHING: 6245540
DIP/AZIMUTH: 90°/--

BORE No: BH9
PROJECT No: 86462.00
DATE: 13/7/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILLING: dark brown, sand filling with some clay and rootlets (topsoil).		A	0.1				
	0.4	FILLING: dark grey, gravelly, sandy clay filling with basalt gravels.		A B	0.4 0.5		Bulk sample taken from 0.5-2.0m		
24	0.8	SILTY CLAY: very stiff, orange-brown, silty clay.		A	0.8				
	1	1.0m: becoming brown		A	1.0				1
23		1.5m: becoming orange mottled grey		A	1.5				
	2	2.0m: becoming red and slightly gravelly (ironstone gravel)		A	2.0				2
22		2.5m: becoming gravelly (ironstone gravel)							
	3								3
	3.4	SHALE: extremely low strength,extremely weathered, grey shale.		A	3.5				
21	4								4
	4.1	4.0m: becoming very low strength, grey-brown							
		Bore discontinued at 4.1m Limit of Investigation							
20	5								5
19	6								6
18	7								7
17	8								8
16	9								9
15									

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CLN **CASING:** None

TYPE OF BORING: Solid flight auger (TC-Bit) to 4.1m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.3 AHD
EASTING: 318387
NORTHING: 6245515
DIP/AZIMUTH: 90°/--

BORE No: BH10
PROJECT No: 86462.00
DATE: 13/7/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
24		FILLING: dark brown, clayey sand fillnig with rootlets (topsoil).		A	0.1				
	0.4	FILLING: orange, brown and grey, silty clay filling with some sandstone gravel and ash.		A B	0.4 0.5		Bulk sample taken from 0.5 to 1.5m		
	1								1
23	1.2	SILTY CLAY: orange-brown, silty clay, MC ~ PL.		A	1.2				
	2	1.8m: becoming red		A	2.0				2
22		2.5m: with ironstone gravel		A	2.5				
	3								3
21	3.4	SHALE: extremely low strength, extremely weathered, grey-red shale.		A	3.5				
	4	4.0m: becoming brown							4
20		4.5m: becoming very low strength, grey-brown		A	4.5				
	4.7	Bore discontinued at 4.7m Limit of Investigation							
	5								5
19									
	6								6
18									
	7								7
17									
	8								8
16									
	9								9
15									

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CLN **CASING:** None

TYPE OF BORING: Solid flight auger (TC-Bit) to 4.7m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.3 AHD
EASTING: 318400
NORTHING: 6245511
DIP/AZIMUTH: 90°/--

BORE No: BH11
PROJECT No: 86462.00
DATE: 13/7/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.04	ASPHALTIC CONCRETE							
24	0.4	FILLING: grey-brown, gravelly, cemeneted sand filling (roadbase).		A	0.2				
		FILLING: orange-brown mottled grey, silty clay filling with tree bark and some gravel (possible natural).		A	0.5				
1	1.0	SILTY CLAY: stiff, orange-brown, silty clay with some ironstone gravel.		A	1.0				1
23		1.5m: becoming more red, increased ironstone gravel content		A	1.5				
2									2
22									
3									3
21	3.4	SILTY CLAY: very stiff, grey-orange, slightly gravelly, silty clay.		A	3.4				
	3.8	SHALE: extremely low strength, extremely weathered, dark grey shale.		A	3.9				
4	4.1	Bore discontinued at 4.0m Limit of Investigation							4
20									
5									5
19									
6									6
18									
7									7
17									
8									8
16									
9									9
15									

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CLN **CASING:** None

TYPE OF BORING: Solid flight auger (TC-Bit) to 4.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
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BOREHOLE LOG

CLIENT: Western Sydney University
PROJECT: Bankstown City Campus Development
LOCATION: 74 Rickard Rd, Bankstown

SURFACE LEVEL: 24.0 AHD
EASTING: 318423
NORTHING: 6245521
DIP/AZIMUTH: 90°/--

BORE No: BH12
PROJECT No: 86462.00
DATE: 13/7/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
24	0.15	ASPHALTIC CONCRETE		A	0.2				
	0.4	FILLING: grey-brown, gravelly, cemented sand filling (roadbase) with some concrete gravel.		A	0.4				
	0.8	FILLING: dark brown, slightly sandy, silty clay filling with some gravel.		A	0.9				
23	1	FILLING: grey-brown, silty clay filling (possible natural).							1
	1.3	SILTY CLAY: very stiff, grey mottled orange, silty clay with trace gravel, MC ~ PL.		A	1.8				
22	2	2.0m: becoming dark brown-grey and wet 2.2m: becoming hard and orange with very low strength shale gravel		A	2.0				2
				A	2.5				
	2.9								
21	3	SHALE: very low strength, brown shale.		A	3.0				3
	3.3	Bore discontinued at 3.3m Limit of Investigation							
20	4								4
19	5								5
18	6								6
17	7								7
16	8								8
15	9								9

RIG: Scout 2 **DRILLER:** SS **LOGGED:** CLN **CASING:** None

TYPE OF BORING: Solid flight auger (TC-Bit) to 3.3m

WATER OBSERVATIONS: No free groundwater observed whilst augering.

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Appendix D

Permeability Testing

Douglas Partners
Geotechnics / Environment / Groundwater

Douglas Partners Pty Ltd
ABN 75 053 980 117
www.douglaspartners.com.au

Permeability Testing - Falling Head Test Report

Client:	Western Sydney University	Project No:	86462.00
Project:	Western Sydney Uni, Bankstown	Test date:	30-Jul-18
Location:	74 Rickard Rd, Bankstown	Tested by:	JAP

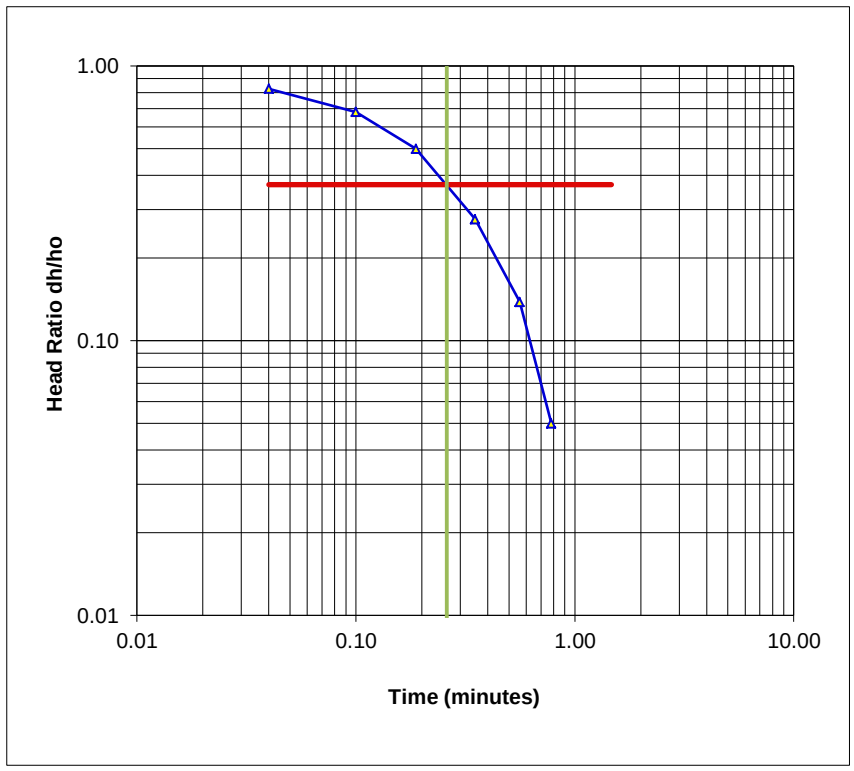
Test Location		**Test No.**	BH1	
Description:	BH1 Falling Head Test	Easting:	318381	m
Material type:	Typically Shale and Laminite	Northing	6245551	m
		Surface Level:	24.9	m AHD

Details of Well Installation

Well casing diameter (2r)	50	mm	Depth to water before test	8.6	m
Well screen diameter (2R)	76	mm	Depth to water at start of test	6	m
Length of well screen (Le)	21.1	m			

Test Results

Time (min)	Depth (m)	Change in Head: dH (m)	dH/Ho
0.01	5.99	2.61	1.004
0.04	6.45	2.15	0.827
0.10	6.83	1.77	0.681
0.19	7.3	1.30	0.500
0.35	7.88	0.72	0.277
0.56	8.24	0.36	0.138
0.78	8.47	0.13	0.050
1.47	8.6	0.00	0.000



To = 0.26 mins
15.6 secs

Theory: Falling Head Permeability calculated using equation by Hvorslev

$k = [r^2 \ln(Le/R)]/2Le\ To$

where r = radius of casing
R = radius of well screen
Le = length of well screen
To = time taken to rise or fall to 37% of initial change

Hydraulic Conductivity	**k =**	**6.0E-06**	m/sec
	=	**2.160**	cm/hour

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Permeability Testing - Falling Head Test Report

Client:	Western Sydney University	Project No:	86462.00
Project:	Western Sydney Uni, Bankstown	Test date:	30-Jul-18
Location:	74 Rickard Rd, Bankstown	Tested by:	JAP

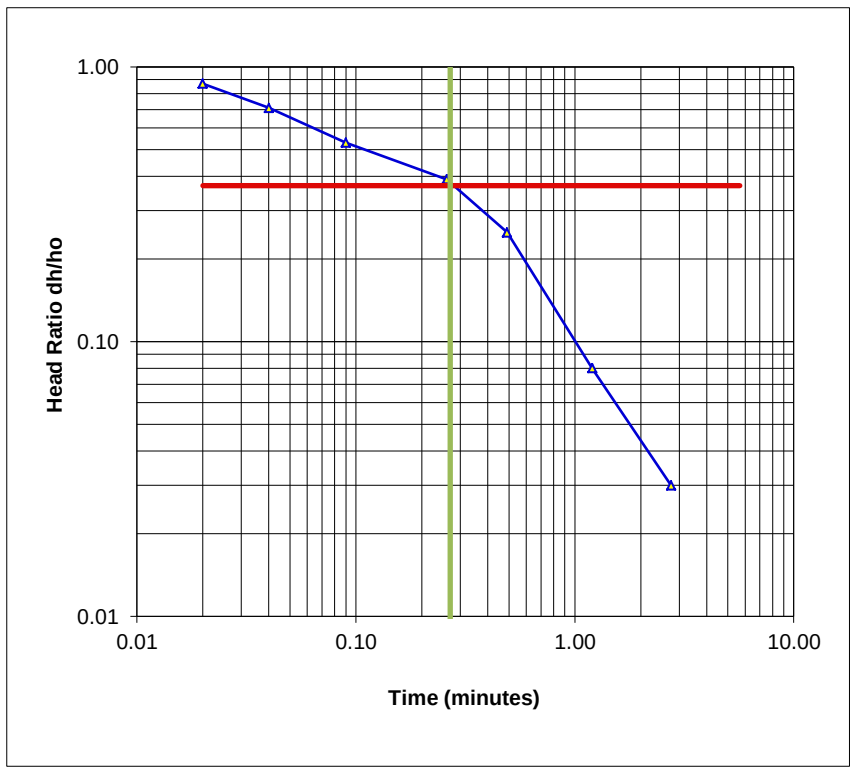
Test Location		**Test No.**	BH4	
Description:	BH4 Falling Head Test	Easting:	318367	m
Material type:	Typically Shale and Laminite	Northing	6245510	m
		Surface Level:	24.3	m AHD

Details of Well Installation

Well casing diameter (2r)	50	mm	Depth to water before test	7.9	m
Well screen diameter (2R)	76	mm	Depth to water at start of test	6.9	m
Length of well screen (Le)	19.5	m			

Test Results

Time (min)	Depth (m)	Change in Head: dH (m)	dH/Ho
0.01	6.93	0.97	0.970
0.02	7.03	0.87	0.870
0.04	7.19	0.71	0.710
0.09	7.37	0.53	0.530
0.26	7.51	0.39	0.390
0.49	7.65	0.25	0.250
1.20	7.82	0.08	0.080
2.75	7.87	0.03	0.030
5.66	7.9	0.00	0.000



To = 0.27 mins
16.2 secs

Theory: Falling Head Permeability calculated using equation by Hvorslev

$k = [r^2 \ln(Le/R)]/2Le\ To$

where r = radius of casing
R = radius of well screen
Le = length of well screen
To = time taken to rise or fall to 37% of initial change

Hydraulic Conductivity	**k =**	**6.2E-06**	m/sec
	=	**2.222**	cm/hour

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Permeability Testing - Rising Head Test Report

Client:	Western Sydney University	Project No:	86462.00
Project:	Western Sydney Uni, Bankstown	Test date:	30-Jul-18
Location:	74 Rickard Rd, Bankstown	Tested by:	JAP

Test Location

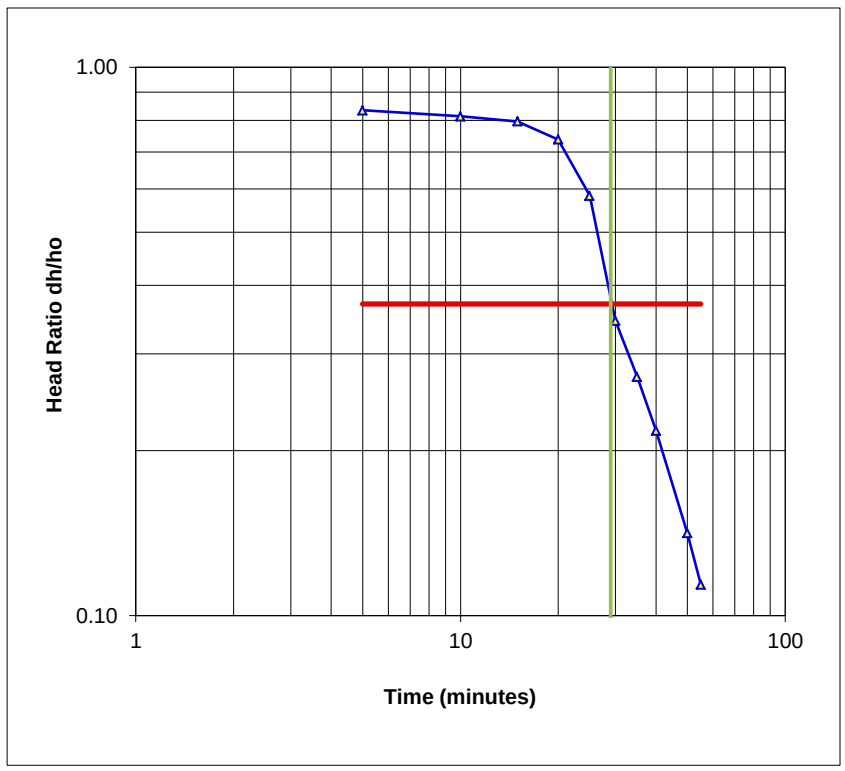
		Test No.	BH5	
Description:	BH5 Rising Head Test	Easting:	318418	m
Material type:	Typically Shale and Laminite	Northing	6245503	m
		Surface Level:	23.8	m AHD

Details of Well Installation

Well casing diameter (2r)	50	mm	Depth to water before test	8.3	m
Well screen diameter (2R)	76	mm	Depth to water at start of test	11.2	m
Length of well screen (Le)	19.5	m			

Test Results

Time (min)	Depth (m)	Change in Head: dH (m)	dH/Ho
0	11.20	2.90	1.000
5	10.72	2.42	0.834
10	10.66	2.36	0.814
15	10.61	2.31	0.797
20	10.44	2.14	0.738
25	9.99	1.69	0.583
30	9.3	1.00	0.345
35	9.09	0.79	0.272
40	8.93	0.63	0.217
50	8.71	0.41	0.141
55	8.63	0.33	0.114



To = 29 mins
1740 secs

Theory: Falling Head Permeability calculated using equation by Hvorslev

$k = [r^2 \ln(Le/R)]/2Le\ To$

where r = radius of casing
R = radius of well screen
Le = length of well screen
To = time taken to rise or fall to 37% of initial change

Hydraulic Conductivity	**k =**	**5.7E-08**	m/sec
	=	**0.021**	cm/hour

Appendix E

Laboratory Test Results

Material Test Report

Douglas Partners
Geotechnics / Environment / Groundwater
Douglas Partners Pty Ltd
Sydney Laboratory
96 Hermitage Road West Ryde NSW 2114
Phone: (02) 9809 0666
Fax: (02) 9809 0666
Email: mick.gref@douglaspartners.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

NATA
WORLD RECOGNISED ACCREDITATION

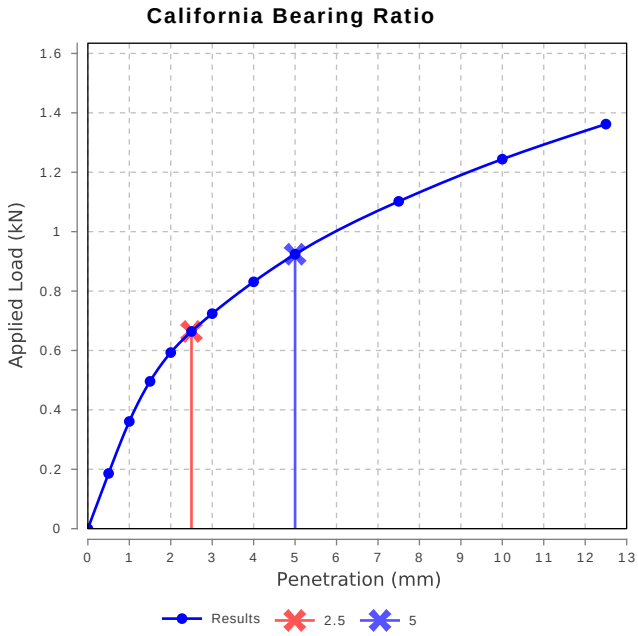
Approved Signatory: Michael Gref
NATA Accredited Laboratory Number: 828

Report Number:	**86462.00-2**
Issue Number:	1
Date Issued:	31/07/2018
Client:	Western Sydney University Victoria Road, Rydalmere NSW 2730
Contact:	Michelle Lee
Project Number:	86462.00
Project Name:	Bankstown City Campus Development
Project Location:	74 Rickard Rd, Bankstown
Work Request:	3506
Sample Number:	18-3506A
Date Sampled:	13/07/2018
Sampling Method:	Sampled by Engineering Department
Sample Location:	**BH4 (1.5 - 2.0m)**
Material:	Brown sandy silt and clay with trace of gravel

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m^3)	1.75		
Optimum Moisture Content (%)	18.5		
Laboratory Density Ratio (%)	100.0		
Laboratory Moisture Ratio (%)	100.0		
Dry Density after Soaking (t/m^3)	1.75		
Field Moisture Content (%)	18.4		
Moisture Content at Placement (%)	18.5		
Moisture Content Top 30mm (%)	20.1		
Moisture Content Rest of Sample (%)	18.8		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	194		
Swell (%)	0.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	44		
Plastic Limit (%)	15		
Plasticity Index (%)	**29**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Linear Shrinkage (%)	13.5		
Cracking Crumbling Curling	None		



Material Test Report

Douglas Partners
Geotechnics / Environment / Groundwater
Douglas Partners Pty Ltd
Sydney Laboratory
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Fax: (02) 9809 0666
Email: mick.gref@douglaspartners.com.au

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NATA
WORLD RECOGNISED ACCREDITATION

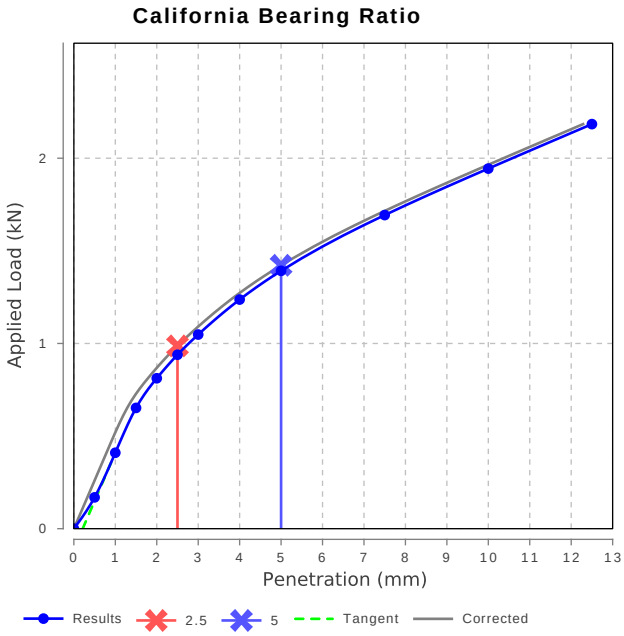
Approved Signatory: Michael Gref
NATA Accredited Laboratory Number: 828

Report Number:	**86462.00-2**
Issue Number:	1
Date Issued:	31/07/2018
Client:	Western Sydney University Victoria Road, Rydalmere NSW 2730
Contact:	Michelle Lee
Project Number:	86462.00
Project Name:	Bankstown City Campus Development
Project Location:	74 Rickard Rd, Bankstown
Work Request:	3506
Sample Number:	18-3506B
Date Sampled:	13/07/2018
Sampling Method:	Sampled by Engineering Department
Sample Location:	**BH9 (0.5 - 2.0m)**
Material:	Brown slightly gravelly, clayey silty sand

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**7**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m^3)	1.91		
Optimum Moisture Content (%)	14.5		
Laboratory Density Ratio (%)	100.0		
Laboratory Moisture Ratio (%)	100.0		
Dry Density after Soaking (t/m^3)	1.91		
Field Moisture Content (%)	14.8		
Moisture Content at Placement (%)	14.5		
Moisture Content Top 30mm (%)	16.2		
Moisture Content Rest of Sample (%)	14.9		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	192		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	1.9		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	48		
Plastic Limit (%)	15		
Plasticity Index (%)	**33**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Linear Shrinkage (%)	14.5		
Cracking Crumbling Curling	None		



Material Test Report

Douglas Partners
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WORLD RECOGNISED ACCREDITATION

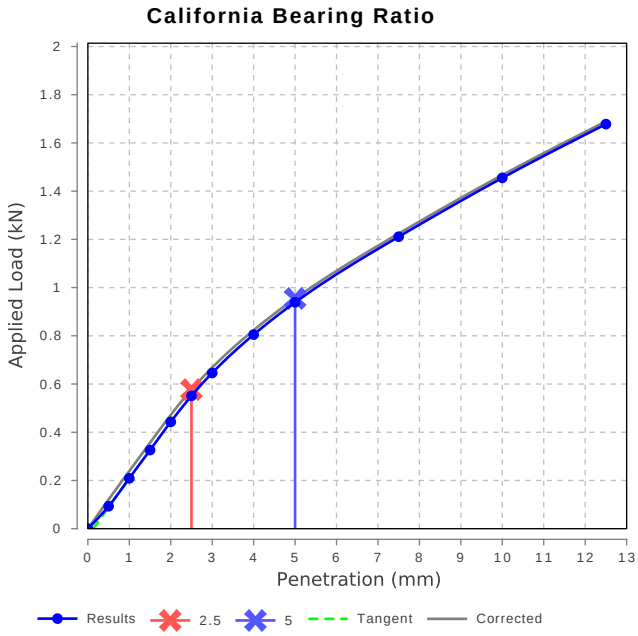
Approved Signatory: Michael Gref
NATA Accredited Laboratory Number: 828

Report Number: **86462.00-2**
Issue Number: 1
Date Issued: 31/07/2018
Client: Western Sydney University
Victoria Road, Rydalmere NSW 2730
Contact: Michelle Lee
Project Number: 86462.00
Project Name: Bankstown City Campus Development
Project Location: 74 Rickard Rd, Bankstown
Work Request: 3506
Sample Number: 18-3506C
Date Sampled: 13/07/2018
Sampling Method: Sampled by Engineering Department
Sample Location: **BH10 (0.5 - 1.5m)**
Material: Orange brown gravelly sandy clayey silt

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**5.0**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m^3)	1.98		
Optimum Moisture Content (%)	14.0		
Laboratory Density Ratio (%)	100.0		
Laboratory Moisture Ratio (%)	100.0		
Dry Density after Soaking (t/m^3)	1.96		
Field Moisture Content (%)	14.7		
Moisture Content at Placement (%)	14.0		
Moisture Content Top 30mm (%)	17.7		
Moisture Content Rest of Sample (%)	15.9		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	197		
Swell (%)	1.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	49		
Plastic Limit (%)	15		
Plasticity Index (%)	**34**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Linear Shrinkage (%)	14.5		
Cracking Crumbling Curling	None		



Material Test Report

Douglas Partners
Geotechnics / Environment / Groundwater
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WORLD RECOGNISED ACCREDITATION

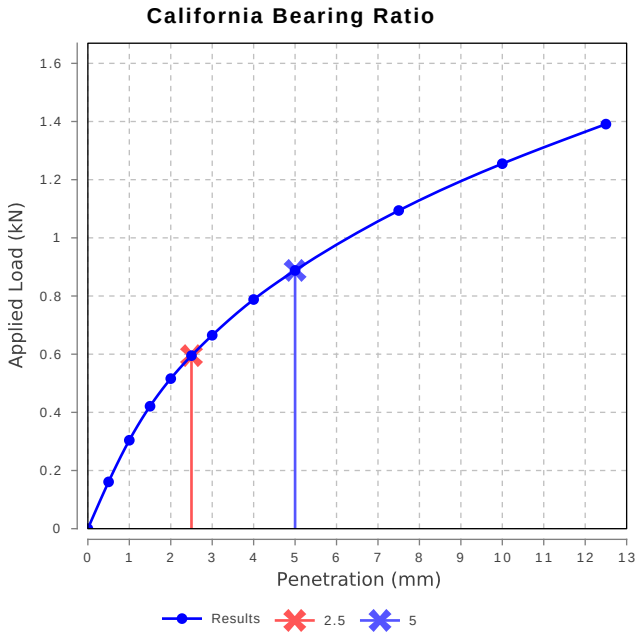
Approved Signatory: Michael Gref
NATA Accredited Laboratory Number: 828

Report Number: **86462.00-2**
Issue Number: 1
Date Issued: 31/07/2018
Client: Western Sydney University
Victoria Road, Rydalmere NSW 2730
Contact: Michelle Lee
Project Number: 86462.00
Project Name: Bankstown City Campus Development
Project Location: 74 Rickard Rd, Bankstown
Work Request: 3506
Sample Number: 18-3506D
Date Sampled: 13/07/2018
Sampling Method: Sampled by Engineering Department
Sample Location: **BH11 (0.5 - 1.5m)**
Material: Brown sandy clayey silt with some gravel

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**4.5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m^3)	1.82		
Optimum Moisture Content (%)	16.5		
Laboratory Density Ratio (%)	100.0		
Laboratory Moisture Ratio (%)	100.0		
Dry Density after Soaking (t/m^3)	1.82		
Field Moisture Content (%)	12.8		
Moisture Content at Placement (%)	16.7		
Moisture Content Top 30mm (%)	18.8		
Moisture Content Rest of Sample (%)	17.6		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	194		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	37		
Plastic Limit (%)	15		
Plasticity Index (%)	**22**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Linear Shrinkage (%)	12.0		
Cracking Crumbling Curling	None		



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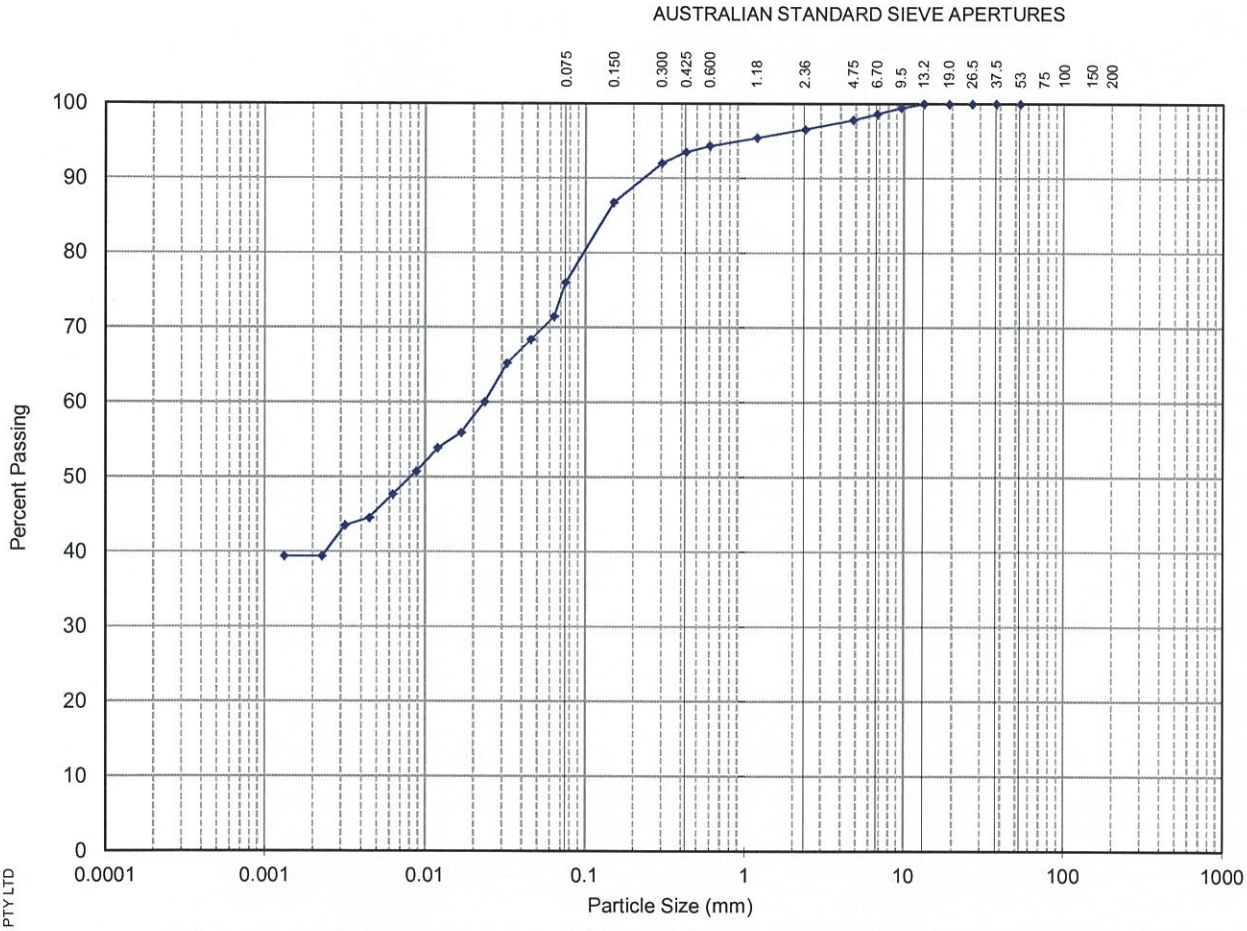
Results of Particle Size Distribution (Hydrometer)

Client :	Western Sydney University	**Project No. :**	86462
		Report No. :	2
Project :	Bankstown City Campus Development	**Report Date :**	30/7/2018
		Date Sampled:	13-Jul-18
Location :	74 Rickard Road, Bankstown	**Date of Test:**	18-Jul-18
Road No:	- **Sample / Pit No:** BH4	**Depth / Layer:**	1.5 - 2.0m
Chainage:	- **Section / Lot No:** -	**Test Request No:**	
		Page:	1 of 1



Sieve Size (mm)	% Passing
75.0	~
53.0	100%
37.5	100%
26.5	100%
19.0	100%
13.2	100%
9.5	99%
6.7	99%
4.75	98%
2.36	97%
1.18	95%
0.600	94%
0.425	94%
0.300	92%
0.150	87%
0.075	76%
0.046	68%
0.033	65%
0.023	60%
0.017	56%
0.012	54%
0.009	51%
0.006	48%
0.004	45%
0.003	44%
0.002	39%
0.001	39%

CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60	

Description: Brown sandy silt and clay with trace of gravel

Test Method(s): AS 1289.3.6.1, AS1289.3.6.3

Sampling Method(s): Sampled by Engineering Department

Loss in pretreatment: 0%

Remarks:

Type of Hydrometer: g/l

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Tested: AH
Checked: LW

Michael Gref
Senior Soil Technician

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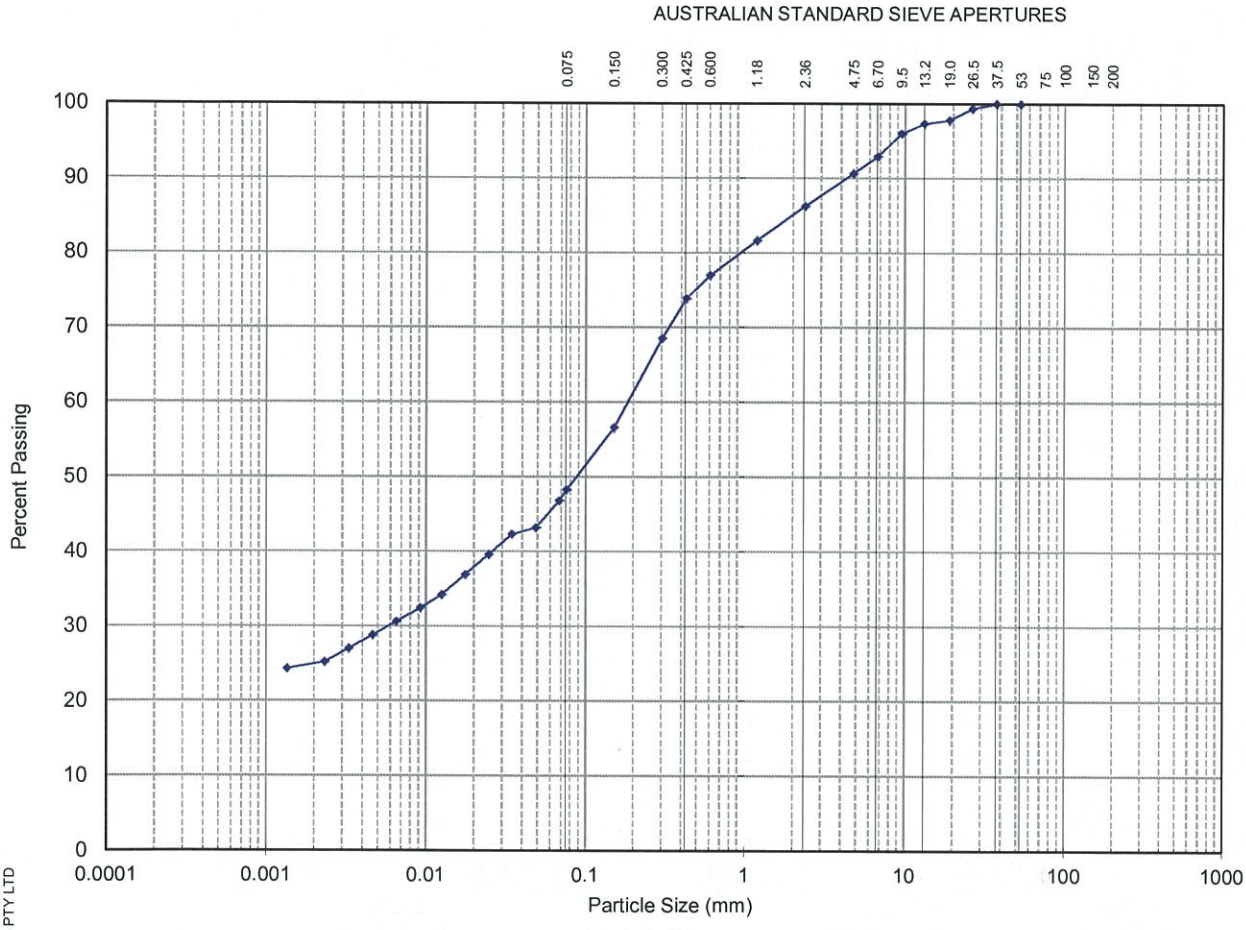
Results of Particle Size Distribution (Hydrometer)

Client :	Western Sydney University			**Project No. :**	86462
				Report No. :	3
Project :	Bankstown City Campus Development			**Report Date :**	30/7/2018
				Date Sampled:	13-Jul-18
Location :	74 Rickard Road, Bankstown			**Date of Test:**	18-Jul-18
Road No:	-	**Sample / Pit No:**	BH9	**Depth / Layer:**	0.5 - 2.0m
Chainage:	-	**Section / Lot No:**	-	**Test Request No:**	
				Page:	1 of 1



Sieve Size (mm)	% Passing
75.0	~
53.0	100%
37.5	100%
26.5	99%
19.0	98%
13.2	97%
9.5	96%
6.7	93%
4.75	91%
2.36	86%
1.18	82%
0.600	77%
0.425	74%
0.300	69%
0.150	57%
0.075	48%
0.048	43%
0.034	42%
0.025	40%
0.018	37%
0.012	34%
0.009	32%
0.007	31%
0.005	29%
0.003	27%
0.002	25%
0.001	24%

CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60	

Description: Brown slightly gravelly, clayey silty sand

Test Method(s): AS 1289.3.6.1, AS1289.3.6.3

Sampling Method(s): Sampled by Engineering Department

Loss in pretreatment: 0%

Remarks:

Type of Hydrometer: g/l

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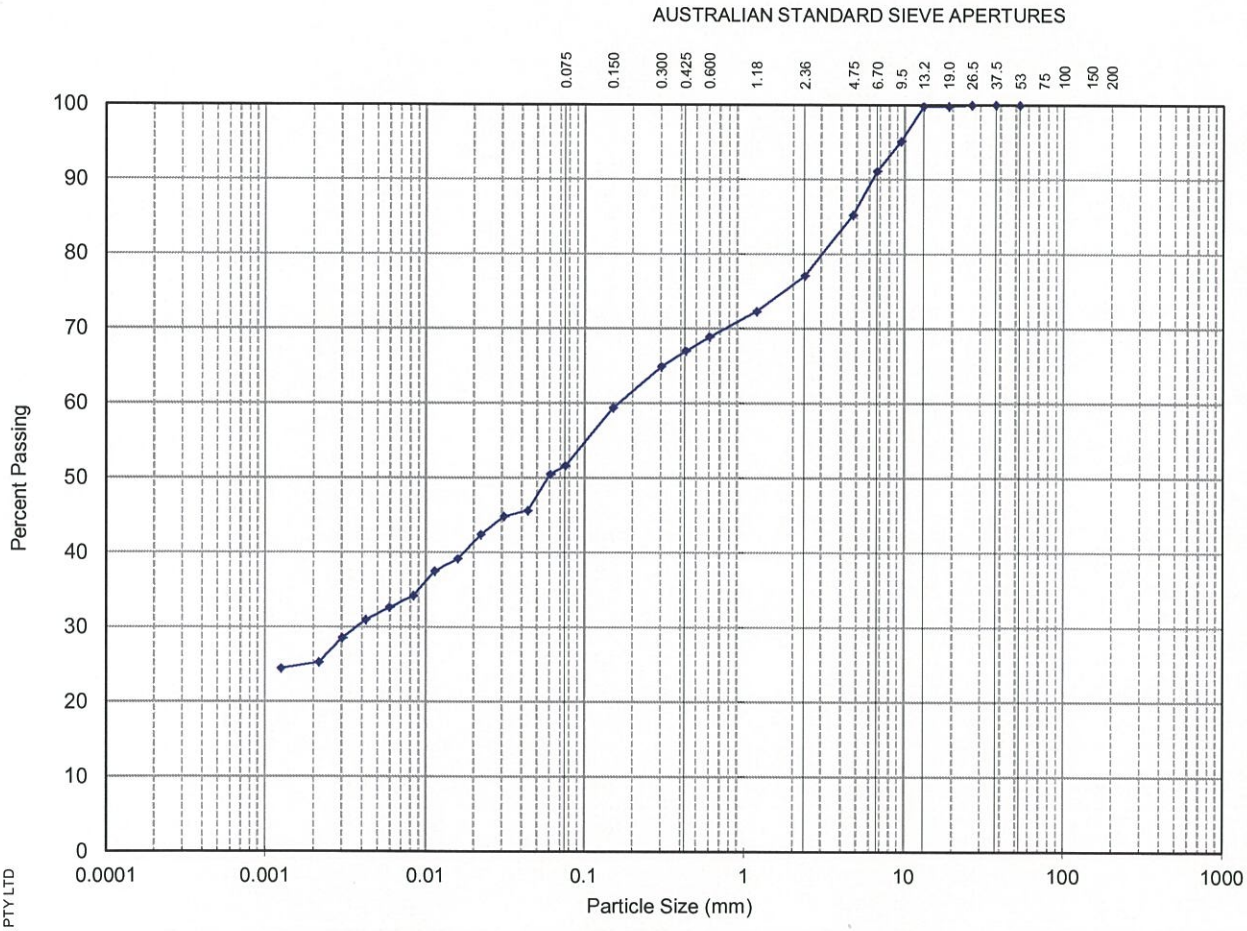
Results of Particle Size Distribution (Hydrometer)

Client :	Western Sydney University			**Project No. :**	86462
				Report No. :	4
Project :	Bankstown City Campus Development			**Report Date :**	30/7/2018
				Date Sampled:	13-Jul-18
Location :	74 Rickard Road, Bankstown			**Date of Test:**	18-Jul-18
Road No:	-	**Sample / Pit No:**	BH10	**Depth / Layer:**	0.5 - 1.5m
Chainage:	-	**Section / Lot No:**	-	**Test Request No:**	
				Page:	1 of 1



Sieve Size (mm)	% Passing
75.0	~
53.0	100%
37.5	100%
26.5	100%
19.0	100%
13.2	100%
9.5	95%
6.7	91%
4.75	85%
2.36	77%
1.18	72%
0.600	69%
0.425	67%
0.300	65%
0.150	59%
0.075	52%
0.044	46%
0.031	45%
0.022	42%
0.016	39%
0.011	38%
0.008	34%
0.006	33%
0.004	31%
0.003	29%
0.002	25%
0.001	24%

CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
0.002	0.006	0.02		0.06	0.2	0.6	2.0	6.0	20	60

Description: Orange brown gravelly sandy clayey silt

Test Method(s): AS 1289.3.6.1, AS1289.3.6.3

Sampling Method(s): Sampled by Engineering Department

Loss in pretreatment: 0%

Remarks:

Type of Hydrometer: g/l

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Tested: AH
Checked: LW

Michael Gref
Senior Soil Technician

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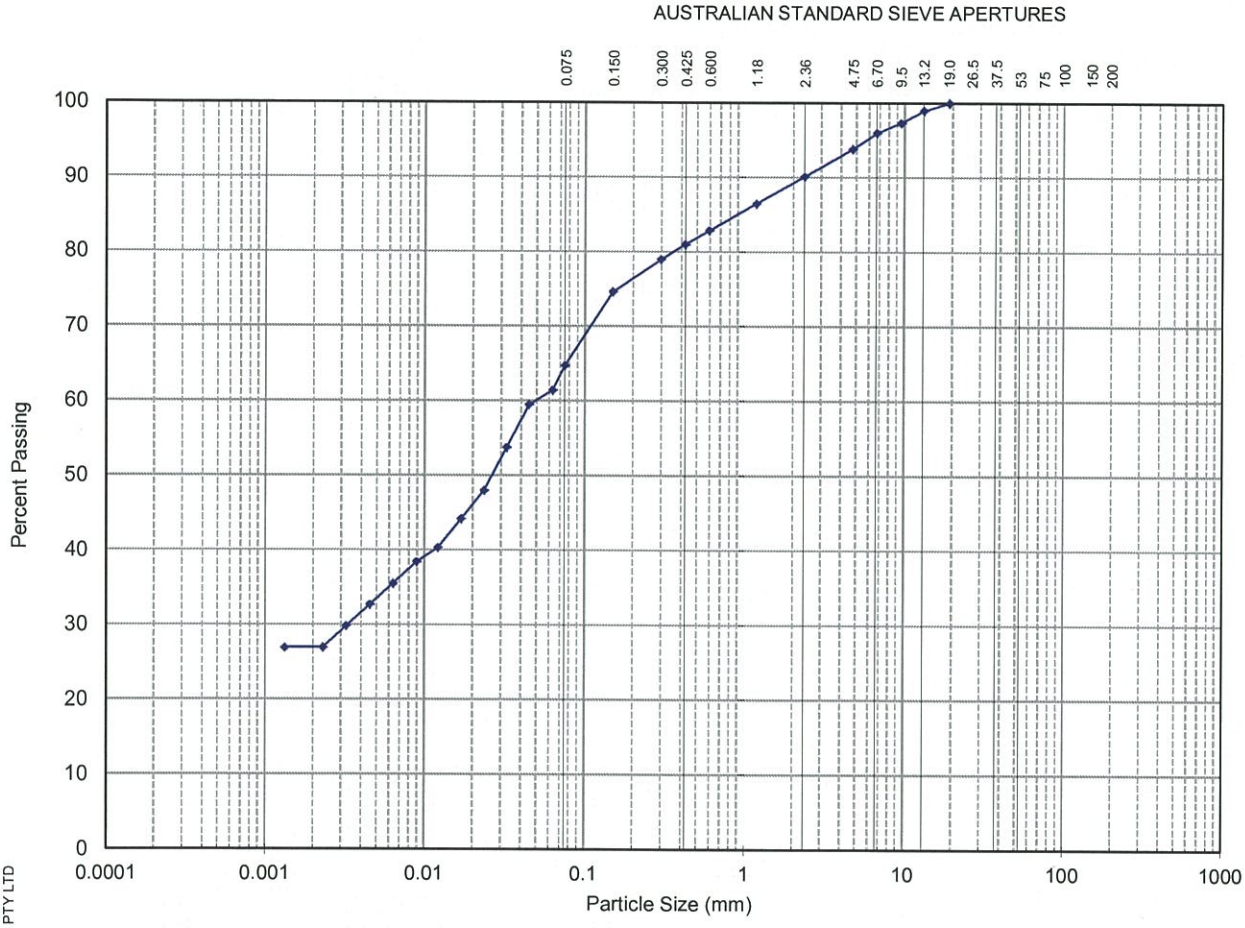
Results of Particle Size Distribution (Hydrometer)

Client :	Western Sydney University	**Project No. :**	86462
		Report No. :	5
Project :	Bankstown City Campus Development	**Report Date :**	31/7/2018
		Date Sampled:	13-Jul-18
Location :	74 Rickard Road, Bankstown	**Date of Test:**	18-Jul-18
Road No:	- **Sample / Pit No:** BH11	**Depth / Layer:**	0.5 - 1.5m
Chainage:	- **Section / Lot No:** -	**Test Request No:**	
		Page:	1 of 1



Sieve Size (mm)	% Passing
75.0	~
53.0	~
37.5	~
26.5	~
19.0	100%
13.2	99%
9.5	97%
6.7	96%
4.75	94%
2.36	90%
1.18	86%
0.600	83%
0.425	81%
0.300	79%
0.150	75%
0.075	65%
0.045	59%
0.032	54%
0.023	48%
0.017	44%
0.012	40%
0.009	38%
0.006	36%
0.005	33%
0.003	30%
0.002	27%
0.001	27%

CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
0.002	0.006	0.02		0.06	0.2	0.6	2.0	6.0	20	60

Description: Brown sandy clayey silt with some gravel

Test Method(s): AS 1289.3.6.1, AS1289.3.6.3

Sampling Method(s): Sampled by Engineering Department

Loss in pretreatment: 0%

Remarks:

Type of Hydrometer: g/l

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Tested: AH
Checked: LW

Michael Gref
Senior Soil Technician

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CERTIFICATE OF ANALYSIS 197063

Client Details

Client	Douglas Partners Pty Ltd
Attention	Chamali Nagodavithane
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86462.00, Bankstown**
Number of Samples	4 SOIL
Date samples received	26/07/2018
Date completed instructions received	26/07/2018

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.

Report Details

Date results requested by	02/08/2018
Date of Issue	30/07/2018

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Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Jacinta Hurst, Laboratory Manager

sPOCAS field test					
Our Reference		197063-1	197063-2	197063-3	197063-4
Your Reference	UNITS	BH1	BH2	BH5	BH6
Depth		2.5-2.95	2.5-2.95	2.5-2.95	2.5-2.95
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	26/07/2018	26/07/2018	26/07/2018	26/07/2018
Date analysed	-	26/07/2018	26/07/2018	26/07/2018	26/07/2018
pH_F (field pH test)*	pH Units	6.5	8.6	8.1	5.5
pH_{FOX} (field peroxide test)*	pH Units	5.8	7.2	7.8	4.1
Reaction Rate*	-	Slight	Slight	Slight	Moderate

Method ID	Methodology Summary
Inorg-063	pH- measured using pH meter and electrode. Soil is oxidised with Hydrogen Peroxide or extracted with water. Based on section H, Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions.

Result Definitions

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

Quality Control Definitions

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

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.

Miscellaneous Inorganics				
Our Reference		197408-1	197408-2	197408-3
Your Reference	UNITS	BH1	BH4	BH5
Date Sampled		30/07/2018	30/07/2018	31/07/2018
Type of sample		Water	Water	Water
Date prepared	-	31/07/2018	31/07/2018	31/07/2018
Date analysed	-	31/07/2018	31/07/2018	31/07/2018
pH	pH Units	7.4	7.3	7.7
Electrical Conductivity	µS/cm	22,000	21,000	14,000
Sulphate, SO4	mg/L	540	640	590
Chloride, Cl	mg/L	7,200	7,100	4,200

sPOCAS field test				
Our Reference		195910-2	195910-5	195910-6
Your Reference	UNITS	BH3	BH4	BH3
Depth		1.5-1.6	2.4-2.5	2.5-2.95
Date Sampled		10/07/2018	09/07/2018	10/07/2018
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	13/07/2018	13/07/2018	13/07/2018
Date analysed	-	13/07/2018	13/07/2018	13/07/2018
pH_F (field pH test)*	pH Units	8.9	5.4	6.7
pH_{FOX} (field peroxide test)*	pH Units	8.5	4.4	6.4
Reaction Rate*	-	Slight	High	High

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 197063-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Brendan O'Kane
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86462.00, Bankstown**
Number of Samples	4 SOIL
Date samples received	26/07/2018
Date completed instructions received	03/08/2018

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.

Report Details

Date results requested by	10/08/2018
Date of Issue	09/08/2018

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Results Approved By
Nick Sarlamis, Inorganics Supervisor

Authorised By

Jacinta Hurst, Laboratory Manager

sPOCAS + %S w/w		
Our Reference		197063-A-4
Your Reference	UNITS	BH6
Depth		2.5-2.95
Type of sample		SOIL
Date prepared	-	06/08/2018
Date analysed	-	06/08/2018
pH $_{kcl}$	pH units	4.4
TAA pH 6.5	moles H^+ /t	14
s-TAA pH 6.5	%w/w S	0.02
pH $_{Ox}$	pH units	5.2
TPA pH 6.5	moles H^+ /t	15
s-TPA pH 6.5	%w/w S	0.02
TSA pH 6.5	moles H^+ /t	<5
s-TSA pH 6.5	%w/w S	<0.01
ANC_E	% $CaCO_3$	<0.05
a-ANC_E	moles H^+ /t	<5
s-ANC_E	%w/w S	<0.05
S_{KCl}	%w/w S	0.02
S_P	%w/w	0.02
S_{POS}	%w/w	<0.005
a-S_{POS}	moles H^+ /t	<5
Ca_{KCl}	%w/w	<0.005
Ca_P	%w/w	<0.005
Ca_A	%w/w	<0.005
Mg_{KCl}	%w/w	0.10
Mg_P	%w/w	0.14
Mg_A	%w/w	0.040
S_{HCl}	%w/w S	0.027
S_{NAS}	%w/w S	0.010
a-S_{NAS}	moles H^+ /t	<5
s-S_{NAS}	%w/w S	<0.01
Fineness Factor	-	1.5
a-Net Acidity	moles H^+ /t	20
s-Net Acidity	%w/w S	0.03
Liming rate	kg $CaCO_3$ /t	1.5
s-Net Acidity without -ANCE	%w/w S	0.033
a-Net Acidity without ANCE	moles H^+ /t	20
Liming rate without ANCE	kg $CaCO_3$ /t	1.5

SCr		
Our Reference		197063-A-4
Your Reference	UNITS	BH6
Depth		2.5-2.95
Type of sample		SOIL
Date prepared	-	06/08/2018
Date analysed	-	06/08/2018
Chromium Reducible Sulfur	%w/w	<0.005
a-Chromium Reducible Sulfur	moles H^+ /t	<3

Method ID	Methodology Summary
Inorg-064	sPOCAS determined using titrimetric and ICP-AES techniques. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.

QUALITY CONTROL: sPOCAS + %S w/w						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			06/08/2018	[NT]	[NT]	[NT]	[NT]	06/08/2018	[NT]
Date analysed	-			06/08/2018	[NT]	[NT]	[NT]	[NT]	06/08/2018	[NT]
pH $_{kcl}$	pH units		Inorg-064	[NT]	[NT]	[NT]	[NT]	[NT]	90	[NT]
TAA pH 6.5	moles H^+/t	5	Inorg-064	<5	[NT]	[NT]	[NT]	[NT]	95	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-064	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pH $_{Ox}$	pH units		Inorg-064	[NT]	[NT]	[NT]	[NT]	[NT]	98	[NT]
TPA pH 6.5	moles H^+/t	5	Inorg-064	<5	[NT]	[NT]	[NT]	[NT]	112	[NT]
s-TPA pH 6.5	%w/w S	0.01	Inorg-064	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
TSA pH 6.5	moles H^+/t	5	Inorg-064	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-TSA pH 6.5	%w/w S	0.01	Inorg-064	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
ANC_E	% $CaCO_3$	0.05	Inorg-064	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-ANC_E	moles H^+/t	5	Inorg-064	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-ANC_E	%w/w S	0.05	Inorg-064	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_P	%w/w	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{POS}	%w/w	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-S_{POS}	moles H^+/t	5	Inorg-064	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ca_{KCl}	%w/w	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ca_P	%w/w	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ca_A	%w/w	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Mg_{KCl}	%w/w	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Mg_P	%w/w	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Mg_A	%w/w	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{HCl}	%w/w S	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-064	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-S_{NAS}	moles H^+/t	5	Inorg-064	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-S_{NAS}	%w/w S	0.01	Inorg-064	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fineness Factor	-	1.5	Inorg-064	<1.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Net Acidity	moles H^+/t	5	Inorg-064	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-Net Acidity	%w/w S	0.01	Inorg-064	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Liming rate	kg $CaCO_3$/t	0.75	Inorg-064	<0.75	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-Net Acidity without -ANCE	%w/w S	0.01	Inorg-064	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+/t	5	Inorg-064	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: sPOCAS + %S w/w						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Liming rate without ANCE	kg $CaCO_3$/t	0.75	Inorg-064	<0.75	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: SCr						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			06/08/2018	[NT]	[NT]	[NT]	[NT]	06/08/2018	[NT]
Date analysed	-			06/08/2018	[NT]	[NT]	[NT]	[NT]	06/08/2018	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Chromium Reducible Sulfur	moles H^+ /t	3	Inorg-068	<3	[NT]	[NT]	[NT]	[NT]	96	[NT]

Result Definitions

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

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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.

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CERTIFICATE OF ANALYSIS 195910-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Brendan O'Kane
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86462.00, Bankstown**
Number of Samples	6 SOIL
Date samples received	10/07/2018
Date completed instructions received	03/08/2018

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.

Report Details

Date results requested by	10/08/2018
Date of Issue	09/08/2018

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Nick Sarlamis, Inorganics Supervisor

Authorised By

Jacinta Hurst, Laboratory Manager

sPOCAS + %S w/w		
Our Reference		195910-A-5
Your Reference	UNITS	BH4
Depth		2.4-2.5
Date Sampled		09/07/2018
Type of sample		SOIL
Date prepared	-	06/08/2018
Date analysed	-	06/08/2018
pH $_{kcl}$	pH units	4.3
TAA pH 6.5	moles H^+ /t	26
s-TAA pH 6.5	%w/w S	0.04
pH $_{Ox}$	pH units	4.3
TPA pH 6.5	moles H^+ /t	42
s-TPA pH 6.5	%w/w S	0.07
TSA pH 6.5	moles H^+ /t	16
s-TSA pH 6.5	%w/w S	0.03
ANC_E	% $CaCO_3$	<0.05
a-ANC_E	moles H^+ /t	<5
s-ANC_E	%w/w S	<0.05
S_{KCl}	%w/w S	0.02
S_P	%w/w	0.03
S_{POS}	%w/w	0.01
a-S_{POS}	moles H^+ /t	6
Ca_{KCl}	%w/w	0.02
Ca_P	%w/w	0.02
Ca_A	%w/w	<0.005
Mg_{KCl}	%w/w	0.068
Mg_P	%w/w	0.073
Mg_A	%w/w	0.005
S_{HCl}	%w/w S	0.039
S_{NAS}	%w/w S	0.015
a-S_{NAS}	moles H^+ /t	7
s-S_{NAS}	%w/w S	0.01
Fineness Factor	-	1.5
a-Net Acidity	moles H^+ /t	39
s-Net Acidity	%w/w S	0.06
Liming rate	kg $CaCO_3$ /t	3.0
s-Net Acidity without -ANCE	%w/w S	0.063
a-Net Acidity without ANCE	moles H^+ /t	39
Liming rate without ANCE	kg $CaCO_3$ /t	3.0

SCr		
Our Reference		195910-A-5
Your Reference	UNITS	BH4
Depth		2.4-2.5
Date Sampled		09/07/2018
Type of sample		SOIL
Date prepared	-	06/08/2018
Date analysed	-	06/08/2018
Chromium Reducible Sulfur	%w/w	0.005
a-Chromium Reducible Sulfur	moles H^+ /t	<3

Method ID	Methodology Summary
Inorg-064	sPOCAS determined using titrimetric and ICP-AES techniques. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.

QUALITY CONTROL: sPOCAS + %S w/w						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			06/08/2018	5	06/08/2018	06/08/2018		06/08/2018	[NT]
Date analysed	-			06/08/2018	5	06/08/2018	06/08/2018		06/08/2018	[NT]
pH $_{kcl}$	pH units		Inorg-064	[NT]	5	4.3	4.1	5	90	[NT]
TAA pH 6.5	moles H^+ /t	5	Inorg-064	<5	5	26	26	0	95	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-064	<0.01	5	0.04	0.04	0	[NT]	[NT]
pH $_{Ox}$	pH units		Inorg-064	[NT]	5	4.3	4.5	5	98	[NT]
TPA pH 6.5	moles H^+ /t	5	Inorg-064	<5	5	42	38	10	112	[NT]
s-TPA pH 6.5	%w/w S	0.01	Inorg-064	<0.01	5	0.07	0.06	15	[NT]	[NT]
TSA pH 6.5	moles H^+ /t	5	Inorg-064	<5	5	16	11	37	[NT]	[NT]
s-TSA pH 6.5	%w/w S	0.01	Inorg-064	<0.01	5	0.03	0.02	40	[NT]	[NT]
ANC_E	% $CaCO_3$	0.05	Inorg-064	<0.05	5	<0.05	<0.05	0	[NT]	[NT]
a-ANC_E	moles H^+ /t	5	Inorg-064	<5	5	<5	<5	0	[NT]	[NT]
s-ANC_E	%w/w S	0.05	Inorg-064	<0.05	5	<0.05	<0.05	0	[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-064	<0.005	5	0.02	0.03	40	[NT]	[NT]
S_P	%w/w	0.005	Inorg-064	<0.005	5	0.03	0.03	0	[NT]	[NT]
S_{POS}	%w/w	0.005	Inorg-064	<0.005	5	0.01	0.007	35	[NT]	[NT]
a-S_{POS}	moles H^+ /t	5	Inorg-064	<5	5	6	<5	18	[NT]	[NT]
Ca_{KCl}	%w/w	0.005	Inorg-064	<0.005	5	0.02	0.02	0	[NT]	[NT]
Ca_P	%w/w	0.005	Inorg-064	<0.005	5	0.02	0.03	40	[NT]	[NT]
Ca_A	%w/w	0.005	Inorg-064	<0.005	5	<0.005	0.006	18	[NT]	[NT]
Mg_{KCl}	%w/w	0.005	Inorg-064	<0.005	5	0.068	0.071	4	[NT]	[NT]
Mg_P	%w/w	0.005	Inorg-064	<0.005	5	0.073	0.075	3	[NT]	[NT]
Mg_A	%w/w	0.005	Inorg-064	<0.005	5	0.005	<0.005	0	[NT]	[NT]
S_{HCl}	%w/w S	0.005	Inorg-064	<0.005	5	0.039	0.038	3	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-064	<0.005	5	0.015	0.013	14	[NT]	[NT]
a-S_{NAS}	moles H^+ /t	5	Inorg-064	<5	5	7	6	15	[NT]	[NT]
s-S_{NAS}	%w/w S	0.01	Inorg-064	<0.01	5	0.01	<0.01	0	[NT]	[NT]
Fineness Factor	-	1.5	Inorg-064	<1.5	5	1.5	1.5	0	[NT]	[NT]
a-Net Acidity	moles H^+ /t	5	Inorg-064	<5	5	39	36	8	[NT]	[NT]
s-Net Acidity	%w/w S	0.01	Inorg-064	<0.01	5	0.06	0.06	0	[NT]	[NT]
Liming rate	kg $CaCO_3$ /t	0.75	Inorg-064	<0.75	5	3.0	2.7	11	[NT]	[NT]
s-Net Acidity without -ANCE	%w/w S	0.01	Inorg-064	<0.01	5	0.063	0.058	8	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+ /t	5	Inorg-064	<5	5	39	36	8	[NT]	[NT]

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Liming rate without ANCE	kg $CaCO_3$/t	0.75	Inorg-064	<0.75	5	3.0	2.7	11	[NT]	[NT]

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Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			06/08/2018	5	06/08/2018	06/08/2018		06/08/2018	[NT]
Date analysed	-			06/08/2018	5	06/08/2018	06/08/2018		06/08/2018	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	5	0.005	<0.005	0	[NT]	[NT]
a-Chromium Reducible Sulfur	moles H^+ /t	3	Inorg-068	<3	5	<3	<3	0	96	[NT]

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