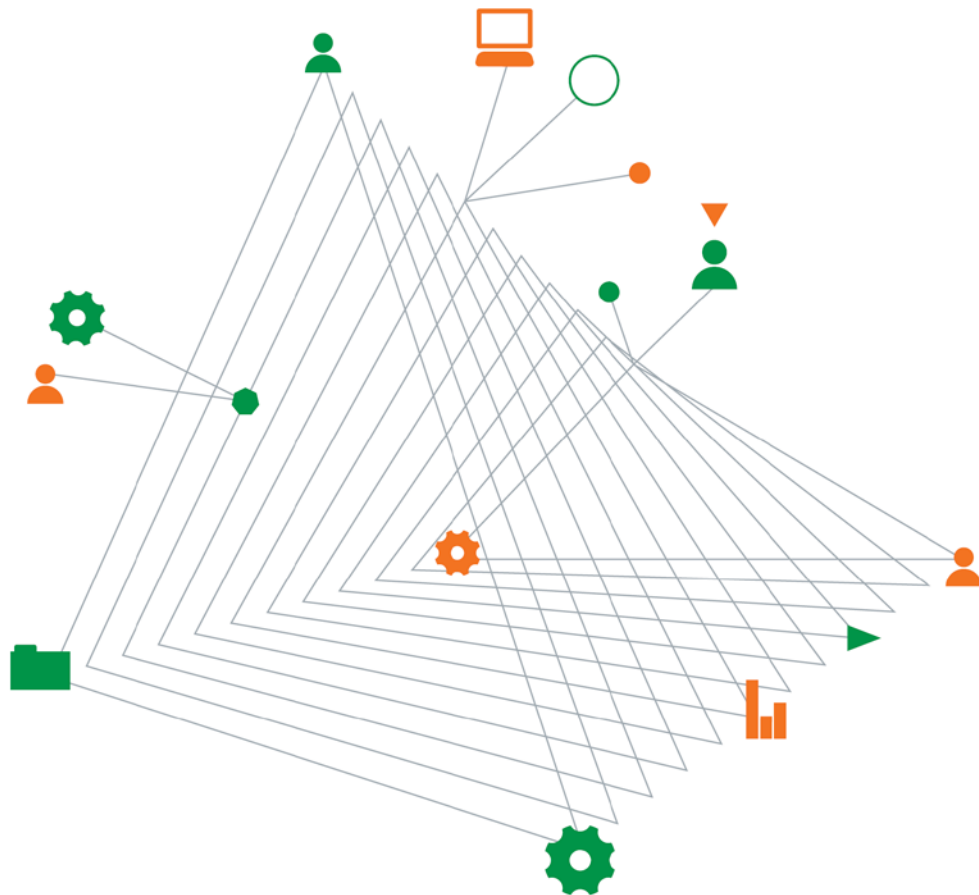


University of Wollongong

Contamination Assessment

Social Sciences & Law Humanities and Arts
Building

27 September 2017



Experience
comes to life
when it is
powered by
expertise

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Contamination Assessment

Prepared for
University of Wollongong

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Executive summary

The University of Wollongong (UOW) is proposing to develop the Western Building – Social Sciences & Law Humanities and Arts Building (Western Building) within the Wollongong Campus. The proposed building will be located within the Western Precinct of the Wollongong Campus and opposite building 21 Early Start Facility on the Campus Ring Road. The site currently houses demountable buildings used mainly as classrooms for teaching, the majority of which are assigned for relocation prior to this development.

This report presents the results of a contamination assessment carried out by Coffey for the proposed Social Sciences & Law Humanities and Arts Building. This work was carried out concurrently with a geotechnical investigation of the site which is reported separately.

The objectives of the assessment were to:

- Assess the likelihood for contamination of the site from past or present activities;
- Investigate potential Areas of Environmental Concern (AECs) through soil and groundwater sampling (if required);
- Summarise the findings of the site investigation including the results of any soil and groundwater drilling and sampling; and
- Provide recommendations for further investigation and/or options management of contamination to make the site suitable for the proposed development (as applicable).

The scope of work developed to meet this objective included a review of site history information and site walkover followed by the development and implementation of a soil sampling and analysis plan targeting identified AECs. The results of the desk study, site walkover and sampling program were interpreted and assessed with respect to these objectives. This report was prepared with reference to NSW EPA endorsed guidelines and in accordance with State Environmental Planning Policy 55 Remediation of Land (DUAP, 1998) for a Stage 1 – Preliminary Investigation.

Site history information indicated that the site has had demountable structures used as classrooms for teaching associated with the University since the early-mid 1990's. Prior to this the site was generally unoccupied open space which was potentially used for grazing prior to the establishment of the university, during which time it was owned by an iron and steel making and a coal mining company.

Three AECs were identified at the site:

- AEC 1: Areas surrounding existing and former structures from weathering of hazardous building materials into surface soils and/or potential use of pesticides/herbicides;
- AEC 2: The whole site from potential presence of imported fill of unknown origin and quality; and
- AEC 3: Potential presence of a septic tank associated with the toilet.

Eleven sampling locations were used to assess three AECs identified at the site.

Laboratory results reported COPCs associated within these AEC's below soil assessment criteria for industrial/commercial land use. These results are consistent with field observations. Site assessment works have not been able to establish if a septic pit exists at the site in the central western part of the site in the area of the 'unclassified service pit'. No sampling was carried out in close proximity due to the unknown location and presence of services.

Based on the findings of the assessment, it appears that the site has a low likelihood for being affected by contamination that would pose an unacceptable risk to human health or the environment under the proposed development scenario. During construction, a check should be made to see if a septic pit actually exists and if so, this should be excavated along with appropriate management of soils in close proximity.

An unexpected finds protocol (UFP) is recommend for the construction activities. The UFP would assist to provide direction that if during the excavation work, material is encountered which appears to be potentially contaminated or suspicious, excavation works should cease until inspection is carried out by a competent environmental consultant. In the context of the above, potentially contaminated or suspicious material would include stained or odorous soil, fibrous material, asbestos sheeting, drums, metal or plastic chemical containers or brightly coloured material, septic pits etc.

Should soils require offsite disposal, then they should be appropriately classified.

This executive summary must be read in conjunction with the full report and in the context of the attached "Important Information about your Coffey Environmental Report" and to the statement of limitations in Section 13 of this report.



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Appendix B – Groundwater Bore Search Results

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Appendix E – Wollongong City Council Development Application Search

Appendix F – Historical Title Search Results

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Appendix H – Borehole Logs

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Abbreviations

ACM	Asbestos Containing Materials
AEC	Area of Environmental Concern
AHD	Australian Height Datum
DQO	Data Quality Objective
DQI	Data Quality Indicator
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
COPC	Chemical of potential concern
CSM	Conceptual Site Model
EIL	Ecological Investigation Levels
ESL	Ecological Screening Levels
HIL	Health Investigation Level
HSL	Health Screening Level
LOR	Limit of Reporting
mg/kg	Milligrams per kilogram
NATA	National Association of Testing Authorities
NEHF	National Environmental Health Forum
NEPM	National Environment Protection (Assessment of Site Contamination) Measure
OCP	Organochlorine Pesticide
OPP	Organophosphorus Pesticide
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photoionisation Detector
ppm	parts per million
QA /QC	Quality Assurance / Quality Control
RPD	Relative Percent Difference
SOP	Standard Operating Procedures
TPH / TRH	Total Petroleum Hydrocarbon / Total Recoverable Hydrocarbons
VOC	Volatile Organic Compound

1. Introduction

The University of Wollongong (UOW) is proposing to develop the Western Building – Social Sciences & Law Humanities and Arts Building (Western Building) within the Wollongong Campus. The proposed building will be located within the Western Precinct of the Wollongong Campus and opposite building 21 Early Start Facility on the Campus Ring Road. The site currently houses demountable buildings used mainly as classrooms for teaching, the majority of which are assigned for relocation prior to this development.

The new Western Building will be a landmark development for the UoW campus. It will be located adjacent the campus Ring Road at the western end of the campus. The proposed project will accommodate the diverse functions of The Arts English and Media (TAEM) School and the Health and Society (HAS) School and the School of Geography and Sustainable Communities (SGSC) into a collaborative and engaging hub that will support the ambitions of next generation research and learning. Functions accommodated include specialist teaching spaces, academic and professional staff workplace, informal collaboration spaces as well as other support spaces. The proposed building will be circa 10,000sqm gross floor area across four levels plus a plant level.

This report presents the results of a contamination assessment carried out by Coffey Services Australia (Coffey) for the proposed Social Sciences & Law Humanities and Arts Building. This work was carried out concurrently with a geotechnical investigation of the site which is reported separately.

The objectives of the assessment were to:

- Assess the likelihood for contamination of the site from past or present activities;
- Investigate potential Areas of Environmental Concern (AECs) through soil and groundwater sampling (if required);
- Summarise the findings of the site investigation including the results of any soil and groundwater drilling and sampling; and
- Provide recommendations for further investigation and/or options management of contamination to make the site suitable for the proposed development (as applicable).

2. Scope of works

The work carried out by Coffey to meet the above objectives included:

- Review of published information (e.g. topographic, geological, acid sulfate soil risk, soil landscape maps).
- Review of information for assessing the likelihood of potential contamination to exist at the site. This included review of: historical land title records, historical aerial photographs dating to 1948, Wollongong City Council (Council) planning records; a search of NSW EPA databases, and collation of this information.
- A site walkover to visually assess potential sources of contamination, observe surrounding land uses, topography, drainage, nearby sensitive environments, and assess details of the site history and desk study to further assess potential areas of environmental concern (AECs) and contaminants of potential concern (COPCs).
- Developing a Conceptual Site Model (CSM) and sampling plan to target key AECs.
- Collection of soil samples from 11 locations. Selected soil samples were also collected in duplicate and screened for Volatile Organic Compounds (VOC) using a Photoionisation Detector (PID).
- Log subsurface conditions noting the extent of fill, groundwater inflows and evidence of contamination (if any).
- Laboratory analysis of selected soil samples were analysed for a suite of COPCs including petroleum hydrocarbons, pesticides, heavy metals and asbestos
- Preparation of this report with the assessment and making conclusions and recommendations with respect to the objectives outlined in Section 1.

This report was prepared with reference to NSW EPA endorsed guidelines and State Environmental Planning Policy 55 Remediation of Land (DUAP, 1998).

3. Summary of site details and surroundings

3.1. Site identification

Site identification details and surrounding land uses are summarised in **Table 1**. The site layout and surrounding areas are shown on Figure 1.

Table 1: Site Identification Details

Address:	Ring Road, UoW Campus, Keiraville NSW 2500
Title identification:	Part Lot 1, DP 1188267
Area (approx.):	4,875m ² (inferred area of proposed development)
Dimensions (Approx.):	65m x 75m
Local government area:	Wollongong City Council
County:	Camden
Parish:	Wollongong
Zoning: Under the Wollongong City Council Local Environment Plan 2009	• RE1: Public Recreation • E2: Environmental Conversation • SP2: Infrastructure (Road) • SP2: Infrastructure (Educational Establishment)
Current land use:	Occupied by demountable buildings (classrooms), car parking areas, gardens and greenspace
Adjoining land uses:	Car parking, roadways, teaching facilities and greenspace
Site coordinates:	307655E, 6190947S (approx. centre of site)

3.2. Topography, drainage, soil, geology & hydrogeology

Table 2 summarises topography, drainage, soil, geology, acid sulfate soil and hydrogeology associated with the site. Topography, drainage, soil and geology information was obtained from published maps listed in Section 14.

Table 2: Topography, drainage, geology and hydrogeology

Elevation:	Between about 37m and 41m above Australian Height Datum (AHD) (Based on Google Earth Pro, 2017)
General topography:	The site is relatively flat. Overall the general broader topography has a gentle slope down to the south and east
Closest surface water body: (SIX Maps, 2012)	An unnamed creek runs approximately 70m south of the site towards a pond located approximately 275m south-east of the site. Topographic maps indicate that this water may discharge into Fairy Creek located approximately 1.7km south east of the site. Other small ponds are located within the university south and west of the site.

Drainage:	Surface water around the built environment will likely flow into storm water drains and other drainage systems around the site. Surface water from unpaved areas is likely to infiltrate into the site soils, with excess surface water likely to follow topography, flowing east and southeast. The excess water is likely to eventually discharge into Fairy Creek approximately 1.7km away.
Regional geology: (Bowman, 1985)	Quaternary Alluvium described as quartz and lithic fluvial sand silt and clay. The geological map also indicates that the underlying bedrock will likely be the Pheasants Nest Formation of the Permian Illawarra Coal Measures group comprising interbedded lithic sandstone, coal, carbonaceous claystone, siltstone and claystone. The Budgong Sandstone of the Shoalhaven Group is mapped in the general vicinity of the University as occurring below the alluvium, and is described as red, brown and grey volcanic sandstone.
Site specific geology:	Based on investigations undertaken as part of the concurrent geotechnical investigation the subsurface conditions encountered generally comprised. Specific details are in Section 11.1, but are briefly summarised as follows: • Pavement/Road base – 0.1m/0.3m • Fill/topsoil – to about 0.3m • Natural soils/rock — Alluvial and residual clays and weathered rock.
Soil landscape:	The site is located within the Gwynneville soil landscape, a 'residual' soil landscape. The soil landscape is described as moderate to gently undulating rises dominated by dells (hanging swamps) on Hawkesbury Sandstone plateau surfaces. Local relief <40m, slopes <10%. Very broad drainage depressions with scattered rock outcrop <15%. Sedgelands, wet heath and dry heath with isolated stands of open woodland and scrub land. Limitations include extreme erosional hazard, steep slopes, mass movement hazard, local flooding. Reactive subsoils and impermeable, low wet bearing strength clay subsoils.
Acid Sulfate Soil: (NSW DLWC, 1997)	The Acid Sulfate Soils risk map shows the site being mapped in an area of 'no known occurrence' of acid sulfate soils.
Groundwater bore search: (NSW DPI, Office of Water)	No groundwater bores are registered within 500m. Search results are included in Appendix B.
Depth to groundwater:	Groundwater is expected to be at depths between about 3m and 10m.
Inferred groundwater flow direction:	South and east direction (based on topography), inferred towards Fairy Creek.

4. Site history

4.1. Summary of site history

Information on the Site history was obtained from:

- Review of selected aerial photographs (1948-51 to 2016);
- A historical land title search to review previous landowners and possible past uses of the Site;
- A search of NSW EPA register for listings of the Site and nearby Sites; and
- A review of Wollongong City Council records and Section 149 planning certificate.

The Site history information is presented in Appendix A to G and a summary is provided below.

Table 3: Summary of site history

Historical land use:	A chronology of the historical land use is summarised below: • Pre-1948-1951 - Limited information is available. Aerial photographs indicate that the site was undeveloped rural land and possibly used for grazing. Australian Iron & Steel Limited (and its previous company titles) were the registered proprietor between 1888 and 1958. • 1951 to current: The site and surrounding area have been subject to constant development associated with the university. In the 1963 aerial photograph the Ring Road is visible and a possible car park is visible adjacent to this east of the site, the remainder of the site is unoccupied. Between 1990 and 1998 the demountable buildings were installed on the site and the car parks to the west and north-west were built. Up until the present, the surrounding area was subject to continued development with a number of buildings constructed or replaced around the university campus to the east and south of the site. It appears that three former demountables were present on the site, one near the central southern boundary and two in the north/north-western part of the site. The southern demountable appears to have been removed between about 2009 and 2011 and the northern demountables in 2016 (based on Google Earth Pro historical imagery).
Filling Activities:	Historical imagery shows no indication of bulk or widespread filling activities taking place on the site. Based on the site walkovers and aerial imagery some minor surface works would have been undertaken to establish site levels for buildings, gardens, roads and car parks.
Hazardous building materials:	Fibre cement formwork and panelling was identified within the buildings on the site. We have not been provided with any reports on hazardous materials for these structures. Analysis of two samples of fragments of this material that were previously damaged returned negative results for the presence of asbestos
Chemical usage & storage:	No information is available to suggest chemical use or storage.
Section 149 Planning Certificate (Appendix C)	Land not subject to any notifications under the Contaminated Land Management Act 1997.
NSW EPA Registers (Appendix D)	No listing for the site or immediate surrounds.

Offsite considerations:	No known offsite potential for contamination based on site walkover and aerial photography.
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4.2. Gaps in the site history

The following gaps in the site history were identified:

- Limited information is available on the early history of the site, i.e. prior to 1948-1951, and therefore, some site activities may not have been identified.

5. Site observations

Site observations were made by a Principal Environmental Engineer of Coffey on the 22 May 2017. The following site features were observed and also shown on Figure 1 and Photos 1 to 5.

The site is located within an area containing semi demountable type classroom structures amongst grassed/treed area with two small bitumen carparks.

The site is accessible off the university ring road. Nine buildings were observed in the area, some with multiple classrooms (classrooms numbered 45 to 56) (See Photos 1 to 3 for examples). No observations were made inside the structures, but all appeared to be classroom style single storey buildings. One small structure appeared to be a toilet and was located between classrooms 51 and 52. The buildings appeared to be a mix of steel clad and fibre cement type construction as per below:

- Classrooms 45-47 - part fibre cement external walls
- Classroom 54 – fibro external walls

The fibro portions were painted. Most structures were slightly raised off the ground on piers. Some piers were observed to have a fibro type casing (See Photo 5).

The south eastern part of Classroom 54 was noted to have a broken eave and a few fibro fragments were evident on the ground surface (See Photo 2). A central area ringed by classrooms 45-47 and 51-54 had pavers and some raised garden beds (See photo 4). Remaining areas (excluding carparks) were generally unpaved and either with grass, leaf litter and trees.

A steel pipe was observed near the toilet which had an appearance like a septic pump out type pipe. A plan provided by the University of Wollongong depicts this as an unclassified service pit.

There was no visible evidence of underground storage tanks, chemical storage, staining or odours. No apparent evidence was noted of vegetation die back.



Photo 1 – Example of classroom (Classroom 50) as viewed from the north



Photo 2 – Classroom 54 facing north west



Photo 3 – Site facing south west (Showing classrooms 45-47 and north east car park)



Photo 4 – Central paved area surrounded with classrooms and raised garden beds – facing west



Photo 5 – Example of fibro encased concrete pier (at Classroom 54)

6. Areas and contaminants of potential concern

Based on the site history information and site observations, there is potential for contamination on the site in the following areas of environmental concern (AECs):

Table 4: AEC Summary

AEC	Likelihood of contamination	COPCs
AEC 1 - Areas surrounding existing and former structures from weathering of hazardous building materials into surface soils and/or potential use of pesticides/herbicides for site maintenance	Low	Lead, asbestos, OC/OP pesticides, herbicides
AEC 2 - The whole site from potential presence of imported fill of unknown origin and quality	Low	TRH, BTEX, PAH, OC/OP, PCB, asbestos
AEC 3 – Potential presence of a septic tank associated with the toilet.	Low	Pathogens

7. Conceptual site model

A conceptual site model (CSM) is used to determine the presence of plausible exposure pathways, and hence the presence of significant risk to susceptible receptors such as humans, ecosystems, or the built environment. For a significant or identifiable risk to exist an exposure pathway must be present, which requires each of the following to be identified:

- The presence of substances that may cause harm (SOURCE);
- The presence of a receptor, which may be harmed at an exposure point (RECEPTOR); and
- The existence of means of exposing a receptor to the source (EXPOSURE ROUTE).

In the absence of a plausible exposure pathway there is no risk. Therefore, the presence of measurable concentrations of chemical substances does not automatically imply that the site will cause harm. In order for this to be the case, a plausible exposure pathway must be present, allowing a source to adversely affect a receptor. The nature and importance of both receptors and exposure routes, which are relevant to any particular site, will vary according to its characteristics, intended end-use, and its environmental setting.

Based on the potential contamination sources and mechanisms identified for this site, contamination (if any) is likely to be limited to near surface soils and within fill. In the construction of a building the size of those indicated within supplied concept plans surface soils are typically removed however the final depth of excavation is unknown. In this case contamination (if any) is likely to be removed, therefore the main receptor is considered to be construction workers during soil excavation. Contamination exposure pathways exist including dermal contact, inhalation and ingestion.

If soils were to be reused on site, then other receptors could include site users and ecological receptors.

Groundwater and receiving nearby surface water (ecological receptors) could potentially be impacted if a redundant septic system was present on the site.

8. Assessment criteria

8.1. Soil

Assessment criteria have been selected with consideration of the proposed land use. As discussed in Section 1, the land use is also consistent with industrial / commercial scenario, as per exposure setting described in NEPM Schedule B7. Laboratory results of validation samples will be compared to guidelines representing this land use scenario, which are contained within the following references:

- National Environment Protection (Assessment of Site Contamination) 1999 (April 2013), NEPC 2013, Canberra.
- Friebel and Nadebaum (2011) CRC Care Technical Report No. 10 – Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater.

The applicable criteria from these guidelines are listed in the following table references:

- Table 1A (1) – Health-based Investigation Levels (HILs) for Commercial / Industrial Land Uses (HIL D);
- Table 1A (3) – Soil Health Screening levels (HSLs) for vapour intrusion for Commercial / Industrial Land Uses (HSL D);
- Table B3 – Soil Health Screening Levels for Vapour Intrusion (Intrusive Maintenance Worker – shallow trench) (CRC Care, 2011), depth 0m to <2m;
- Table B4 – Soil Health Screening levels for Direct Contact (HSL-D and Intrusive Maintenance Worker) (CRC Care, 2011); and
- Table 1B (7) – Management Limits for TPH Fractions F1 to F4 for fine soil.

Ecological investigation levels (EILs) were obtained from the ASC NEPM toolbox. Soil physio chemical parameters were based on a soil sample collected from the site. We have conservatively assumed background concentrations of zero for initial screening. These criteria will only apply if site soils are reused in the development where they are likely to be a growing medium or accessible to the local environment.

For this assessment we have adopted a criteria of no asbestos, noting that other criteria are available if more detailed assessment is required.

Aesthetic issues are not likely to affect a commercial industrial land use.

Adopted assessment criteria are listed in Table LR1.

9. Sampling, analysis and quality plan

The site occupies an approximate area of 4,875m². The NSW EPA (1995) Sampling Design Guidelines recommend a minimum of between 11 and 13 sampling locations to assess an area between 4,000m² and 5,000m² respectively. This guidance was used to develop a sampling and analysis plan for assessing the AECs and is discussed in **Table 4**. Given the low likelihood of the contamination associated with the AECs, eleven sampling locations were assessed across the site. Six borehole locations (CBH01 – CBH06) were sampled in conjunction with the geotechnical drilling program conducted concurrently with the environmental investigation. A seventh location (CBH07) was assessed and sampled using a hand auger while the remaining four locations (SS01 – SS04) were assessed through surface sampling. An additional two potential asbestos containing materials samples (ACM01 – ACM02) were collected from the demountable buildings.

Drilling closer to the potential septic was not possible due to the presence of many services and the unknown location of the structure.

9.1. Soil sampling methodology

During drilling, a hand auger was used to advance the upper 1.2m, due to potential underground services present, then continued with a mechanical drilling rig fitted with 100mm solid flight augers and V or TC Bit. Soil samples were collected directly off the hand auger within the upper 1.2m thereafter with a Standard Penetration Test tool (SPT). Between sampling locations the augers and SPT cleaned by brush scrubbing with a phosphate free detergent and finally rinsed with potable water. The push tube sampler was lined with a single-use polycarbonate sampling sleeve to retain the undisturbed soil sample. Soil samples were collected with a new pair of nitrile gloves between sampling locations.

The hand auger was also washed with a phosphate free detergent, rinsed with potable water followed by rinsing with distilled water between sampling locations. Where asphalt was present at the sampling locations, the drilling rig was used to break through the asphalt, facilitating access to materials below. The hole was then advanced using the hand auger.

Where only surface sampling was conducted, surface materials were collected using a stainless steel trowel, this was washed with a phosphate free detergent, rinsed with potable water followed by rinsing with distilled water between sampling locations.

Soil samples were generally collected at the surface, in the fill or at major changes in stratigraphy or where evidence of odours or staining was noted (if observed). Care was taken to avoid fragments of asphalt when collecting samples immediately below the asphalt.

Clean 250mL glass jars were filled with soil to the brim and immediately sealed with Teflon lined caps to lower the potential for loss of volatile contaminants. Samples were then labelled and placed directly into ice filled cooler boxes.

Soil samples for analysis were collected in duplicate into tightly sealed plastic bags where considered appropriate. The headspace above each sample was measured using a Mini Rae 3000 PID fitted with a 10.6eV lamp and calibrated with isobutylene gas at a concentration of 100ppm. This instrument allows rapid, semi quantitative analysis of ionisable volatile organic compounds in the soil.

10. Data validation assessment

10.1. Fieldwork quality control procedures

The field quality control was generally in accordance with the quality control program and consisted of the following:

- Sampling was performed by a qualified Coffey environmental professionals generally in accordance with the procedures outlined in Coffey's Standard Operating Procedures (SOPs) which are based on industry accepted protocols for environmental sampling and are consistent with Schedule B(2) of the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999, amended 2013. Sampling activities were carried out by Coffey staff who had completed Coffey's training for Coffey SOPs including supervised field training;
- Calibration of field instruments in accordance with manufacturer's instructions;
- Collection and analysis of one blind coded duplicates (QC2) soil samples are summarised in Table LR1. The laboratory results and calculated Relative Percent Differences (RPDs) are presented in Tables QAQC1 in Appendix I;
- Laboratory prepared trip spike and trip blank samples were carried into the field and despatched to the laboratory for analysis of volatile contaminants to check the potential for cross contamination or loss of volatile contaminants during transport and sample preparation at the laboratory. The laboratory results for the trip spike and blank samples are presented in Table QAQC2 in Appendix I;
- Collection of wash blank samples from the hand auger to check the effectiveness of equipment decontamination, and designated WB1 (24/5/2017). The laboratory results for the wash blank sample are presented in Table QAQC2 in Appendix I; and
- Samples (as designated on the chain of custody form) were transported in ice-cooled chests (where required) to Eurofins | MGT Pty Ltd (Eurofins). A copy of the chain of custody record is included in Appendix J.

10.2. Laboratory analysis and quality assurance

Laboratory analysis of the primary and duplicate samples was undertaken by Eurofins in Sydney. This laboratory is NATA accredited for the tests performed.

Samples were selected for analysis mainly based on geological origin type of the material, results of headspace screening and visual and olfactory observations so that samples appropriately represented materials requiring characterisation.

Laboratory results are discussed in Section 11.3, and laboratory reports (NATA certified) are presented in Appendix J. Laboratory test methods and holding times applicable for the chemicals analysed are listed in laboratory reports.

10.3. Laboratory data validation

In order to validate primary soil sampling results, a range of field and laboratory quality control (QC) samples were collected and assessed during the investigation. Coffey has reviewed the QC results including laboratory blanks, duplicates, matrix spikes, laboratory control spikes and surrogate spikes, which were within the acceptable limits. A data validation report was prepared by Coffey as part of the quality assurance programme and is included in Appendix I.

Based on the data validation assessment, it is considered that the data collected for this contamination assessment are adequate and meet the DQOs and DQIs for both field and laboratory procedures and results.

We consider that the laboratory results are acceptable for the purposes of interpreting and verifying the analytical results of this assessment.

11. Results

11.1. Subsurface conditions

The general subsurface conditions encountered in boreholes CBH01 to CBH06 are summarised in Table 5 below:

Table 5: Summary of subsurface conditions

Unit	Unit Description	Approximate depth range to top of unit in boreholes (m)	Thickness range of unit (m)
Pavement / Roadbase (Only CBH01)	Gravelly Sand, fine to coarse grained sand, fine to coarse angular to sub-angular gravel	Surface to 0.1	0.2 to 0.3
Topsoil/Fill	Clay/silty sand Clay, medium to high plasticity, brown, dark brown, orange mottled, fine to medium sand, trace of rootlets	0.0 to 0.3	0.2 to 0.7
Alluvial	Clay/sandy Clay, medium plasticity, brown, orange/grey mottled, fine to medium sand, trace of fine to coarse sub-rounded gravel	0.2 to 1.0	2.7 to 5.5
Residual	Sandy Clay, medium plasticity, brown, red/orange mottled, fine to medium sand, trace of fine to coarse sub-angular to sub-rounded gravel	4.5 to 5.8	2.2 to 2.6
Extremely Weathered Material (EW)	Sandy Clay, medium plasticity, grey, brown/orange mottled, trace of fine to medium sub-rounded to sub-angular gravel	7.0 to 8.0	0.5 to 2.3
Extremely to Highly Weathered Material (EW / HW)	Sandy Clay/clayey Sand/Sand, fine to coarse, grey, low to medium plasticity clay, trace of shale	8.25 to 9.8	0.4 to 6.3
Moderately Weathered Rock (HW / MW)	Siltstone/Sandstone, fine to medium grained, grey, dark grey	10.2 to 14.8	1.2 to 3.3

Unit	Unit Description	Approximate depth range to top of unit in boreholes (m)	Thickness range of unit (m)
Slightly Weathered to Fresh Rock (MW / SW)	Siltstone/Sandstone, fine to medium grained, grey, dark grey	13.5 to 16.0	Unconfirmed – extends to least 15.2m (CBH01), 17.05m (CBH03) and 16.0m (CBH04)

11.2. Screening for volatile organic compounds

Soil samples screened recorded negligible readings of less than 5.1ppm, indicating that volatile ionisable compounds were not present. PID results were consistent with laboratory results.

11.3. Laboratory results

The laboratory analytical results for soil are summarised in Table LR1. Laboratory reports are included in Appendix J. No exceedances were reported. Laboratory results were consistent with field observations and PID results.

The two fibre cement samples collected and laboratory tested for asbestos indicated no detection for asbestos.

12. Conclusions

Site history information indicated that the site has had demountable structures used as classrooms for teaching associated with the University since the early-mid 1990's. Prior to this the site was generally unoccupied open space which was potentially used for grazing prior to the establishment of the university, during which time it was owned by an iron and steel making and a coal mining company.

Three AECs were identified at the site:

- AEC 1: Areas surrounding existing and former structures from weathering of hazardous building materials into surface soils and/or potential use of pesticides/herbicides;
- AEC 2: The whole site from potential presence of imported fill of unknown origin and quality; and
- AEC 3: Potential presence of a septic tank associated with the toilet.

Eleven (11) sampling locations were used to assess three AECs identified at the site.

Laboratory results reported COPCs associated within these AEC's below soil assessment criteria for industrial/commercial land use. These results are consistent with field observations. Site assessment works have not been able to establish if a septic pit exists at the site in the central western part of the site in the area of the 'unclassified service pit'. No sampling was carried out in close proximity due to the unknown location and presence of services.

Based on the findings of the assessment, it appears that the site has a low likelihood for being affected by contamination that would pose an unacceptable risk to human health or the environment under the proposed development scenario. During construction, a check should be made to see if a septic pit actually exists and if so, this should be excavated along with appropriate management of soils in close proximity.

An unexpected finds protocol (UFP) is recommended for the construction activities. The UFP would assist to provide direction that if during the excavation work, material is encountered which appears to be potentially contaminated or suspicious, excavation works should cease until inspection is carried out by a competent environmental consultant. In the context of the above, potentially contaminated or suspicious material would include stained or odorous soil, fibrous material, asbestos sheeting, drums, metal or plastic chemical containers or brightly coloured material, septic pits etc.

Should soils require offsite disposal, then they should be appropriately classified.

13. Limitations

Limited information is available on the early history of the site and therefore, some site activities may not have been identified. In addition, aerial photographs are up to 16 years apart and other site history information available prior to 1955 is limited. We cannot preclude that potentially contaminating activities took place during these periods. Allowances for uncertainties and potential unexpected finds should be made during planning and development phases.

It is the nature of contaminated site investigations that the degree of variability in site conditions cannot be known completely and no sampling and analysis program can eliminate all uncertainty concerning the condition of the site. Professional judgement must be exercised in the collection and interpretation of the data.

In preparing this report, current guidelines for assessment and management of contaminated land were followed. This work has been conducted in good faith in accordance with Coffey understanding of the client's brief and general accepted practice for environmental consulting.

This report was prepared for University of Wollongong based on the objective and scope of work listed in Sections 1 and 2. No warranty, expressed or implied, is made as to the information and professional advice included in this report. Anyone using this document does so at their own risk and should satisfy themselves concerning its applicability and, where necessary, should seek expert advice in relation to the particular situation.

This report does not provide information on soil waste classification.

We draw your attention to the attached sheets titled "Important Information about your Coffey Environmental Report" which should be read in conjunction with this report. These information sheets are located at the end of this section.

14. References

1. **Bowman H. N. (1985)** Wollongong-Port Hacking 1:100,000 Geological Series Sheet, first edition, Geological Survey of NSW, Department of Mines, Sydney;
2. **Coffey (2017)** Geotechnical Investigation, Social Sciences & Law Humanities and Arts Building (Ref: 754-WOLGE205371AA);
3. **Department of Conservation and Land Management (1990)** 1:100,000 Wollongong-Port Hacking Soil Landscape Series Sheet 9029-9129;
4. **Department of Urban Affairs and Planning (1998)** Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land
5. **Friebel & Nadebaum (2011)** Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater (technical paper No.10) Guidelines, CRC for Contamination Assessment and Remediation of the Environment (CRC CARE);
6. **NEPC (2013)** National Environmental Protection (Assessment of Site Contamination) Measure 1999, as amended in 2013, National Environment Protection Council;
7. **NSW EPA (1995)** Sampling Design Guidelines;
8. **NSW Department of Land and Water Conservation (1997)**, Wollongong Acid Sulfate Soils Risk Map 1:25,000 edition two;
9. **NSW OEH (2011)** Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, OEH 2011/0650, ISBN 0 7310 3892 4, Office of Environment and Heritage, Sydney;
10. **NSW Department of Finance and Services, Spatial Services**, SIX Maps maps.six.nsw.gov.au, NSW Map (2012) Accessed 1/05/2017; and
11. **NSW Department of Primary Industries, Office of Water**, allwaterdata.water.nsw.gov.au/water.stm, Accessed 19/06/201

Important information about your Coffey Environmental Report

Introduction

This report has been prepared by Coffey for you, as Coffey's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Coffey may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Coffey has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

Your report has been written for a specific purpose

Your report has been developed for a specific purpose as agreed by us and applies only to the site or area investigated. Unless otherwise stated in the report, this report cannot be applied to an adjacent site or area, nor can it be used when the nature of the specific purpose changes from that which we agreed.

For each purpose, a tailored approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible quantify, risks that both recognised and potential contamination pose in the context of the agreed purpose. Such risks may be financial (for example, clean up costs or constraints on site use) and/or physical (for example, potential health risks to users of the site or the general public).

Limitations of the Report

The work was conducted, and the report has been prepared, in response to an agreed purpose and scope, within time and budgetary constraints, and in reliance on certain data and information made available to Coffey.

The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Coffey should be kept apprised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statutes and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

Interpretation of factual data

Environmental site assessments identify actual conditions only at those points where samples are taken and on the date collected. Data derived from indirect field measurements, and sometimes other reports on the site, are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions.

Variations in soil and groundwater conditions may occur between test or sample locations and actual conditions may differ from those inferred to exist. No environmental assessment program, no matter how comprehensive, can reveal all subsurface details and anomalies. Similarly, no professional, no matter how well qualified, can reveal what is hidden by earth, rock or changed through time.

The actual interface between different materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions.

For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of a suitably qualified and experienced environmental consultant through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other unrecognised features encountered on site. Coffey would be pleased to assist with any investigation or advice in such circumstances.

Recommendations in this report

This report assumes, in accordance with industry practice, that the site conditions recognised through discrete sampling are representative of actual conditions throughout the investigation area. Recommendations are based on the resulting interpretation.

Should further data be obtained that differs from the data on which the report recommendations are based (such as through excavation or other additional assessment), then the recommendations would need to be reviewed and may need to be revised.

Report for benefit of client

Unless otherwise agreed between us, the report has been prepared for your benefit and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendation and should make their own enquiries and obtain independent advice in relation to such matters.

Coffey assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report.

To avoid misuse of the information presented in your report, we recommend that Coffey be consulted before the report is provided to another party who may not be familiar with the background and the purpose of the report. In particular, an environmental disclosure report for a property vendor may not be suitable for satisfying the needs of that property's purchaser. This report should not be applied for any purpose other than that stated in the report.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, a suitably qualified and experienced environmental consultant should be retained to explain the implications of the report to other professionals referring to the report and then review plans and specifications produced to see how other professionals have incorporated the report findings.

Given Coffey prepared the report and has familiarity with the site, Coffey is well placed to provide such assistance. If another party is engaged to interpret the recommendations of the report, there is a risk that the contents of the report may be misinterpreted and

Coffey disowns any responsibility for such misinterpretation.

Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

Responsibility

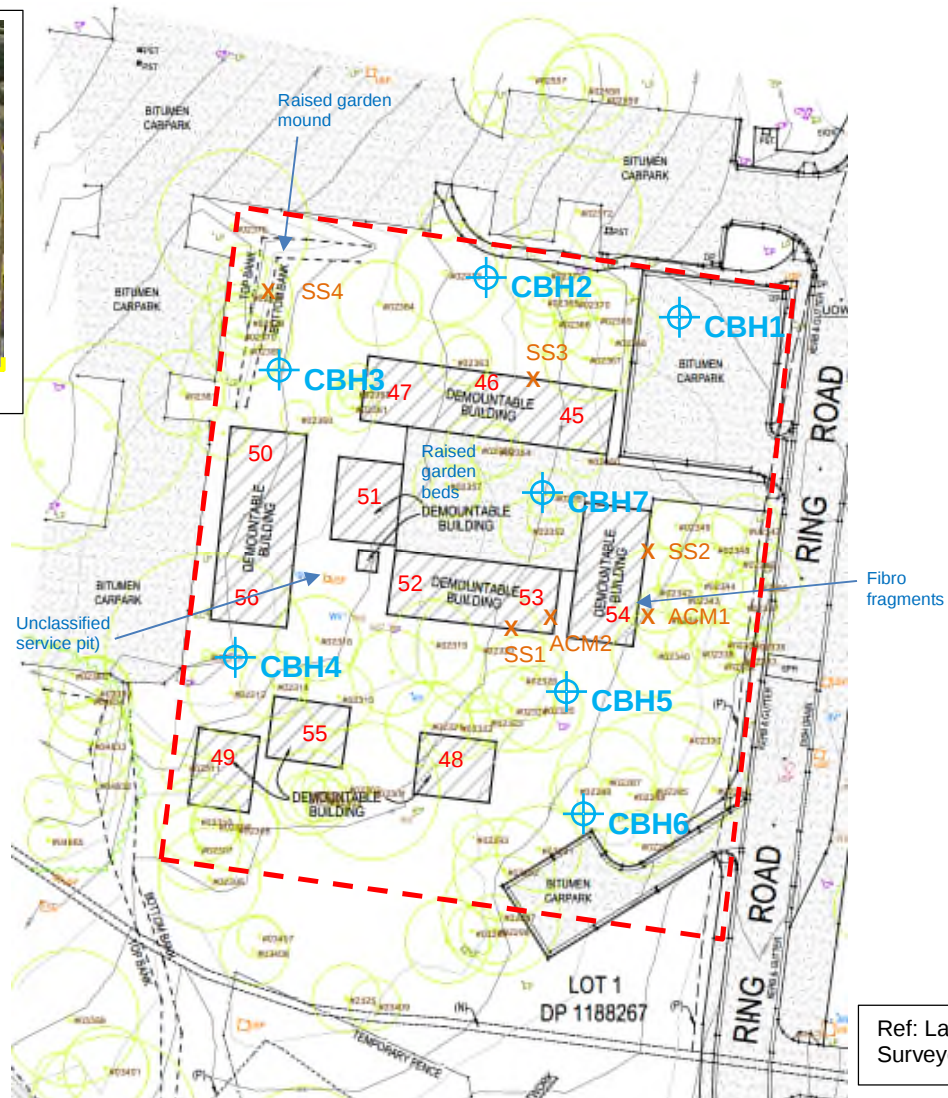
Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.

Figures



SITE LOCALITY PLAN

(Ref: Google Earth Pro)



Ref: Land Team Drawing No: 209936-TS01
Surveyed 31/3-5/4/2017

LEGEND

- Approximate borehole location
- Approximate surface sample
- Classroom number
- Approximate site boundary



drawn	MF
approved	
date	19/06/2017
scale	AS SHOWN
original size	A4



client:	UNIVERSITY OF WOLLONGONG	
project:	SOCIAL SCIENCES & LAW HUMANITIES AND ARTS BUILDING CONTAMINATION ASSESSMENT	
title:	SITE LOCALITY, LAYOUT & SAMPLE LOCATIONS	
project no: 754-WOLGE205371-AB	figure no: 1	

Tables

TABLE LR1:
SUMMARY OF LABORATORY RESULTS FOR SOIL SAMPLES
TRH, BTEX, PAH, OCP, OPP, heavy metals, asbestos and field observations
(All results in mg/kg, unless otherwise stated)

Sample ID	THRESHOLD CONCENTRATIONS							CBH01_0.5-0.7	CBH02_0.25-0.4	CBH03_0.1-0.3	CBH04_0.05-0.25	CBH06_0.05-0.25	CBH07_0.5-0.6	SS1	SS2	SS3	SS4	ACM1	ACM2	QC2			
Batch	HIL D (Commercial/Industrial) ¹	EIL/ESL (Commercial/Industrial) ¹ Coarse Soil Texture	HSL-D (Commercial/Industrial) ¹	HSL-D ² (Direct Contact)	Intrusive maintenance worker (Direct Contact) ²	Intrusive maintenance worker (Vapour Intrusion) ³	Management Limits for TPH Fractions ¹	548245	548245	548245	548245	548245	548245	548245	548245	548245	548245	548245	548245	548245			
Date of Sampling								24-May-17	25-May-17	25-May-17	26-May-17	26-Feb-17	24-May-17	24-May-17	24-May-17	24-May-17	24-May-17	24-May-17	24-May-17	24-May-17	24-May-17	24-May-17	24-May-17
Soil Description (Texture)			0-<1m ^a					FILL - CLAY	Sandy CLAY	FILL - Silty Sandy CLAY	FILL - Silty Sandy CLAY	FILL - Silty Sandy CLAY	FILL - Silty CLAY	FILL - Silty SAND	FILL - Sandy SILT	FILL - Silty SAND	FILL - Sandy SILT	-	-	FILL - Silty SAND			
Depth (m)			0-<2m ^b					0.5-0.7	0.25-0.4	0.1-0.3	0.05-0.25	0.05-0.25	0.5-0.6	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	-	-	0.0-0.1		
HEAVY METALS (TOTAL)																							
Arsenic	3,000	160	-	-	-	-	-	11	8.1	7.7	5	5.5	6.8	6.1	6.4	7.4	3.5	-	-	7.9			
Cadmium	900	-	-	-	-	-	-	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.4	< 0.4	0.6	-	-	< 0.4			
Chromium	3,600 ^c	780	-	-	-	-	-	24	23	19	17	19	19	17	20	27	12	-	-	29			
Copper	240,000	310	-	-	-	-	-	38	26	22	46	63	35	41	30	29	39	-	-	33			
Lead	1,500	1,800	-	-	-	-	-	17	37	36	33	63	51	25	36	39	22	-	-	46			
Mercury	730	-	-	-	-	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	-	< 0.1			
Nickel	6,000	330	-	-	-	-	-	18	19	17	15	10	14	12	16	16	13	-	-	18			
Zinc	400,000	800	-	-	-	-	-	42	70	69	71	85	58	160	110	280	140	-	-	350			
Iron								-	-	31,000	-	-	-	-	-	-	-	-	-	-			
TOTAL RECOVERABLE HYDROCARBONS																							
F1 (C6-C10)	-	215	-	-	-	-	700	-	< 20	-	-	-	< 20	-	< 20	< 20	-	-	-	< 20			
F1 (C6-C10 less BTEX)	-	-	310	26,000	82,000	NL	-	-	< 20	-	-	-	< 20	-	< 20	< 20	-	-	-	< 20			
F2 (>C10-C16)	-	170	-	-	-	-	1,000	-	< 50	-	-	-	< 50	-	< 50	< 50	-	-	-	< 50			
F2 (>C10-C16 less naphthalene)	-	-	NL	20,000	62,000	NL	-	-	< 50	-	-	-	< 50	-	< 50	< 50	-	-	-	< 50			
F3 (>C16-C34)	-	1,700	-	27,000	85,000	NL	3,500	-	< 100	-	-	-	< 100	-	< 100	< 100	-	-	-	< 100			
F4 (>C34-C40)	-	3,300	-	38,000	120,000	NL	10,000	-	< 100	-	-	-	< 100	-	< 100	< 100	-	-	-	< 100			
BTEX																							
Benzene	-	75	4	430	1,100	77	-	-	< 0.1	-	-	-	< 0.1	-	< 0.1	< 0.1	-	-	-	< 0.1			
Toluene	-	135	NL	99,000	120,000	NL	-	-	< 0.1	-	-	-	< 0.1	-	< 0.1	< 0.1	-	-	-	< 0.1			
Ethylbenzene	-	165	NL	27,000	85,000	NL	-	-	< 0.1	-	-	-	< 0.1	-	< 0.1	< 0.1	-	-	-	< 0.1			
Total Xylene	-	180	NL	81,000	130,000	NL	-	-	< 0.3	-	-	-	< 0.3	-	< 0.3	< 0.3	-	-	-	< 0.3			
POLYCYCLIC AROMATIC HYDROCARBONS																							
Naphthalene	-	370	NL	11,000	29,000	NL	-	-	< 0.5	-	-	-	< 0.5	-	< 0.5	< 0.5	-	-	-	< 0.5			
Carcenogenic PAHs (as BaP TEQ)	40	-	-	-	-	-	-	-	0.6	-	-	-	0.6	-	0.6	0.6	-	-	-	0.6			
Benzo(a)pyrene	-	1.4	-	-	-	-	-	-	< 0.5	-	-	-	< 0.5	-	< 0.5	< 0.5	-	-	-	< 0.5			
Total PAH	4,000	-	-	-	-	-	-	-	< 0.5	-	-	-	< 0.5	-	< 0.5	< 0.5	-	-	-	< 0.5			
ORGANOCHLORINE PESTICIDES																							
	45 to 3,600	640	-	-	-	-	-	-	< LOR	< LOR	-	-	< LOR	-	< LOR	< LOR	-	-	-	< LOR			
ORGANOPHOSPHORUS PESTICIDES																							
	2,500 to 4,500	-	-	-	-	-	-	-	< LOR	< LOR	-	-	< LOR	-	< LOR	< LOR	-	-	-	< LOR			
ACID HERBICIDES																							
	600 to 900	-	-	-	-	-	-	< LOR	-	-	< LOR	-	-	< LOR	-	< LOR	< LOR	-	-	< LOR			
POLYCHLORINATED BIPHENYLS																							
		-	-	-	-	-	-	-	-	< LOR	-	-	-	-	-	-	-	-	-	-			
ASBESTOS																							
	ND	-	-	-	-	-	-	-	ND	ND	-	-	-	ND	ND	-	-	ND	ND	-			
FIELD OBSERVATIONS																							
Headspace Screening (ppm)	-	-	-	-	-	-	-	2.1	1.7	2.4	3.2	2.6	-	-	-	-	-	-	-	-			
Odour Description	-	-	-	-	-	-	-	No Odour	No Odour	No Odour	No Odour	No Odour	No Odour	No Odour	No Odour	No Odour	No Odour	No Odour	No Odour	No Odour			
Staining / Foreigns / Asbestos Containing Material	-	-	-	-	-	-	-	Trace rootlets	None	Trace rootlets	Some rootlets	Trace rootlets	Trace rootlets	High (10-15%) roots, wood chip and leaves, Trace gravels	Trace rootlets	Trace rootlets, leaves, wood chip	High (30-40%) roots, wood chip and leaves, Trace plastic	-	-	-			

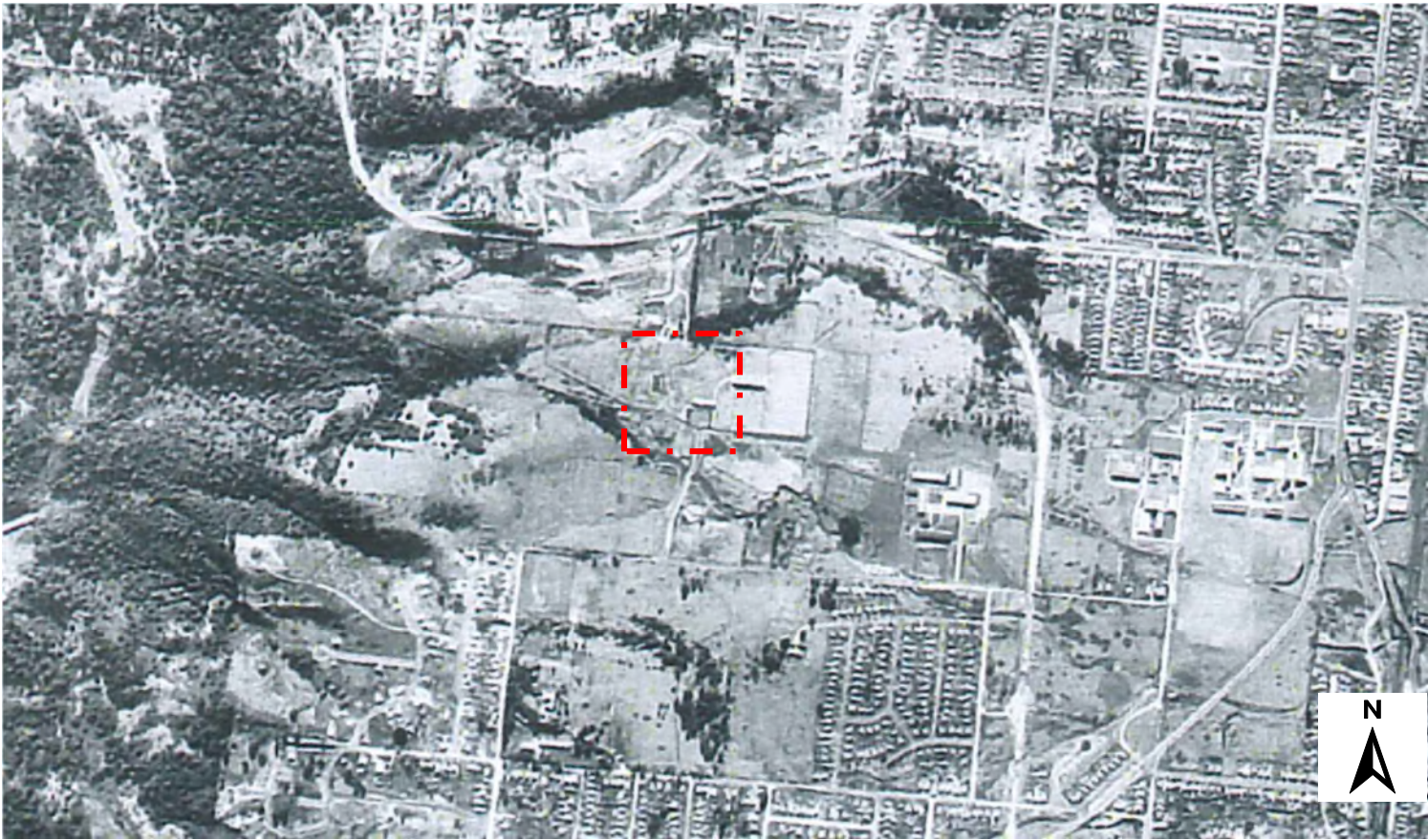
NOTES:

Bold	Concentration exceeds the Health Investigation Levels (HIL) or Health Screen Level (HSL)
1	Based on NEPM (1999) (amendment 2013).
2	CRC Care Technical Report No, 10 (Soil HSLs for direct contact)
3	CRC Care Technical Report No, 10 (Soil HSLs for Vapour Intrusion)
4	EILs for heavy metals were calculated using the ASC NEPM Toolbox using site physio-chemical paramenters from sample (CBH03 0.1-0.3 - see appendix J). We have conservatiely assumed background concentrations to be zero for initial screening purposes.
a	Soil HSLs for vapour intrusion (for depth range between 0m to <1m, soil type: SAND)
b	Soil HSLs for vapour intrusion (for depth range between 0m to <2m, soil type: SAND)
c	Based on Chromium VI
-	No result or guideline
ND	Not detected
NL	Not limiting
LOR	Limit of reporting

Appendix A – Aerial Photograph Review

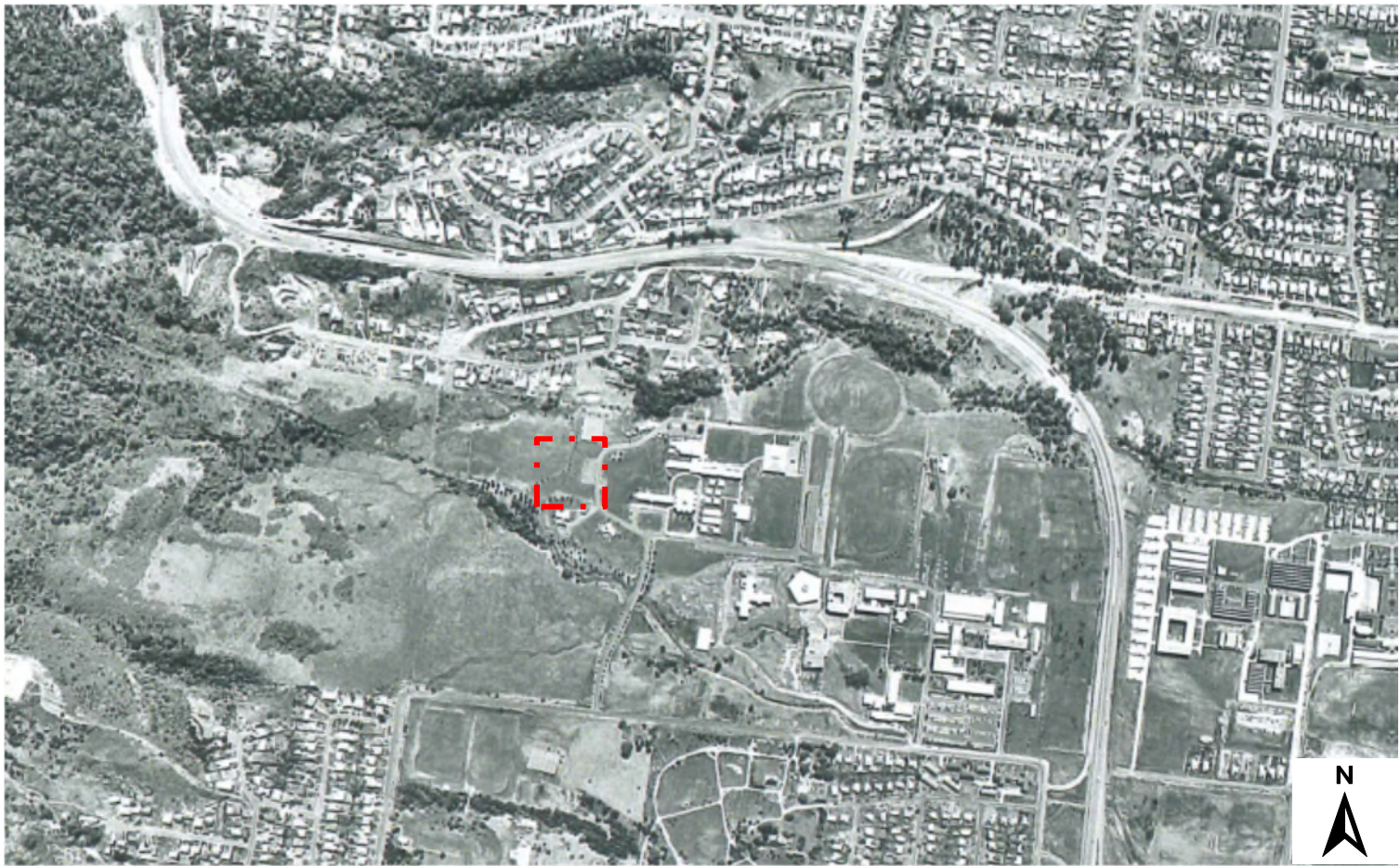


Aerial Photograph 1948-51

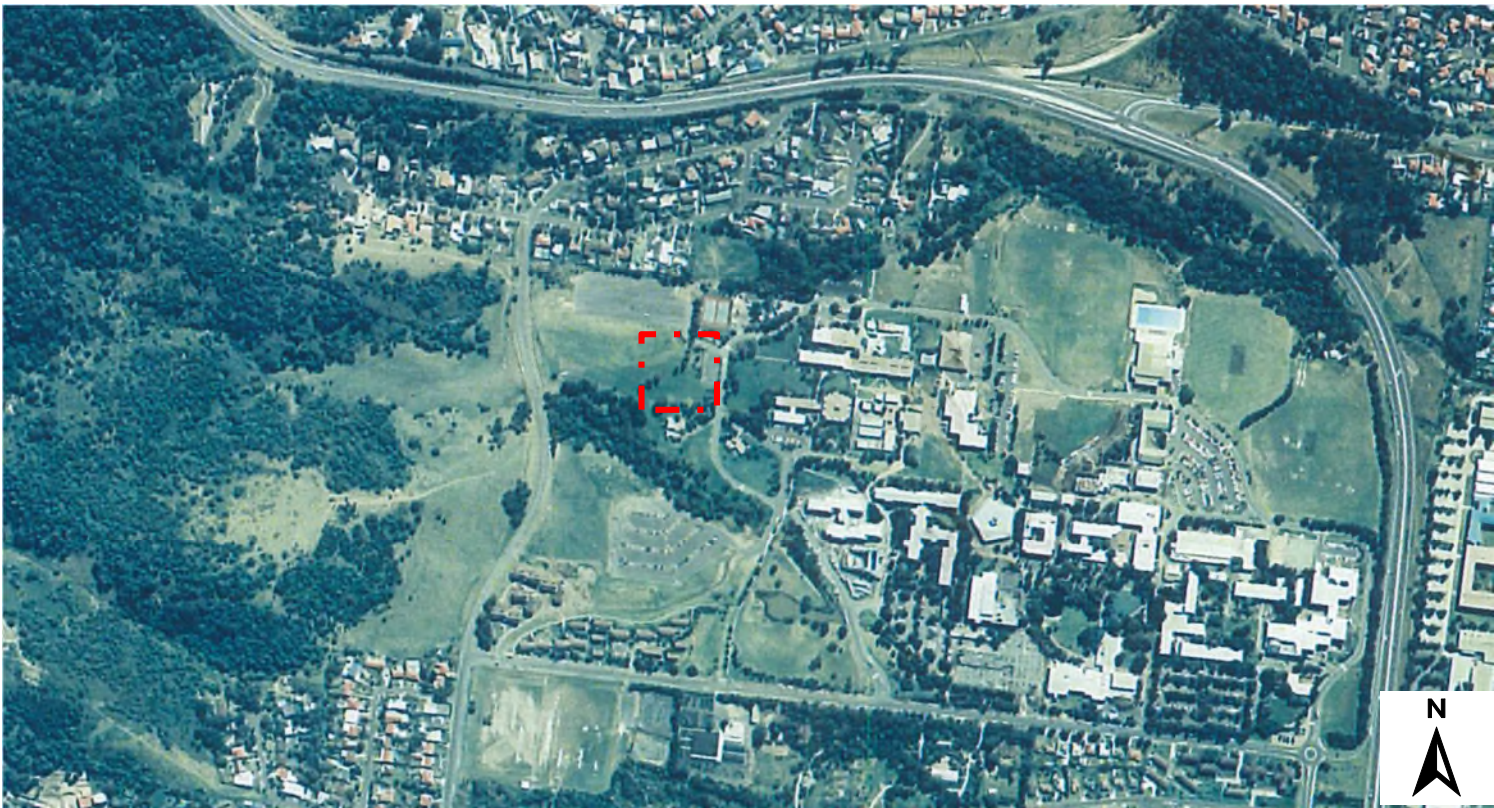


Aerial Photograph 1963

revision	description	drawn	approved	date		drawn	CC	 A TETRA TECH COMPANY	client: ROADS AND MARITIME SERVICES	
						approved			project: CONTAMINATION ASSESSMENT SOCIAL SCIENCES & LAW HUMANITIES AND ARTS BUILDING	
						date			title: AERIAL PHOTOGRAPH 1948-51 & 1963	
						scale	N/A		project no: 754-WOLGE205371AB	
						original size	A3		figure no: B-1	



Aerial Photograph 1976



Aerial Photograph 1990

revision	description	drawn	approved	date		drawn	CC	coffey A TETRA TECH COMPANY	client:	ROADS AND MARITIME SERVICES			
						approved			project:	CONTAMINATION ASSESSMENT SOCIAL SCIENCES & LAW HUMANITIES AND ARTS BUILDING			
						date			title:	AERIAL PHOTOGRAPH 1976 & 1990			
						scale	N/A		project no: 754-WOLGE205371AB figure no: B-2				
						original size	A3						



Aerial Photograph 1998



Aerial Photograph 2010

revision	description	drawn	approved	date		drawn	CC		client: ROADS AND MARITIME SERVICES	
						approved			project: CONTAMINATION ASSESSMENT SOCIAL SCIENCES & LAW HUMANITIES AND ARTS BUILDING	
						date			title: AERIAL PHOTOGRAPH 1998 & 2010	
						scale	N/A		project no: 754-WOLGE205371AB figure no: B-3	
						original size	A3			



Aerial Photograph 2016

revision	description	drawn	approved	date		drawn	CC	 A TETRA TECH COMPANY	client: ROADS AND MARITIME SERVICES	
						approved			project: CONTAMINATION ASSESSMENT SOCIAL SCIENCES & LAW HUMANITIES AND ARTS BUILDING	
						date			title: AERIAL PHOTOGRAPH 2016	
						scale	N/A		project no: 754-WOLGE205371AB figure no: B-4	
						original size	A3			

Appendix B – Groundwater Bore Search Results

**Appendix C –
Section 149
Planning
Certificate**

Colee Quayle

CERTIFICATE	201700225
Issued	23 January 2017
Certificate Type	Sections 149(2) & (5)
Fee	\$133.00
Your Reference	754-WOLGE200229:124008
Council Property Reference	458198

PLANNING CERTIFICATE

Issued Under Section 149 of the Environmental Planning and Assessment Act 1979

PROPERTY DETAILS	Legal Description	Lot 1 DP 1188267
	Location	2 Northfields Avenue KEIRAVILLE NSW 2500

This certificate provides information on how a property (such as land and buildings) may be used and the limits on its development. The certificate contains information Council is aware of through its records and environmental plans, along with data supplied by the State Government.

SECTION 149 (2) DETAILS

As at the date of this certificate, the following prescribed matters under section 149(2) of the Act relate to the abovementioned land:

1. NAMES OF RELEVANT PLANNING INSTRUMENTS & DEVELOPMENT CONTROL PLANS

(1) The name of each environmental planning instrument that applies to the carrying out of development on the land

Wollongong Local Environmental Plan 2009

State Environmental Planning Policies

State Environmental Planning Policy (State and Regional Development) 2011
State Environmental Planning Policy (Urban Renewal) 2010
State Environmental Planning Policy (Affordable Rental Housing) 2009
State Environmental Planning Policy (Exempt and Complying Codes) 2008
State Environmental Planning Policy (Infrastructure) 2007
State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy (State Significant Precincts) 2005
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
State Environmental Planning Policy No. 71 – Coastal Protection
State Environmental Planning Policy No. 65 – Design Quality of Residential Flat Development
State Environmental Planning Policy No. 64 – Advertising and Signage

State Environmental Planning Policy No. 55 – Remediation of Land
State Environmental Planning Policy No. 50 – Canal Estates
State Environmental Planning Policy No. 44 – Koala Habitat Protection
State Environmental Planning Policy No. 36 – Manufactured Home Estates
State Environmental Planning Policy No. 21 – Caravan Parks
State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
State Environmental Planning Policy No. 30 – Intensive Agriculture
State Environmental Planning Policy No. 62 – Sustainable Aquaculture
Paper Subdivisions: Exhibition of draft Environmental Planning & Assessment Amendment
(Subdivision works) Regulation 2013

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

Draft Coastal Management SEPP 2016 (Part of lot)

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

Wollongong Development Control Plan 2009

Wollongong Development Control Plan 2009, contains detailed development controls which supplement the provisions of Wollongong Local Environmental Plan 2009.

Note: The Wollongong Development Control Plan 2009 should be consulted to ascertain its full effect on the land.

(4) In this clause, proposed environmental planning instrument includes a planning proposal for a Local Environmental Plan or a draft environmental planning instrument.

2. ZONING AND LAND USE UNDER RELEVANT LEPs

Wollongong Local Environmental Plan 2009.

Zones Applying to the Land

RE1 Public Recreation
E2 Environmental Conservation
SP2 Road
SP2 Educational Establishment

The objectives for and the uses permissible and prohibited by Wollongong Local Environmental Plan 2009

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a State Environmental Planning Policy or proposed State Environmental Planning Policy) that includes the land in any zone (however described):

- (a) the identity of the zone, whether by reference to a name (such as “Residential Zone” or “Heritage Area”) or by reference to a number (such as “Zone No 2(a)”)**

RE1 – Public Recreation

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

Nil.

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

Boat sheds; Camping grounds; Caravan Parkes; Child care centres; Community facilities; Environmental facilities; Environment protection works; Extensive agriculture; Helipads; Information and education facilities; Kiosks; Markets; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreational facilities (outdoor); Respite day care centres; Restaurants or cafes; Roads; Signage; Take away food and drink premises; Water recreational structures.

- (d) the purposes for which the instrument provides that development is prohibited within the zone.**

Any development not specified in subclause (2) or (3).

Note: For subdivision consent requirements see Clause 2.6, of Wollongong Local Environmental Plan 2009.

Demolition of a building or work requires consent see Clause 2.6AA, of Wollongong Local Environmental Plan 2009.

Development below the mean high water mark requires consent see Clause 5.7, of Wollongong Local Environmental Plan 2009.

Note: Wollongong Local Environmental Plan 2009 should be consulted to ascertain its full effect on the land.

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a State Environmental Planning Policy or proposed State Environmental Planning Policy) that includes the land in any zone (however described):

- (a) the identity of the zone, whether by reference to a name (such as “Residential Zone” or “Heritage Area”) or by reference to a number (such as “Zone No 2(a)”)**

E2 – Environmental Conservation

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

Nil.

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

Environmental facilities; Environment protection works; Extensive agriculture; Recreation areas.

- (d) The purposes for which the instrument provides that development is prohibited within the zone.**

Business premises; Hotel or motel accommodation; Industries; Multi dwelling housing; Recreational facilities (major); Residential flat buildings; Restricted premises; Retail premises; Seniors housing; Service stations; Warehouse and distribution centres; Any development not specified in subclause (2) or (3).

Note: For subdivision consent requirements see Clause 2.6, of Wollongong Local Environmental Plan 2009.

Demolition of a building or work requires consent see Clause 2.6AA, of Wollongong Local Environmental Plan 2009.

Development below the mean high water mark requires consent see Clause 5.7, of Wollongong Local Environmental Plan 2009.

Note: Wollongong Local Environmental Plan 2009 should be consulted to ascertain its full effect on the land.

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a State Environmental Planning Policy or proposed State Environmental Planning Policy) that includes the land in any zone (however described):

- (a) the identity of the zone, whether by reference to a name (such as “Residential Zone” or “Heritage Area”) or by reference to a number (such as “Zone No 2(a)”)**

SP2 – Infrastructure (Road)

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

Building identification signs.

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

The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose; Advertising structures; Business identification signs; Child care centres; Community facilities; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Respite day care centres; Roads.

Maps are available on the NSW Department of Planning website www.planning.nsw.gov.au

(d) the purposes for which the instrument provides that development is prohibited within the zone.

Any development not specified in subclause (2) or (3).

Note:For subdivision consent requirements see Clause 2.6, of Wollongong Local Environmental Plan 2009.

Demolition of a building or work requires consent see Clause 2.6AA, of Wollongong Local Environmental Plan 2009.

Development below the mean high water mark requires consent see Clause 5.7, of Wollongong Local Environmental Plan 2009.

Note: Wollongong Local Environmental Plan 2009 should be consulted to ascertain its full effect on the land.

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a State Environmental Planning Policy or proposed State Environmental Planning Policy) that includes the land in any zone (however described):

(a) the identity of the zone, whether by reference to a name (such as “Residential Zone” or “Heritage Area”) or by reference to a number (such as “Zone No 2(a)”)

SP2 – Infrastructure (Educational Establishment)

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

Building identification signs.

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

The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose; Advertising structures; Business identification signs; Child care centres; Community facilities; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Respite day care centres; Roads.

Maps are available on the NSW Department of Planning website
www.planning.nsw.gov.au

(d) the purposes for which the instrument provides that development is prohibited within the zone.

Any development not specified in subclause (2) or (3).

Note: For subdivision consent requirements see Clause 2.6, of Wollongong Local Environmental Plan 2009.

Demolition of a building or work requires consent see Clause 2.6AA, of Wollongong Local Environmental Plan 2009.

Development below the mean high water mark requires consent see Clause 5.7, of Wollongong Local Environmental Plan 2009.

Note: Wollongong Local Environmental Plan 2009 should be consulted to ascertain its full effect on the land.

Schedule 1 Reclassify Land (Wollongong Local Environmental Plan 2009) applies to Lot 1672 DP 877546, Car Park at University of Wollongong, Keiraville for the purpose of removing all trusts and other interests from certain Council Car Park sites previously reclassified as Operational Land within the meaning of the Local Government Act 1993 reclassifying the land from Community Land to Operational Land.

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

See Clauses 4.1, 4.1AA, 4.1A, 4.2 and 4.2A of the Local Environmental Plan.

(f) Whether the land includes or comprises critical habitat

Nil

(g) Whether the land is in a conservation area (however described)

The land is within the Illawarra Heritage Escarpment Conservation Area listed in Schedule 5 Part 2 of Wollongong Local Environmental Plan 2009.

(h) Whether an item of environmental heritage (however described) is situated on the land

The land is within the Illawarra Heritage Escarpment Conservation Area listed in Schedule 5 Part 2 of Wollongong Local Environmental Plan 2009.

2A. ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGIONAL GROWTH CENTRES) 2006

To the extent that the land is within any zone (however described) under:

- (a) a Precinct Plan (within the meaning of the 2006 SEPP), or**
- (b) a Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act,**
- (c) a proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act,**

the particulars referred to in clause 2 (a) – (h) in relation to that land (with a reference to “the instrument” in any of those paragraphs being read as a reference to Part 3 of the 2006 SEPP, or the Precinct Plan or proposed Precinct Plan, as the case requires).

Not Applicable.

3. COMPLYING DEVELOPMENT

(1) The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1), (c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.

(2) The extent to which complying development may not be carried out on that land because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4) and 1.19 of that Policy and the reasons why it may not be carried out under those clauses.

(3) If the council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, a statement that a restriction applies to the land, but it may not apply to all of the land, and that council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

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

- (1) Subject to the terms of each code, and the zoning of the land, complying development may**

be carried out for the following codes to the extent that the land is not affected by the provisions identified at (2) below.

- General Housing Code
- Rural Housing Code
- Housing Alterations Code
- General Development Code
- Commercial and Industrial (New Buildings and Additions) Code
- Commercial and Industrial (Alterations) Code
- Subdivision Code
- Demolition Code

- (2) Complying development **may not** be carried out on the land to the extent that it is **partially affected by a Heritage Conservation Area or Draft Heritage Conservation Area** because of the provisions of clauses 1.17A, 1.18 or 1.19 of *State Environmental Planning Policy (Exempt and Complying Codes) 2008*

- General Housing Code
- Rural Housing Code
- Commercial and Industrial (New Buildings & Additions) Code

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

- (1) Subject to the terms of each code, and the zoning of the land, complying development **may be** carried out for the following codes to the extent that the land is not affected by the provisions identified at (2) below.

- General Housing Code
- Rural Housing Code
- Housing Alterations Code
- General Development Code

- Commercial and Industrial (New Buildings and Additions) Code
- Commercial and Industrial (Alterations) Code
- Subdivision Code
- Demolition Code

(2) Complying development **may not** be carried out on the land to the extent that it is **partially affected by Ecologically Sensitive Land – Natural Resource/ Biodiversity** because of provisions of clauses 1.17A, 1.18 or 1.19 of *State Environmental Planning Policy (Exempt and Complying Codes) 2008*

- General Housing Code
- Rural Housing Code
- Commercial and Industrial (New Buildings and Additions) Code

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

(1) Subject to the terms of each code, and the zoning of the land, complying development **may be** carried out for the following codes to the extent that the land is not affected by the provisions identified at (2) below.

- General Housing Code
- Rural Housing Code
- Housing Alterations Code
- General Development Code
- Commercial and Industrial (New Buildings and Additions) Code
- Commercial and Industrial (Alterations) Code
- Subdivision Code
- Demolition Code

(2) Complying development **may not** be carried out on the land to the extent that it is **partially identified as Environmentally Sensitive Land - Illawarra Escarpment** because of provisions of clauses 1.17A, 1.18 or 1.19 of *State Environmental Planning Policy (Exempt and Complying Codes) 2008*

- General Housing Code
- Rural Housing Code
- Commercial and Industrial (New Buildings and Additions) Code

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

- (1) Subject to the terms of each code, and the zoning of the land, complying development **may be** carried out for the following codes to the extent that the land is not affected by the provisions identified at (2) below.

- General Housing Code
- Rural Housing Code
- Housing Alterations Code
- General Development Code
- Commercial and Industrial (New Buildings and Additions) Code
- Commercial and Industrial (Alterations) Code
- Subdivision Code
- Demolition Code

- (2) Complying development **may not** be carried out on the land to the extent that it is **partially identified as Environmentally Sensitive Land** zoned RU1, E2, E3, W1 or W2 because of the provisions of clauses 1.17A, 1.18 or 1.19 of *State Environmental Planning Policy (Exempt and Complying Codes) 2008*

- General Housing Code
- Rural Housing Code
- Commercial and Industrial (New Buildings & Additions) Code
- Commercial and Industrial (Alterations) Code

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

- 1) Subject to the terms of each code, and the zoning of the land, complying development **may**

be carried out for the following codes to the extent that the land is not affected by the provisions identified at (2) below.

- General Housing Code
- Rural Housing Code
- Housing Alterations Code
- General Development Code
- Commercial and Industrial (New Buildings and Additions) Code
- Commercial and Industrial (Alterations) Code
- Subdivision Code
- Demolition Code

(2) Complying development **may not** be carried out on the land to the extent that it is land identified as **partially affected by Public Purpose** because of the provisions of clauses 1.17A, 1.18 or 1.19 of *State Environmental Planning Policy (Exempt and Complying Codes) 2008*

- General Housing Code
- Rural Housing Code
- Commercial and Industrial (New Buildings & Additions) Code

4. COASTAL PROTECTION

Whether or not the land is affected by the operation of section 38 or 39 of the Coastal Protection Act 1979, but only to the extent that the council has been so notified by the Department of Services, Technology and Administration.

The Department of Services, Technology and Administration has not notified Council that the land is affected by the operation of sections 38 and 39 of the Coastal Protection Act 1979.

4A. CERTAIN INFORMATION RELATING TO BEACHES AND COASTS

(1) In relation to a coastal council – whether an order has been made under Part 4D of the Coastal Protection Act 1979 in relation to temporary coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land), except where the council is satisfied that such an order has been fully complied with.

Nil

(2) In relation to a coastal council:

(a) whether the council has been notified under section 55X of the Coastal Protection Act 1979 that temporary coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land) and,

Nil

(b) if works have been so placed – whether the council is satisfied that the works have been removed and the land restored in accordance with that Act.

Not applicable

4B. ANNUAL CHARGES UNDER LOCAL GOVERNMENT ACT 1993 FOR COASTAL PROTECTION SERVICES THAT RELATE TO EXISTING COASTAL PROTECTION WORKS

In relation to a coastal council- whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act)

Note: “Existing coastal protection works” are works to reduce the impact of coastal hazards on the land (such as seawalls, revetments, groynes and beach nourishment) that existed before the commencement of section 553B of the Local Government Act 1993

Not applicable

5. MINE SUBSIDENCE

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

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

6. ROAD WIDENING AND ROAD REALIGNMENT

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

- (a) Division 2 of Part 3 of the Roads Act 1993 or**
- (b) Any environmental planning instrument or**
- (c) Any resolution of the council**

Council has no record that the land is affected by any Road Widening or Road Realignment under:

- a) Division 2 of Part 3 of the *Roads Act 1993*, or
- b) any environmental planning instrument, or
- c) any resolution of the Council.

7. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Whether or not the land is affected by a policy:

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

Council has adopted “Wollongong Development Control Plan 2009 – Chapter E12 Geotechnical Assessment”.

Council has adopted Acid Sulfate Maps, Wollongong Local Environmental Plan 2009 – Clause 7.5 Acid Sulfate Soils.

Council has adopted “Wollongong Development Control Plan 2009 – Chapter E16 Bushfire Management”, approved by the Rural Fire Service.

Council has adopted Wollongong City Council Coastal Zone Study (Cardno, Lawson, Treloar 2010).
Draft Coastal Management SEPP 2016.

7A. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

(1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

Development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls as contained in Wollongong Development Control Plan 2009 Chapter E13 Floodplain Management and Wollongong Local Environmental Plan 2009 Clause 7.3 Flood Planning.

(2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

Development on the land or part of the land for any other purpose is subject to flood related development controls as contained in Wollongong Development Control Plan 2009 Chapter E13 Floodplain Management and Wollongong Local Environmental Plan 2009 Clause 7.3 Flood Planning.

(3) Words and expressions in this clause have the same meaning as in the instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006

Further flood information relating to this parcel of land is available by application under section 149(5) of the Environmental Planning & Assessment Act 1979.

8. LAND RESERVED FOR ACQUISITION

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

Nil.

9. CONTRIBUTION PLANS

The name of each contributions plan applying to the land.

Wollongong Section 94A Development Contributions Plan (2014)

The purposes of this contributions plan are:

- To authorise the imposition of a condition on certain development consents and complying development certificates requiring the payment of a contribution pursuant to section 94A of the EP&A Act 1979.
- To assist the council to provide the appropriate public facilities which are required to maintain

- and enhance amenity and service delivery within the Wollongong Local Government area.
- To publicly identify the purposes for which the levies are required.
- Any party wishing to undertake construction of any new, or alterations to any existing, building or other development should review this policy or contact Council to determine if any contributions may be payable.

9A. BIODIVERSITY CERTIFIED LAND

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

Nil.

10. BIOBANKING AGREEMENTS

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

Nil

11. BUSH FIRE PRONE LAND

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

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

The land is recorded in Council's records as bushfire prone land.

12. PROPERTY VEGETATION PLANS

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

The Southern Rivers Catchment Management Authority has not notified Council that the land is affected by a Property Vegetation Plan issued under the Native Vegetation Act 2003.

13. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

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

Nil.

14. DIRECTIONS UNDER PART 3A

If there is a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect, a statement to that effect identifying the provision that does not have effect.

Nil

15. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

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

(a) statement of whether there is a current site compatibility certificate (seniors housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

- (i) the period for which the certificate is current, and
- (ii) that a copy may be obtained from the head office of the Department of Planning, and

(b) a statement setting out any terms of a kind referred to in clause 18(2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land

State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004

Nil.

16. SITE COMPATIBILITY CERTIFICATE FOR INFRASTRUCTURE

A statement of whether there is a valid site compatibility certificates (infrastructure), of which the council is aware, in respect of proposed development on the land and , if there is a certificate, the statement is to include

- (a) the period for which the certificate is valid, and
- (b) that a copy may be obtained from the head office of the Planning and Infrastructure Agency.

State Environmental Planning Policy (Infrastructure) 2007

Nil.

17. SITE COMPATIBILITY CERTIFICATE AND CONDITIONS FOR AFFORDABLE RENTAL HOUSING

(1) A statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include

- (a) the period for which the certificate is current, and
- (c) that a copy may be obtained from the head office of the Planning and Infrastructure Agency.

(2) A statement setting out any terms of a kind referred to in clause 17 (1) or 38 (1) of State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land.

State Environmental Planning Policy (Affordable Rental Housing) 2009

Nil.

18. PAPER SUBDIVISION INFORMATION

(1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to the consent ballot.

Nil

(2) The date of any subdivision order that applies to the land.

Not applicable

(3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

19. SITE VERIFICATION CERTIFICATES

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

- (a) the matter certified by the certificate, and

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

- (b) the date on which the certificate ceases to be current (if any), and
- (c) that a copy may be obtained from the head office of the Planning and Infrastructure Agency,

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

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

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

Nil.

20. LOOSE-FILL ASBESTOS INSULATION REGISTER

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

Nil.

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

- (a) that the land to which the certificate relates is significantly contaminated within the meaning of that Act- if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,
- (b) that the land to which the certificate relates is subject to a management order within the meaning of the Act- if it is subject to such an order at the date when the certificate is issued,
- (c) that the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act – if it is the subject of such an approved proposal at the date when the certificate is issued,
- (d) that the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act – if it is subject to such an order at the date when the certificate is issued,
- (e) that the land to which the certificate relates is the subject of a site audit statement within the meaning of the Act – if a copy of such a statement has been provided at any time to the local authority issuing the certificate

Council has **not** been advised that:

- a) The land is significantly contaminated land within the meaning of the Contaminated Land Management Act 1997
- b) The land is subject to a management order within the meaning of the Contaminated Land Management Act 1997
- c) The land is subject to an approved voluntary management proposal within the meaning of the Contaminated Land Management Act 1997
- d) The land is subject to an ongoing maintenance order within the meaning of the Contaminated Land Management Act 1997
- e) The land is the subject of a site audit statement within the meaning of the Contaminated Land Management Act 1997.

SECTION 149 (5) DETAILS

As at the date of this certificate, the following additional information, provided in good faith pursuant to section 149 (5) of the Act, relate to the abovementioned land. Council has selected these matters as those most likely to be of concern but they do not comprise an exhaustive list of matters likely to affect the land.

When information pursuant to section 149 (5) is requested the Council is under no obligation to furnish any of the information supplied herein pursuant to that section. Council draws your attention to section 149 (6) which states that a council shall not incur any liability in respect of any advice provided in good faith pursuant to subsection (5). The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter referred to in this certificate.

RESOLUTION TO PREPARE PLANNING PROPOSAL

Nil.

PROPOSED DRAFT DEVELOPMENT CONTROL PLANS

The following plans have been placed on exhibition pursuant to the provisions of section 72 of the Environmental Planning and Assessment Act 1979:

Draft Development Control Plan 2009 Review

The Wollongong Development Control Plan 2009 came into force on 3 March 2010. A review commenced after 6 months of operation. The following chapters are available for public exhibition.

1. D14 Wollongong Innovation Campus 2.

LAND STABILITY

Council's land constraint/stability assessment maps show that the land is located in an area where landslip and/or subsidence have occurred, or land stability is suspected. The services of a suitably qualified geotechnical engineer should be sought to ascertain the likely effect if any, on the land.

Note: The advice provided by Council in respect of the stability of the land is based on information contained in Council's land constraint maps. The maps have been compiled from data received by Council and considered by Council to be reasonably reliable. Council does not warrant that its land constraint maps contain all information ever received by Council relating to the stability of the land.

FLOOD AND DRAINAGE

1 Classification of Flood Risk

Council records indicate that this property is located within a **Low, Medium and High Flood Risk** precinct.

Land that is potentially subject to inundation is classified as low, medium or high flood risk. Council has prepared a development control plan known as Wollongong Development Control Plan 2009 that provides details of flood related development controls that may be applicable.

Where the owner/applicant has detailed survey available which identifies the property to be within another risk precinct or not in one at all, it may be presented to Council for reassessment.

Definitions:

High Flood Risk (and Interim Riverine Corridor) Precinct

This has been defined as the area within the envelope of land subject to a high hydraulic hazard (in accordance with the provisional criteria outlined in the Floodplain Management Manual) in a 100 year flood event *plus* all land within a corridor 10m from the top of the creek bank (Interim Riverine Corridor). The high flood risk precinct is where high flood damages, potential risk to life, evacuation problems would be anticipated or development would significantly and adversely effect flood behaviour. Most development should be restricted in this precinct. In this precinct, there would be a significant risk of flood damages without compliance with flood related building and planning controls.

▪ **Medium Flood Risk Precinct**

This has been defined as land below the 100 year flood level (plus 0.5m freeboard) that is not within the High Flood Risk (and Interim Riverine Corridor) Precinct. It is land subject to low hydraulic hazard (in accordance with the provisional criteria outlined by the Floodplain Management Manual). In this precinct there would still be a significant risk of flood damage, but these damages can be minimised by the application of appropriate development controls.

▪ **Low Flood Risk Precinct**

This has been defined as all other land within the floodplain (i.e. within the extent of the probable maximum flood) but not identified within either the High Flood Risk (and Interim Riverine Corridor) or the Medium Flood Risk Precinct, where risk of damages are low for most land uses. The Low Flood Risk Precinct is that area above the 100 year flood (plus 0.5m freeboard) and most land uses would be permitted within this precinct.

2 Estimated Flood Levels

Estimated and/or historical flood levels in the vicinity of this property may be available from Council. Requests may be made by completing a Flood Enquiry Form available from council's website, in writing or from the Level 6 front counter of the Administration Building. A cost is involved for this service. Payment must be made prior to information being provided.

Please contact Council's Drainage Duty Officer on 42277181 to ensure the availability of information before submitting this request form. Council does not hold flood information for every property.

Council on the 30 May 2016 endorsed the WMA Water Review of Conduit Blockage Policy, and agreed to review Council's Flood Studies based on the new policy. The flood study reviews will occur over the following 2 years and may result in a change in flood levels.

ACID SULFATE SOILS

Acid Sulfate Soils Class 5 has been mapped on this land, refer to Clause 7.5 of Wollongong Local Environmental Plan 2009.

CONTAMINATED LAND

No advice provided.

STATE SIGNIFICANT DEVELOPMENT

Nil.

BUILDING LINES

Wollongong Development Control Plan 2009 details the setbacks applicable to the land.

OTHER HERITAGE MATTERS KNOWN TO COUNCIL

Aboriginal Heritage

All development within the Wollongong Local Government Area is subject to the Aboriginal Heritage requirements of the National Parks and Wildlife Act 1974. To determine if your property is affected by an Aboriginal Site, it is recommended that an Aboriginal Heritage Information Management System (AHIMS) search be undertaken by contacting the AHIMS Administrator on (02) 9995 5000. Further detail on Council's Aboriginal Heritage requirements for Development is contained within Chapter E10 of the Wollongong Development Control Plan 2009.

DEVELOPMENT HISTORY

Application may be made for a Building Certificate under section 149B of Environmental Planning and Assessment Act 1979 if written certification of existing buildings on the land is required.

The history of development consent approval applicable to the land may be obtained by consulting the Development Consent Register. Enquiries concerning the register may be made at Council's Customer Service Centre, 41 Burelli Street Wollongong during office hours.

LOOSE-FILL ASBESTOS INSULATION REGISTER

Council recommends you make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the Council also strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

Contact NSW Fair Trading for further information.

OTHER INFORMATION

Illawarra Regional Strategy

The Minister for Planning released the Illawarra Regional Strategy on 1 February 2007. The strategy is the NSW Government 25 year land use strategy for the Illawarra Region.

The Department of Planning and Environment released the Illawarra Shoalhaven Regional Plan, November 2015.

The land is within an Environmentally Sensitive Area (Illawarra Escarpment).

The land is included in the Natural Resources Biodiversity Sensitivity Maps of Wollongong Local

GENERAL INFORMATION

The following general information is brought to the attention of land owners.

1. Tree Management Policy

The Wollongong Tree Management Policy allows proper assessment to be made of the environmental importance and viability of trees before they are pruned, removed or damaged in any way. This Policy prohibits the ringbarking, cutting down, topping, lopping, removing, injuring or destruction of any tree except with the prior written consent of Council.

The Tree Management Policy applies to any tree that:

- Is 3 metres or more in height,
- Has a trunk diameter of 200mm or more at a height of 1 metre from the ground, or
- Has a branch spread of 3 metres or more

Please note that:

- A dead/dying tree is subject to the Tree Management Policy
- Pruning of major structural or anchor roots is also subject to the Tree Management Policy

Some trees may be exempt and do not require a permit to prune or remove them. Following is a list of the exempt tree species:

Salix Species	Willow
Erythrina X Sykesii	Coral Tree
Cupressus Macrocarpa “Brunniana”	Golden Cypress
Lagunaria Pattersonii	Itchy Pod Tree
Harpephyllum Caffrum	Kaffir Plum
Syagrus Romanzoffina	Cocos Palm
Poplar Species	Poplar
Ficus Elastica “Decora” and hybrids	Ornamental Rubber tree
Ligustrum Lucidum	Large Leafed Privet
Cinnamomum Camphora	Camphor Laurel
Schefflera Actinophylla	Umbrella Tree
False Acacia	Black Locust
Peppercorn	Pepper Tree
Alnus	Alder
Acer negundo	Box Elder

For the full list of other exemptions please refer to the Tree Management Policy document available via Council’s website.

Any person acting on a permit issued under this Policy must comply with all conditions of that permit.

Any person who contravenes, or causes or permits the contravention of this Policy is guilty of an offence under the Environmental Planning and Assessment Act 1979.

Development Consents may contain restrictions relating to trees.

Further information regarding Council's Tree Management Policy including how to lodge an application can be made by contacting Council's Customer Service on telephone 4227 7111. Alternatively information can be obtained from Council's website via the following link <http://www.wollongong.nsw.gov.au/services/household/trees/Pages/Lodgeatmp.aspx>.

2. Termite Management for Buildings

Australian Standards 3660.1-2000 (New Buildings) AS 3660.2-2000 (Existing Buildings) Termite Management, recommends that buildings be inspected and be maintained in order to achieve termite management of buildings. Licensed Pest Control Contractors should be contacted to achieve necessary termite control.

3. Lead Paint and Building Renovations

Your attention is drawn to the hazards associated with lead-based paints during building renovation. Suitable precautions should be taken when removing flaking paint or sanding painted surfaces suspected to have been treated with lead-based paint to prevent contamination of the immediate environment and associated health risk from lead dust.

AS 4361 – Part 2 – Guide to Lead Paint Management – Residential and Commercial.

4. Sewage Management Systems

Where a property has on-site sewage management system (this includes septic tanks, disposal trenches, aerated waste water treatment systems, composting toilets and pump out systems) the new owner must obtain an "Approval to Operate" from Council within 3 months of land ownership being transferred or otherwise conveyed.

5. Asbestos

Exposure to asbestos is a serious health hazard. In Australia, asbestos was gradually phased out of building materials in the 1980s and the supply and installation of asbestos containing goods has been prohibited since 31 December 2003. However, asbestos legacy materials still exist in many homes, buildings and other assets and infrastructure.

Council on the 27 October 2014 adopted an Asbestos policy which states Council's commitment to and responsibilities for safely managing asbestos, and provides information for Council and the local community on safely managing asbestos. The policy can be viewed on Council's website: www.wollongong.nsw.gov.au.

This letter is authorised by

Margaret Kampen

LIS Information Officer Section 149 Systems

Wollongong City Council

Telephone (02) 4227 7319

Appendix D – NSW EPA

List of NSW Contaminated Sites Notified to EPA as of 13 June 2017

Background

A strategy to systematically assess, prioritise and respond to notifications under Section 60 of the *Contaminated Land Management Act 1997* (CLM Act) has been developed by the EPA. This strategy acknowledges the EPA's obligations to make information available to the public under *Government Information (Public Access) Act 2009*.

When a site is notified to the EPA, it may be accompanied by detailed site reports where the owner has been proactive in addressing the contamination and its source. However, often there is minimal information on the nature or extent of the contamination.

For some notifications, the information indicates the contamination is securely immobilised within the site, such as under a building or carpark, and is not currently causing any offsite consequences to the community or environment. Such sites would still need to be cleaned up, but this could be done in conjunction with any subsequent building or redevelopment of the land. These sites may not require intervention under the CLM Act, but could be dealt with through the planning and development consent process.

Where indications are that the nominated site is causing actual harm to the environment or an unacceptable offsite impact (i.e. it is a "significantly contaminated site"), the EPA would apply the regulatory provisions of the CLM Act to have the responsible polluter and/or landowner investigate and remediate the site.

As such, the sites notified to the EPA and presented in the following table are at various stages of the assessment and/or remediation process. Understanding the nature of the underlying contamination, its implications and implementing a remediation program where required, can take a considerable period of time. The tables provide an indication, in relation to each nominated site, as to the management status of that particular site. Further detailed information may be available from the EPA or the responsible landowner.

The following questions and answers may assist those interested in this issue:

Frequently asked questions

What is the difference between the "List of NSW Contaminated Sites Notified to the EPA" and the "Contaminated Land: Record of Notices"?

A site will be on the Contaminated Land: Record of Notices only if the EPA has issued a regulatory notice in relation to the site under the *Contaminated Land Management Act 1997*.

The sites appearing on this "List of NSW contaminated sites notified to the EPA" indicate that the notifiers consider that the sites are contaminated and warrant reporting to the EPA. However, the contamination may or may not be significant enough to warrant regulation by the EPA. The EPA needs to review and, if necessary, obtain more information before it can make a determination as to whether the site warrants regulation.

Why my site appears on the list?

Your site appears on the list because of one or more of the following reasons:

- The site owner and/or the person partly or fully responsible for causing the contamination notified to the EPA about the contamination under Section 60 of the *Contaminated Land Management Act 1997*. In other words, the site owner or the “polluter” believes the site is contaminated.
- The EPA has been notified via other means and is satisfied that the site is or was contaminated.

Does the list contain all contaminated sites in NSW?

No. The list only contains contaminated sites that the EPA is aware of, with regard to its regulatory role under the CLM Act. An absence of a site from the list does not necessarily imply the site is not contaminated.

The EPA relies upon responsible parties to notify contaminated sites.

How are these notified contaminated sites managed by the EPA?

There are different ways that the EPA manages these notified contaminated sites. First, an initial assessment is carried out by the EPA. At the completion of the initial assessment, the EPA may take one or more than one of the following management approaches:

- The contamination warrants the EPA's direct regulatory intervention either under the *Contaminated Land Management Act 1997* or the *Protection of the Environment Operations Act 1997* (POEO Act), or both. Information about current or past regulatory action on this site can be found on EPA website.
- The contamination with respect to the current use or approved use of the site, as defined under the *Contaminated Land Management Act 1997*, is not significant enough that it warrants EPA regulation.
- The contamination does not require EPA regulation and can be managed by a planning approval process.
- The contamination is related to an operational Underground Petroleum Storage System, such as a service station or fuel depot. The contamination may be managed under the POEO Act and the Protection of the Environment Operation (Underground Petroleum Storage Systems) Regulation 2008.
- The contamination is being managed under a specifically tailored program operated by another agency (for example the Department of Industry and Investment's *Derelict Mines Program*).

I am the owner of a site that appears on the list. What should I do?

First of all, you should ensure the current use of the site is compatible with the site contamination. Secondly, if the site is the subject of EPA regulation, make sure you comply with the regulatory requirements, and you have considered your obligations to notify other parties who may be affected.

If you have any concerns, contact us and we may be able to offer you general advice, or direct you to accredited professionals who can assist with specific issues.

I am a prospective buyer of a site that appears on the list. What should I do?

You should seek advice from the vendor to put the contamination issue into perspective. You may need to seek independent expert advice.

The information provided in the list is meant to be indicative only, and a starting point for your own assessment. Site contamination as a legacy of past site uses is not uncommon,

particularly in an urbanised environment. If the contamination on a site is properly remediated or managed, it may not materially impact upon the intended future use of the site. However, each site needs to be considered in context.

List of NSW Contaminated Sites Notified to the EPA

Disclaimer

The EPA has taken all reasonable care to ensure that the information in the list of contaminated sites notified to the EPA (the list) is complete and correct. The EPA does not, however, warrant or represent that the list is free from errors or omissions or that it is exhaustive.

The EPA may, without notice, change any or all of the information in the list at any time.

You should obtain independent advice before you make any decision based on the information in the list.

The list is made available on the understanding that the EPA, its servants and agents, to the extent permitted by law, accept no responsibility for any damage, cost, loss or expense incurred by you as a result of:

1. any information in the list; or
2. any error, omission or misrepresentation in the list; or
3. any malfunction or failure to function of the list;
4. without limiting (2) or (3) above, any delay, failure or error in recording, displaying or updating information.

Site Status	Explanation
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or <i>Protection of the Environment Operations Act 1997</i> . Alternatively, the EPA may require information via a notice issued under s77 of the <i>Contaminated Land Management Act 1997</i> or issue a Preliminary Investigation Order.
Regulation under CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the <i>Contaminated Land Management Act 1997</i> is not required.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the <i>Contaminated Land Management Act 1997</i> . A regulatory approach is being finalised.

Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the <i>Contaminated Land Management Act 1997</i> (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record .
Contamination currently regulated under POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the <i>Protection of the Environment Operations Act 1997</i> (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register .
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the <i>Contaminated Land Management Act 1997</i> (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the <i>Protection of the Environment Operations Act 1997</i> (POEO Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the <i>Contaminated Land Management Act 1997</i> (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record .

Suburb	Site Name	Site Address	Contamination Activity Type	EPA Management Class	Latitude	Longitude
KATOOMBA	Former Katoomba/Leura Gasworks	Megalong STREET	Gasworks	Contamination currently regulated under CLM Act	-33.71318559	150.3187284
KELLYVILLE	BP Service Station	19-21 Windsor ROAD	Service Station	Under assessment	-33.71280997	150.9590756
KELLYVILLE	Caltex Service Station	3-5 Windsor ROAD	Service Station	Regulation under CLM Act not required	-33.71436125	150.9602175
KELSO	BP Service Station (Reliance Petroleum)	63 Sydney ROAD	Service Station	Under assessment	-33.41925328	149.6076677
KELSO	Caltex Service Station Kelso	19 Sydney ROAD	Service Station	Regulation under CLM Act not required	-33.41904247	149.6023985
KEMBLA GRANGE	ShawCor Australia	66 West Dapto ROAD	Other Petroleum	Regulation under CLM Act not required	-34.46875328	150.8106326
KEMBLAWARRA	Griffins Bay, Lake Illawarra	Shellharbour ROAD	Landfill	Regulation under CLM Act not required	-34.49653984	150.8943776
KEMPS CREEK	Caltex Service Station	1163 Mamre ROAD	Service Station	Under assessment	-33.86972102	150.7966074
KEMPSEY	Former Mobil depot	14 Hopetoun STREET	Other Petroleum	Regulation under CLM Act not required	-31.07603107	152.8350132
KEMPSEY	Former Mobil Service Station NL3448	108-112 Smith STREET	Service Station	Under assessment	-31.07492508	152.8431945
KEMPSEY	Former Shell Depot	43-51 Gladstone STREET	Other Petroleum	Regulation under CLM Act not required	-31.07500944	152.8346699
KEMPSEY	Kempsey Showground	19 Sea STREET	Unclassified	Contamination being managed via the planning process (EP&A Act)	-31.07334836	152.8308795
KEMPSEY	Mobil Depot	154 Belgrave STREET	Service Station	Regulation under CLM Act not required	-31.07965043	152.8326303
KEMPSEY	Shell Coles Express Service Station	Corner Pacific Highway and Cochrane STREET	Service Station	Under assessment	-31.07036743	152.8461571
KENSINGTON	7-Eleven Kensington	135 Anzac PARADE	Service Station	Under assessment	-33.91035885	151.2228537
KENSINGTON	Caltex Service Station	219a Anzac PARADE	Service Station	Under assessment	-33.91460752	151.2251266
KENSINGTON	Footpath adjacent to 10-20 Anzac Parade	10-20 Anzac PARADE	Service Station	Regulation under CLM Act not required	-33.9032124	151.2237836
KENSINGTON	Former Ampol Service Station	76-82 Anzac PARADE	Service Station	Regulation under CLM Act not required	-33.9059246	151.2242891
KENTHURST	Vacant Land	259 McCylmonts ROAD	Unclassified	Regulation under CLM Act not required	-33.61283529	150.9425303
KHANCOBAN	Khancoban Tip	Alpine WAY	Landfill	Regulation under CLM Act not required	-36.21994191	148.1542718
KIAMA	Former Gasworks	105 to 109 and 113 Shoalhaven STREET	Gasworks	Regulation under CLM Act not required	-34.67416881	150.8504143
KIAMA HEIGHTS	Former Mobil Service Station Kiama Heights	7-9 South Kiama DRIVE	Service Station	Under assessment	-34.69553931	150.8437977
KILLARA	7-Eleven Service Station (Former Mobil)	496 Pacific HIGHWAY	Service Station	Contamination currently regulated under CLM Act	-33.77146554	151.1606903



Healthy Environment, Healthy Community, Healthy Business

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

Search results

Your search for:LGA: Wollongong City Council

Matched 27 notices
relating to 12 sites.

[Search Again](#)

[Refine Search](#)

Suburb	Address	Site Name	Notices related to this site
BULLI	7 Molloy STREET	Scrap Yard	1 former
DAPTO	178 Kanahooka ROAD	Slag Dump	3 former
FAIRY MEADOW	46 Montague STREET	Caltex Fuel Depot and adjoining land	2 former
PORT KEMBLA	Springhill ROAD	BHP Area 21	1 former
PORT KEMBLA	Flinders STREET	Manildra Park	2 current
PORT KEMBLA	Five Islands ROAD	No 2 Steelworks	1 current and 2 former
PORT KEMBLA	Military ROAD	Port Kembla Copper Smelter	5 former
PORT KEMBLA	Foreshore Road and Darcy ROAD	Port Kembla Orica	2 current
STANWELL TOPS	Plateau ROAD	Christian Conference Centre	1 current
UNANDERRA	13 Marley PLACE	BlueScope Stainless Steel	2 current
UNANDERRA	41-49 Princes HIGHWAY	Former Prime Service Station and adjoining lands	4 former
W Wollongong	425 Crown STREET	Woolworths Petrol	1 current

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19 June 2017

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**Appendix E –
Wollongong City
Council
Development
Application Search**

Applications Details	
2 Northfields Avenue, KEIRAVILLE NSW 2500	
Property Applications: PC-2011/1009, Airconditioning installation and associated building works to Buildings 4 and 35	***
Property Applications: DE-2012/13, Liquor Licence	***
Property Applications: DA-2009/1189/B, Integrated Development - Construction of student accommodation building with associated site works and services, Modification B - Modification to architectural design, landscape design and conditions of consent	***
Property Applications: DE-2012/48, Liquor Licence	***
Property Applications: PL-2012/23, Improvements to pedestrian/cyclists access on Northfields Avenue	***
Property Applications: DA-2012/739, Landscaping works upgrade including construction of a multi-use games area and cafe with outdoor covered seating and pergola	***
Property Applications: DA-2012/797, Commercial - alterations and additions	***
Property Applications: DA-2009/1128/A, Demolition of existing building and construction of academic and research building in two stages - Modification - reduction in main roof height, minor addition to ground floor area, additional parking and cyclist facilities in basement, architectural design modifications and project brief amendments	***
Property Applications: TMO-2012/1417, Remove 5 x trees	***
Property Applications: TMO-2012/1418, Remove x 5 trees	***
Property Applications: TMO-2012/1419, Remove x 5 trees	***
Property Applications: TMO-2012/1420, Remove 1 tree	***
Property Applications: PC-2012/898, Enclose access link between existing library building 16 and building 17 at Level 2	***
Property Applications: DA-2012/739/A, Landscaping works upgrade including construction of a multi-use games area and cafe with outdoor covered seating and pergola - Modification to delete condition 30	***
Property Applications: DA-2012/1216, Construction of new roof and associated eaves, gutters, downpipes and walls and construction of new roof plant-room and internal access stairs	***
Property Applications: RO-2012/1049, WATER CONNECTION TO SITE - TCP NO. 2931	***
Property Applications: DA-2012/739/B, Landscaping works upgrade including construction of a multi-use games area and cafe with outdoor covered seating and pergola - Modification to delete condition 23	***
Property Applications: PC-2012/1059, Landscaping works upgrade including construction of a multi-use games area and cafe with outdoor covered seating and pergola - Modification to delete condition 23	***
Property Applications: PC-2012/1071, Construction of new main entry stair and foyer to existing building 19	***
Property Applications: DA-2012/1434, Landscape works - removal of 14 trees and extension to existing storage compound	***
Property Applications: PC-2013/24, Integrated Development - Construction of student accommodation building with associated site works and services, Modification B - Modification to architectural design, landscape design and conditions of consent - PC's Construction Certificate No J110424B	***
Property Applications: PC-2013/31, Fit out of food premises	***
Property Applications: DE-2013/9, Liquor Licence	***
Property Applications: CC-2013/44, Landscape works - removal of 14 trees and extension to existing storage compound	***
Property Applications: DC-2013/79, Driveway crossing	***
Property Applications: PC-2013/339, Connecting stairs between level one and level two within building 17	***
Property Applications: DA-2013/422, University of Wollongong Building 40 Hope Theatre - alterations to existing male and female amenities	***
Property Applications: PL-2013/40, Demolition of existing building 32A, preliminary site works and the construction of a science teaching facility	***
Property Applications: DE-2013/83, Liquor Licence	***
Property Applications: DA-2009/1189/C, Integrated Development - Construction of student accommodation building with associated site works and services, Modification C - to modify part of the civil OSD design	***
Property Applications: DA-2012/1216/A, Construction of new roof and associated eaves, gutters, downpipes and walls and construction of new roof plant-room and internal access stairs, Modification A - change the proposed fully enclosed plant-room to an open deck plant platform located above the roof	***

Property Applications: PC-2013/682, Demolition of existing building and construction of academic and research building in two stages - structural works to basement up to ground floor slabs - PC's Construction Certificate No J130153A

Property Applications: DA-2013/683, Demolition of existing building 32A and construction of science teaching facility and preliminary works

Property Applications: DA-2009/1189/D, Integrated Development - Construction of student accommodation building with associated site works and services, Modification D - to requirement to demolish existing traffic calming blister and associated works and deletion of the requirement to construct a new pedestrian crossing and associated works on Robsons Road

Property Applications: PC-2013/713, Construction of new roof and associated eaves, gutters, downpipes and walls and construction of new roof plant-room and internal access stairs

Property Applications: DA-2009/1128/B, Demolition of existing building and construction of academic and research building in two stages, Modification B - to reduce floor area and carparking and amendment to internal partitioning and layouts

Property Applications: PC-2013/762, Stage 2 - construction of plant platform and meter room

Property Applications: PL-2013/66, Long term management of site trees at Wollongong University sites

Property Applications: PC-2013/1009, Internal fitout works to existing commercial office area at Building 40

Property Applications: DA-2013/1195, Residential - demolition of five (5) dwelling houses

Property Applications: PC-2013/1257, University of Wollongong Building 40 Hope Theatre - alterations to existing male and female amenities

Property Applications: DA-2013/683/A, Demolition of existing building 32A and construction of science teaching facility and preliminary works, Modification A - reduce footprint and reduction in height

Property Applications: PC-2013/1394, Demolition of existing building 32A and construction of science teaching facility and preliminary works - this certificate limited to structural, stormwater & civil works - PC's Construction Certificate No J130672

Property Applications: PC-2014/211, Demolition of existing building and construction of academic and research building in two stages, Modification B - to reduce floor area and carparking and amendment to internal partitioning and layouts - PC's Construction Certificate No J130153C

Property Applications: PC-2014/641, Demolition of existing building 32A and construction of science teaching facility and preliminary works - excluding the installation of the hydrant system - PC's Construction Certificate No J130672A

Property Applications: PC-2014/776, Demolition of existing building and construction of academic and research building in two stages - PC's Construction Certificate No J130153B

Property Applications: PC-2014/982, Demolition of existing building and construction of academic and research building in two stages - PC's Construction Certificate No J130153E

Property Applications: PC-2014/1440, Demolition of existing building 32A and construction of science teaching facility and preliminary works - PC's Construction Certificate No J130672B

Property Applications: BA-1973/3051, Social Science Building Pathway Internal Title

Lot 1 DP 1163615



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Include
Sub-Properties

Applications Details	
2 Northfields Avenue, KEIRAVILLE NSW 2500	
Property Applications: BA-1995/2380, University Sciences Building - Da 687/95, Building 201	---
Property Applications: BA-1996/155, Office & Workshop Building And Parking - Da95/687, Essential Services For Building 31A-Administration Building	---
Property Applications: BA-1996/710, Computer Laboratories & Assoc Facilities - Da95/687, Building 17 - Union Library Link	---
Property Applications: BA-1996/1164, Academic Building - Da687/95, Building 3 - Informatics	---
Property Applications: BA-1996/2275, Addition & Alteration To Bldg 25 - University	---
Property Applications: PC-2000/31860, Proposed General Purpose Academic Building And Site Works, For Building 30	---
Property Applications: CC-2002/585, Demolition Of Existing Shed And The Construction Of An, On-Grade Car Park	---
Property Applications: CC-2002/1880, Upgrade Existing Corporate Services Offices, See 4/98 For Essential Services	---
Property Applications: CC-2002/1882, Extension To Existing Building Over 2 Storeys, Demolition, To Include Removal Of Timber Deck At Level 1, Comprised, Fibre Cement Wall And Park Roof To Facilitate Extension, (Recreation & Aquatic Centre - Building No. 13)	---
Property Applications: CC-1999/1262, Alterations & Additions To Existing Building 39	---
Property Applications: CC-1999/1644, Building 22 Refurbishments	---
Property Applications: CC-1999/1990, Refurbishment Of Building 18 - Chemistry / Physics Building	---
Property Applications: CD-2002/158, Alterations To Stage 1 - Illawarra Technology Centre Ground Floor	---
Property Applications: PC-2002/40218, Proposed Internal Fitout To Building Number 39	---
Property Applications: PC-2003/40015, Internal Alterations To Building 39 - Levels 1 And 2	---
Property Applications: CD-2003/210, Demolition Of Existing Toilets Levels 1 & 2 Of Building 17, At The University Of Wollongong And Construction Of New, Toilets	---
Property Applications: CD-2003/211, Alterations To Existing Laboratory	---
Property Applications: BA-1964/1396, Alterations & Additions To Metallurgy & Union Buildings	---
Property Applications: BA-1967/1507, Extensions To Garage	---
Property Applications: BA-1968/300, Additions To College	---
Property Applications: BA-1968/2443, Teaching & Staff Building For Arts, Commerce & Science	---
Property Applications: BA-1968/4959, Pavilion	---
Property Applications: BA-1969/90, Stage 2 Union Building	---
Property Applications: BA-1970/2921, Temporary Library	---
Property Applications: BA-1971/1615, Laboratory	---
Property Applications: BA-1971/1802, Substation	---
Property Applications: BA-1971/1853, Science Building	---
Property Applications: BA-1974/352, University Union	---
Property Applications: BA-1974/1426, University College - 5 Lecture Theatres	---
Property Applications: BA-1974/1585, Offices	---
Property Applications: BA-1974/1732, Extension To Science Building	---
Property Applications: BA-1974/2911, Storage Shed - For 2 Years	---
Property Applications: BA-1975/43, Car Park - Conditionally	---
Property Applications: BA-1975/565, Sports Centre	---
Property Applications: BA-1976/2828, Site Works, Drainage & Car Aprks	---
Property Applications: BA-1977/2686, Infalmmable Liquids Store	---
Property Applications: BA-1977/3063, Concrete Mezzanine Floor	---
Property Applications: BA-1977/3240, Timber & Concrete Joinging Of Buildings 6 & 7	---
Property Applications: BA-1978/39, Animal House & Glass House	---
Property Applications: BA-1978/304, Computer Room Additions	---
Property Applications: BA-1978/663, Animal House	---
Property Applications: BA-1978/1200, Additions To University	---
Property Applications: BA-1978/1560, Additions To University	---
Property Applications: BA-1978/2201, Drama Workshop	---
Property Applications: BA-1978/3080, Social Science Building	---
Property Applications: BA-1979/1260, Social Science Block	---
Property Applications: BA-1979/1369, Indoor Sports Hall	---
Property Applications: BA-1979/1563, Additions To Kitchen & Store	---

Property Applications:	BA-1979/1949, Additions To Union Building	***
Property Applications:	BA-1979/2351, Gymnasium	***
Property Applications:	BA-1980/518, University Childcare Centre	***
Property Applications:	BA-1980/815, Service Complex Stage 1	***
Property Applications:	DA-1973/124, Library Building Air	***
Conditioning Plant Room		
Property Applications:	DA-1974/32, Students Union (Stage 3)	***
Property Applications:	DA-1974/104, 5 Lecture Theatres	***
Property Applications:	DA-1974/180, Educational Liason Office	***
Property Applications:	DA-1975/45, Temporary Ground Level Car	***
Park		
Property Applications:	DA-1975/306, 3000 Gallon Oil Storage	***
Property Applications:	DA-1977/285, Flammable Liquid Storeroom	***
Additions To Art, Commerce & Science Building		
Property Applications:	DA-1977/433, Addition Of Mezzanine Floor	***
To Building No. 3		
Property Applications:	DA-1977/511, Laboratory	***
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Property Applications:	DA-1978/40, Drainage Work & Service Road	***
Property Applications:	DA-1978/217, Landscaping & Development	***
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Property Applications:	DA-1978/529, Drama Workshop	***
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& Store		
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Property Applications:	DA-1979/668, Maintenance Workshops &	***
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Property Applications:	DA-1980/11, Rebuilding Of Section Of	***
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Property Applications:	DA-1980/564, Mezzanine Floor To	***
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Property Applications:	DA-1981/1192, Erection Of Research	***
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Property Applications:	DA-1982/284, Additions To Gymnasium	***
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Counselling & Medical Centre & Co-Operative Book Shop		
Property Applications:	DA-1982/751, Research Laboratory	***
Property Applications:	DA-1983/370, Floodlights For Tennis	***
Courts		
Property Applications:	DA-1983/580, Additions To Kids University	***
Property Applications:	DA-1983/834, New Tertiary Building	***
Property Applications:	DA-1983/864, Student & Residential	***
Accomodation		
Property Applications:	DA-1984/253, New Printery Building	***
Property Applications:	DA-1984/271, Computer Room Additions	***
Property Applications:	DA-1984/503, School Of Nursing	***
Property Applications:	DA-1984/551, 2Nd Storey Office To Arts	***
Building		
Property Applications:	DA-1985/311, Administration Block	***
Property Applications:	DA-1985/740, New Library	***
Property Applications:	DA-1986/43, New Technology Centre	***
Property Applications:	DA-1986/145, Office Space Additions	***
Property Applications:	DA-1986/375, Alterations & Additions To	***
Recreation Centre		
Property Applications:	DA-1986/376, Approved Conditionally	***
Property Applications:	DA-1986/522, Temporary Car Park	***
Property Applications:	DA-1986/639, Relocate Entrance No. 1 &	***
Control Security Booth		
Property Applications:	DA-1986/664, Relocate Vehicular Entrance	***
No. 3 & Security Booth		
Property Applications:	DA-1986/937, Store	***

Property Applications: DA-2002/701, Demolition Of Existing Shed
And The Construction Of An On-Grade Car Park For 223 Vehicles

Property Applications: DA-2002/1113, Fire Safety Upgrade To
Buildings 10,19,21,23,25,36,40,63,67

Property Applications: DA-2002/2037, Extension To Existing
Building Over Two Storeys, Demolition To Include Removal Of Timber
Deck At Level 1, Compressed Fibre Cement Wall & Park Roof To
Facilitate Extension

Property Applications: DA-2002/2279, Upgrade Existing Corporate
Services Offices

Property Applications: DA-2003/1110, Alterations And Additions
To Building 40 - Teaching Areas Academic Offices And Hope Theatre

Property Applications: DA-2003/1244, Redevelopment Of Existing
Pedestrian Entry With Paving, Signage, Low Walling, Tree Removal And
Water Feature Development - Northfields Ave/Irvine Street Gwynneville

Property Applications: DA-2002/2279/A, Upgrade Existing
Corporate Services Offices - Modification To Change Office Layout

Property Applications: BC-2004/56, Lecture Theatre
Refurbishment, Building 14 - University of Wollongong

Property Applications: DA-2004/257, Building code upgrade and
backlog maintenance works

Property Applications: DA-2004/657, Alterations to building 39
Property Applications: CC-2002/948, Fire safety upgrades of

buildings 10, 19, 21, 23, 25, 36, 40, 63, 67

Property Applications: PC-2004/30306, Redevelopment of existing
pedestrian entry with paving, signage, low walling, tree removal and
water feature development - Northfields Ave/Irvine Street Gwynneville

Property Applications: DA-2004/1521, Building works to extend
an existing maintenance workshop (Building 31) to accomodate a
carpenters and joiners workshop and external works to relocate
landscape material storage bins

Property Applications: DA-2004/1581, Demolition of existing
gymnasium (Building 28)

Property Applications: PL-2004/78, Construction of a new
medical school building and associated siteworks and services

Property Applications: CC-2004/745, Building works to extend an
existing maintenance workshop (Building 31) to accomodate a
carpenters and joiners workshop and external works to relocate
landscape material storage bins

Property Applications: DA-2004/1868, Additional storeroom to
student bookstore

Property Applications: DA-2004/1915, Construction of a new
graduate medical school and associated site works and services to
building 28

Property Applications: PC-2005/30013, Additional storeroom to
student bookstore

Property Applications: PL-2005/24, 3 Court indoor sports hall,
associated amenities control, store rooms and mezzanine stores area

Property Applications: CC-2005/288, Construction of a new
graduate medical school and associated site works and services to
building 28

Property Applications: CD-2005/145, Refurbishment works to
ground level and level 2 of existing building 17 at the University
of Wollongong

Property Applications: DA-2005/1436, Demolition of building 9
and tree removal

Property Applications: CD-2005/152, Minor internal building
alterations to existing tenancy partitions, electrical and
mechanical services - building 39

Property Applications: PC-2005/995, Refurbishment of existing
lecture theatres 2, 3 and 4 including mechanical and electrical
services upgrade - Building 20

Property Applications: DA-2005/1766, Minor internal building
alterations including partitions, infill to atrium and electrical
and mechanical services

Property Applications: CD-2005/166, Minor internal alterations
to tenancy - modification to partitions, ceilings, electrical and
mechanical services of ITC building

Property Applications: DA-2005/1920, Minor internal alterations
to storage space on ground floor of building

Property Applications: CC-2005/387, Minor internal alterations
to storage space on ground floor of building

Property Applications: DA-2005/1923, Internal alteration and
toilet refurbishment - building 16 Library

Property Applications: CC-2005/388, Internal alteration and
toilet refurbishment - building 16 Library

Property Applications: PL-2006/1, Extension to existing library

Property Applications: PL-2006/11, relocation of existing
school facility

Property Applications: DA-2006/1013, Ecological research centre and associated site works and services	###
Property Applications: DA-2006/1135, Minor additions and internal alterations to Building 36 Administration Building	###
Property Applications: DA-2006/1198, Carport enclosure and ducting to building 41	###
Property Applications: DA-2006/1333, Refurbishment of existing 115 seat lecture theatre - building 38	###
Property Applications: DA-2006/539, Extension to library at University of Wollongong	###
Property Applications: CC-2006/119, Minor additions and internal alterations to building 36 - administration building	###
Property Applications: DA-2006/1524, Landscape masterplan for the University of Wollongong Central Square	###
Property Applications: CC-2006/134, Landscape masterplan for the University of Wollongong Central Square. Stages 1&2 -Champagne Lawn &Central Lawn	###
Property Applications: CC-2006/138, Extension to library at University of Wollongong	###
Property Applications: DA-2006/1198/A, Carport enclosure and ducting to building 41 - modification to relocate location of external ducting	###
Property Applications: CC-2006/144, Refurbishment of existing 113 seat lecture theatre - building 38	###
Property Applications: DA-2006/1135/A, Minor additions and internal alterations to Building 36 Administration Building - modification to delete condition 11 from development consent	###
Property Applications: DA-2006/1779, Creek stabilisation works near western carpark	###
Property Applications: CC-2006/151, Construction of carport and new ventilation system - building 41	###
Property Applications: DA-2007/98, Alterations and additions to University of Wollongong - building 40	###
Property Applications: CC-2007/23, Alterations and additions to the University of Wollongong - building 40	###
Property Applications: CC-2007/25, Creek stabilisation works near western carpark, rectify bank erosion and improve appearance and stability of the creek	###
Property Applications: DA-2006/1450, Refurbishment of building 8	###
Property Applications: CC-2007/17, Refurbishment to building 8 - University of Wollongong	###
Property Applications: CD-2007/12, Office fitout to University of Wollongong - building 39	###
Property Applications: DA-2006/1013/A, Ecological research centre and associated site works and services - modification to site works, building works, landscape and hydraulics	###
Property Applications: CC-2007/70/1, Ecological research centre and associated site works and services - Stage 1 - Bulk earthworks	###
Property Applications: CC-2007/70/2, Ecological research centre and associated site works and services - Stage 2 - Research centre	###
Property Applications: PL-2007/44, Construction of new indoor sports hall, associated amenities,administration offices, cafe, store rooms and basement parking for 120 cars	###
Property Applications: DA-2007/1301, Minor extensions to administration building 36	###
Property Applications: CD-2007/27, Internal refurbishment to administration office	###
Property Applications: CD-2007/30, Internal alterations and refurbishment of parts of building 11 to form a health centre at level 1 (ground) and office accommodations at level 2	###
Property Applications: DA-2007/1425, Multi purpose sports hall with basement carpark and mezzanine level inside sports hall	###
Property Applications: DA-2006/1013/B, Ecological research centre and associated site works and services - modification to delete steel framed bridges to internal driveway, replace bridges with conventional cut and fill roadway and remove additional tree number 17 to accommodate new road cutting and swale drain. Deletion of condition 16.	###
Property Applications: CC-2007/70/2/A, Ecological research centre and associated site works and services - Stage 2 - Research centre - modification to delete steel framed bridges to internal driveway, replace bridges with conventional cut and fill roadway and remove additional tree number 17 to accommodate new road cutting and swale drain	###
Property Applications: CC-2007/137, Minor extensions to administration building 36	###
Property Applications: PL-2008/6, Illawarra Health and Medical Research Institute - Construction of a Clinical trials facilities and research labs/officers and support areas - three levels over	###

parking - Stage 1 & 2	Property Applications: TMO-2008/425, Remove 1xTree	###
Property Applications: DA-2006/1013/C, Ecological research centre and associated site works and services - modification relates to extension of working hours to include Saturday afternoon to 4pm and Sunday 9am to 4pm for remainder of project (expected duration until end July 2008)		###
Property Applications: DA-2008/557, Construction of stages 1 and 2 of the Illawarra Health and Medical Research Institute at the University of Wollongong		###
Property Applications: CD-2008/10, Alterations to ground floor level of building number (42) for use as an earth science field store and lab		###
Property Applications: CD-2008/13, Refurbishment of existing Oval No 1 change rooms and amenities		###
Property Applications: PC-2008/506, Stage 1 - Bulk excavation only		###
Property Applications: DA-2008/929, Refurbishment of oval Number 1 - including floodlighting, grandstand and awning		###
Property Applications: DA-2008/1012, Alterations and additions to building number 31 - Level 1		###
Property Applications: DA-2008/1144, Installation of front entrance sign		###
Property Applications: PC-2008/685, Stage 2 - Multi purpose sports hall with basement carpark and mezzanine level inside sports hall		###
Property Applications: DA-2008/1266, Building 67 Mckinnon building ground floor food area renovations and alterations		###
Property Applications: CC-2008/122, Alterations and additions to building number 31 - Level 1		###
Property Applications: PC-2008/863, Building 67 Mckinnon building ground floor food area renovations and alterations		###
Property Applications: DA-2008/1649, Demolition of existing structure and construction of academic building at the University of Wollongong - Smart Infrastructure facility		###
Property Applications: PC-2008/933, Installation of front entrance sign		###
Property Applications: PC-2008/966, Construction of stages 1 and 2 of the Illawarra Health and Medical Research Institute at the University of Wollongong - Stage 1a - early works package, including associated earth works, carpark construction and structural works up to first floor slab only.		###
Property Applications: DA-2009/26, Retail tenancy and cafe refurbishment		###
Property Applications: RO-2009/18, Occupy part of the road reserve for maintenance to Sydney Water man hole		###
Property Applications: DE-2009/24, Liquor licence		###
Property Applications: PC-2009/44, Inground concrete water tanks and associated reticulation only		###
Property Applications: DA-2009/407, Alterations and additions to building number 40 - University Of Wollongong		###
Property Applications: PC-2009/168, Construction of stages 1 and 2 of the Illawarra Health and Medical Research Institute at the University of Wollongong - Stage 1 b - Base building structure only		###
Property Applications: DA-2007/1425/A, Multi purpose sports hall with basement carpark and mezzanine level inside sports hall - Modification A - modification to the wording of condition number 25 of development consent		###
Property Applications: DA-2009/719, Hope Theatre Internal Refurbishment		###
Property Applications: PC-2009/343, Demolition of existing structure and construction of academic building at the University of Wollongong - Smart Infrastructure facility		###
Property Applications: CC-2009/83, Alterations and additions to building number 40 - University Of Wollongong		###
Property Applications: PC-2009/386, Construction of stages 1 and 2 of the Illawarra Health and Medical Research Institute at the University of Wollongong		###
Property Applications: DA-2009/1128, Demolition of existing building and construction of academic and research building in two stages		###
Property Applications: CC-2009/124, Hope Theatre Internal Refurbishment		###
Property Applications: DA-2009/1164, Provision of new vehicular and pedestrian access to University of Wollongong western carpark off Robsons Road		###
Property Applications: DA-2009/1189, Integrated Development - Construction of student accommodation building with associated site works and services		###

Property Applications: PC-2009/600, Construction of stages 1 and 2 of the Illawarra Health and Medical Research Institute at the University of Wollongong	###
Property Applications: DA-2009/1236, Alterations and additions on the ground floor of the east wing of building 19 to accommodate the language centre and construct an adjacent and linked building (building 24) to provide common teaching areas, landscape upgrade and associated siteworks and services	###
Property Applications: DA-2009/1424, Alterations and additions to Building 11 incorporating stage 1 and stage 2	###
Property Applications: DE-2009/195, Liquor licence	###
Property Applications: CC-2010/6, Provision of new vehicular and pedestrian access to University of Wollongong western carpark off Robsons Road	###
Property Applications: DE-2010/14, Liquor licence application (Building 67)	###
Property Applications: PC-2010/84, Provision of new vehicular and pedestrian access to University of Wollongong western carpark off Robsons Road	###
Property Applications: DE-2010/32, Liquor licence application	###
Property Applications: PC-2010/140, Demolition of existing structure and construction of academic building at the University of Wollongong - Smart Infrastructure facility - Stage 3 - Remainder of Base Building excluding landscaping and signage	###
Property Applications: TMO-2010/351, Remove 5 x trees	###
Property Applications: DE-2010/73, Liquor Licence	###
Property Applications: DA-2009/1424/A, Alterations and additions to Building 11 incorporating stage 1 and stage 2, Modification A - modification to delete condition number 6 from development consent	###
Property Applications: PC-2010/491, Construction of stages 1 and 2 of the Illawarra Health and Medical Research Institute at the University of Wollongong - Stage 1 - Update fire engineering	###
Property Applications: PC-2010/494, Refurbishment and services upgrade, stage 1 only of uni centre building no 11	###
Property Applications: PL-2010/41, Integrated development - Construction of student accommodation building and associated siteworks and services	###
Property Applications: DE-2010/118, Liquor licence	###
Property Applications: CC-2010/121, Fire engineering report proposing alternative solution for alterations and additions to building number 40 - University Of Wollongong	###
Property Applications: CC-2010/122, Fire engineering report proposing alternative solution for alterations and additions to building number 40 - University Of Wollongong	###
Property Applications: DA-2010/1173, Upgrade pedestrian path network on the McKinnon precinct including shade structure and raised terrace	###
Property Applications: PC-2010/917, Demolition of existing structure and construction of academic building at the University of Wollongong - Smart Infrastructure facility - Stage 3 - Landscaping and Signage Works	###
Property Applications: PC-2010/938, Upgrade pedestrian path network on the McKinnon precinct including shade structure and raised terrace	###
Property Applications: DE-2011/1, Liquor Licence	###
Property Applications: DA-2011/154, Demolition of existing building - building no. 29	###
Property Applications: DA-2011/295, Extension of single storey steel pergola to cover existing outdoor terrace at entry of Building 30	###
Property Applications: CC-2011/68, Extension of single storey steel pergola to cover existing outdoor terrace at entry of Building 30	###
Property Applications: PL-2011/20, 360 bed student accommodation	###
Property Applications: DE-2011/109, Upgrade of a telecommunication facility at an existing site	###
Property Applications: DA-2009/1189/A, Integrated Development - Construction of student accommodation building with associated site works and services, Modification A - change to student accommodation unit mix with a reduction in building scale, mass, gross floor area, site coverage and carparking	###
Property Applications: DE-2011/154, Council notification regarding proposed low RF power facility	###
Property Applications: DA-2011/917, Educational establishments - tertiary institutions - alterations and additions to Building 25 Creative Arts building	###
Property Applications: DE-2011/173, Upgrade to a telecommunication facility at an existing site	###

Property Applications: PC-2011/700, Internal fitout of existing academic science building 41 New Science faculty office (Deanery) and nursing, teaching labs, simulation spaces, airconditioning installation	***
Property Applications: CC-2011/306, Educational establishments - tertiary institutions - alterations and additions to Building 25 Creative Arts building	***
Property Applications: PC-2011/773, Integrated Development - Construction of student accommodation building with associated site works and services - PC's Construction Certificate No J110424 limited to excavation, footings, retaining walls & associated early drainage works	***
Property Applications: PC-2012/118, Integrated Development - Construction of student accommodation building with associated site works and services, Modification A - change to student accommodation unit mix with a reduction in building scale, mass, gross floor area, site coverage and carparking - PC's Construction Certificate No J110424A - structural & services works only & excludes detail fitout	***
Property Applications: PC-2013/409, Demolition of existing building and construction of academic and research building in two stages - demolition, excavation and piling only - PC Certificate No J130153	***
Property Applications: PC-2013/805, Integrated Development - Construction of student accommodation building with associated site works and services - Early works construction of student accommodation building, associated site works and services	***
Property Applications: PC-2014/737, Demolition of existing building and construction of academic and research building in two stages - PC's Construction Certificate No J130153D	***
Property Applications: PC-2014/1223, Demolition of existing building and construction of academic and research building in two stages - PC's Construction Certificate No J130153F	***
Property Applications: PC-2014/1361, Upgrade pedestrian path network on the McKinnon precinct including shade structure and raised terrace	***
Property Applications: PC-2013/805/A, Integrated Development - Construction of student accommodation building with associated site works and services - Early works construction of student accommodation building, associated site works and services - PC Ref J110424D	***
CT	
Lot 6 DP 843929	

Applications Details

Lot 210 Robsons Road, KEIRAVILLE NSW 2500	
Property Applications: BA-1995/2304, Academic - Engineering Extension - Da95/687, Essential Servs - See E4/00	###
Property Applications: BA-1995/2411, Additions To Child Care Centre - Da93/686, Essential Servs - See E10/00	###
Property Applications: BA-1996/53, Recreation Centre - Office Relocation, Essential Services - See E11/00	###
Property Applications: BA-1996/1200, Internal Fitout To Office Space	###
Property Applications: BA-1996/1898, New Entry Foyer - Building 19	###
Property Applications: BA-1996/2274, Addition Of Disabled Persons Lift - University	###
Property Applications: BA-1997/552, Hockey Field	###
Property Applications: BA-1997/781, Building 1 Structural Steel Stairs	###
Property Applications: BA-1997/782, Building 32 - Courtyard/Coolroom/Laboratory - Da97, See E25/00 For Essential Services Schedule	###
Property Applications: BA-1997/1256, Toilet Block	###
Property Applications: BA-1997/1866, Internal Fitout - Administrative Building Offices	###
Property Applications: BA-1997/1867, Alterations And Additions - Bldg 25 Creative Arts	###
Property Applications: BA-1997/1944, Additions To Dwelling, Uni Centre/Offices	###
Property Applications: BA-1997/2102, Internal Fitout - Recreation Centre Offices, See E11/00 For Essential Services	###
Property Applications: BA-1997/2103, Internal Fitout To Commerce Building, See E31/00 For Essential Services	###
Property Applications: BA-1998/524, Kitchen Refurbishment, See E4/98 For Essential Services	###
Property Applications: BA-1998/616, Internal Fitout - Bldg 32, See E25/00 For Essential Services	###
Property Applications: BA-1998/970, Tenancy Shop Fitout - Coffee Shop, See Ba710/96 For Essential Services	###
Property Applications: BA-1998/1239, Office Relocation	###
Property Applications: CC-2000/927, Alterations & Additions To Aquatic Centre - Building 13, For E/Services See E 11/00	###
Property Applications: CC-2000/1232, Demolition Of Existing Northern Wing Unicentre &, Construction Of University Bar	###
Property Applications: CC-2000/1390, Refurbishment/Fitout And Essential Services Up-Grade To, Existing Building No.4	###
Property Applications: CC-2000/1582, Office Fitout To Building 39	###
Property Applications: CC-2000/1690, Fire Control Room	###
Property Applications: CC-2000/1726, Upgrade Of Fire Services To Buildings 11, 16, 17 & 20	###
Property Applications: CC-2001/1362, Refurbishment To Building 1 - Materials Engineering, Essential Servs - See E44/00	###
Property Applications: CC-2001/1615, Enclose An Existing Concrete Deck	###
Property Applications: CC-2001/1844, Internal Fitout To Existing Storeroom	###
Property Applications: CC-2003/1518, Alterations And Additionn To Building 40 - Teaching Areas, Academic Offices And Hope Theatre	###
Property Applications: CC-1998/657, Building Refurbishment, See Ba 2275/96 For Essential Services	###
Property Applications: CC-1999/961, Internal Fitout - Food Court, See E4/98 For Essential Services	###
Property Applications: CC-1999/1261, Tenancy Office Fit-Out	###
Property Applications: CC-1999/1995, Proposed Gas Store Near Building 41	###
Property Applications: CC-1999/1997, Animal House Building 5, Essential Services - See E6/00	###
Property Applications: CD-2000/186, Internal Alterations To Existing Building 39, For Essential Services See W1262/99	###
Property Applications: CD-2001/143, Internal Fitout Of Existing Building 18	###
Property Applications: CD-2001/248, Internal Fitout To Building 35	###
Property Applications: CD-2001/336, Alterations To Buildings 3 & 9 Robsons Road Gwynneville	###
Property Applications: CD-2002/158, Alterations To Stage 1 - Illawarra Technology Centre Ground Floor	###
Property Applications: BA-1964/1396, Alterations & Aditiions To Metallurgy & Union Buildings	###

Property Applications: BA-1967/1507, Extensions To Garage	---
Property Applications: BA-1968/2443, Teaching & Staff Building	---
For Arts, Commerce & Science	
Property Applications: BA-1968/4959, Pavilion	---
Property Applications: BA-1969/90, Stage 2 Union Building	---
Property Applications: BA-1970/2921, Temporary Library	---
Property Applications: BA-1971/1615, Laboratory	---
Property Applications: BA-1971/1802, Substation	---
Property Applications: BA-1971/1853, Science Building	---
Property Applications: BA-1974/352, University Union	---
Property Applications: BA-1974/1426, University College - 5	---
Lecture Theatres	
Property Applications: BA-1974/1585, Offices	---
Property Applications: BA-1974/1732, Extension To Science	---
Building	
Property Applications: BA-1974/2911, Storage Shed - For 2 Years	---
Property Applications: BA-1975/43, Car Park - Conditionally	---
Property Applications: BA-1975/565, Sports Centre	---
Property Applications: BA-1976/2828, Site Works, Drainage & Car	---
Aprks	
Property Applications: BA-1977/2686, Infammable Liquids Store	---
Property Applications: BA-1977/3063, Concrete Mezzanine Floor	---
Property Applications: BA-1977/3240, Timber & Concrete Joining	---
Of Buildings 6 & 7	
Property Applications: BA-1978/39, Animal House & Glass House	---
Property Applications: BA-1978/304, Computer Room Additions	---
Property Applications: BA-1978/663, Animal House	---
Property Applications: BA-1978/1200, Additions To University	---
Property Applications: BA-1978/1560, Additions To University	---
Property Applications: BA-1978/2201, Drama Workshop	---
Property Applications: BA-1978/3080, Social Science Building	---
Property Applications: BA-1979/1260, Social Science Block	---
Property Applications: BA-1979/1369, Indoor Sports Hall	---
Property Applications: BA-1979/1563, Additions To Kitchen &	---
Store	
Property Applications: BA-1979/1949, Additions To Union Building	---
Property Applications: BA-1979/2351, Gymnasium	---
Property Applications: BA-1980/518, University Childcare Centre	---
Property Applications: BA-1980/815, Service Complex Stage 1	---
Property Applications: DA-1968/300, Additions To College	---
Property Applications: DA-1973/124, Library Building Air	---
Conditioning Plant Room	
Property Applications: DA-1974/32, Students Union (Stage 3)	---
Property Applications: DA-1974/104, 5 Lecture Theatres	---
Property Applications: DA-1974/180, Educational Liason Office	---
Property Applications: DA-1975/45, Temporary Ground Level Car	---
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Property Applications: DA-1979/796, Gymnasium	---
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Property Applications: DA-1980/564, Mezzanine Floor To	---

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	Property Applications: DA-1984/271, Computer Room Additions	...
	Property Applications: DA-1984/503, School Of Nursing	...
	Property Applications: DA-1984/551, 2Nd Storey Office To Arts	...
Building		
	Property Applications: DA-1985/311, Administration Block	...
	Property Applications: DA-1985/740, New Library	...
	Property Applications: DA-1986/43, New Technology Centre	...
	Property Applications: DA-1986/145, Office Space Additions	...
	Property Applications: DA-1986/375, Alterations & Additions To	...
Recreation Centre		
	Property Applications: DA-1986/376, Approved Conditionally	...
	Property Applications: DA-1986/522, Temporary Car Park	...
	Property Applications: DA-1986/639, Relocate Entrance No. 1 &	...
Control Security Booth		
	Property Applications: DA-1986/664, Relocate Vehicular Entrance	...
No. 3 & Security Booth		
	Property Applications: DA-1986/937, Store	...
	Property Applications: DA-2000/712, Demolition Of Existing	...
Northern Wing Of Unicentre And Erection Of New Building		
	Property Applications: DA-2000/1376, Refurbishment/Fitout And	...
Essential Services Up-Grade To Existing Building No. 4		
	Property Applications: DA-2000/1443, Demolition & Erectionof	...
Academic Building No. 30		
	Property Applications: DA-2000/1595, Office Fitout To Building	...
39		
	Property Applications: DA-2000/1726, Fire Control Room	...
(Building 11)		
	Property Applications: DA-2001/1684, Refurbishment To Building 1	...
	Property Applications: DA-2001/2018, Enclosure Of Existing	...
Concrete Deck		
	Property Applications: DA-2001/2224, Internal Fitout To Convert	...
Existing Storeroom Into Offices In Building 20		
	Property Applications: DA-1989/809/A, Amended Consent - New	...
General Science Building		
	Property Applications: DA-1990/471, Extension To University	...
Union Facilities And Multi Storey Car Park		
	Property Applications: DA-1990/629, Two Amenities Blocks For	...
Sportsgrounds		
	Property Applications: DA-1990/760, Extensions To Cafeteria -	...
University Union Building		
	Property Applications: DA-1990/833, Extension To Existing Car	...
Park		
	Property Applications: DA-1991/158, Artifical Hockey Field	...
	Property Applications: DA-1991/253, Extension To Creative Arts	...
Building		
	Property Applications: DA-1991/431, New Four Level Building	...
	Property Applications: DA-1991/721, Mobile Academic/Text Sales	...
	Property Applications: DA-1991/740, Visitors Accommodation	...
	Property Applications: DA-1992/267, Formation Of A Lay By	...
	Property Applications: DA-1992/345, Extensions To Highbay	...
Buliding 3		
	Property Applications: DA-1992/346, Union Hall Redevelopment	...
	Property Applications: DA-1992/527, Partial Demolition Of	...
Existing Academic Building & Refurbishment & Addition Of New		
Academic Office Wing		
	Property Applications: DA-1992/625, Alterations & Additions To	...
The Pentagon Building No. 20		
	Property Applications: DA-1992/760, Tennis Courts	...
	Property Applications: DA-1992/832, Addition Of Pool Amenities,	...
Reroofing Lounge, New Mezzanine Gymnasium		

Property Applications: DA-1993/337, Extensions To Science Building	...
Property Applications: DA-1993/477, Extension Of Existing Multi Storey Carpark	...
Property Applications: DA-1993/607, Bus Shelter, Paving & Retaining Walls To Northfields Ave	...
Property Applications: DA-1993/686, Alterations & Additions To Existing Childcare Facility	...
Property Applications: DA-1993/886, Earthworks	...
Property Applications: DA-1994/455, 2 Storey Extension To An Existng Additional Building	...
Property Applications: DA-1994/528, Traffic Calming Devices	...
Property Applications: DA-1994/529, Traffic & Bus Lay-By	...
Property Applications: DA-1994/530, Footpath Paving & Screen Walls	...
Property Applications: DA-1994/852, Alterations & Additions To Existing Union Building	...
Property Applications: DA-1995/234, Student Residential College & Conference Centre	...
Property Applications: DA-1995/687, Academic & Support Buildings, Carparking & Associated Siteworks & Services	...
Property Applications: DA-1996/624, 2 Storey Masonry Administration Building, 2 Storey Portal Frame Workshop/Storage Building & Steel Framed Storage Shed	...
Property Applications: DA-1997/324, Extensions To Provide Coolroom And Laboratory	...
Property Applications: DA-1998/5589, Building Refurbishment	...
Property Applications: DA-1999/457, Alterations And Additions To Xisting Building No. 39 (Illawarra Technology Centre - University Of Wollongong)	...
Property Applications: DA-1999/458, Tenancy Office Fitout - Nortel Technics Telecommunications R & D Centre	...
Property Applications: DA-1999/545, 2 Vynyl Shade Sails To Building 11	...
Property Applications: DA-1999/578, Building 22 Refubishments	...
Property Applications: DA-1999/613, Alterations & Additions To Building 13	...
Property Applications: DA-1999/684, New Gas Store Near Building 41	...
Property Applications: DA-1999/685, Replacement Of Blg 5 Eastern Classrooms With A Building 5 Animal House & Minor Maintenance To Blg 6 Animal House	...
Property Applications: DA-1999/686, Demolition Of Existing Building	...
Property Applications: DA-1999/5896, Internal Fitout - Food Court	...
Property Applications: DA-1999/6797, Refurbishment Of Building 18 & Part 15 Of University	...
Property Applications: DA-1999/457/A, Amended Consent - Alterations & Additions To Existing Building No.9 (Illawarra Technology Centre)	...
Property Applications: DA-1999/458/A, Modification - Signage On Building Elevation, Monument And Boom Gate	...
Property Applications: DA-2000/712/A, Demolition Of Existing Northern Wing Unicentre & Erections Of New Building (Modification - Disabled Access To The Stage	...
Property Applications: DA-2000/1443/A, Demolitionexisting Building And The Erection Of General Purpose Academic Building - Modification To Changes In Carparking Spaces And The Retaining Of Trees	...
CT	
Lot 210 DP 801683	

%Close

StatusDefault

Include

Sub-Properties

Applications Details		
Wollongong University, Northfields Avenue, GWYNNEVILLE NSW 2500		
Property Applications: BA-1975/565, Sports Centre		***
Property Applications: BA-1978/663, Animal House		***
Property Applications: BA-1979/2351, Gymnasium		***
Property Applications: DA-1978/39, Animal House & Glass House		***
Property Applications: DA-1979/796, Gymnasium		***
Property Applications: DA-1980/826, Swimming Pool Complex		***
Property Applications: DA-1982/284, Additions To Gymnasium		***
Property Applications: DA-1983/864, Student & Residential		***
Accommodation		
Property Applications: DA-1984/551, 2Nd Storey Office To Arts		***
Building		
Property Applications: DA-1985/197, Student Accommodation		***
(Stage 2)		
Property Applications: DA-1985/311, Administration Block		***
Property Applications: DA-1986/375, Alterations & Additions To		***
Recreation Centre		
Property Applications: DA-1986/522, Temporary Car Park		***
Property Applications: DA-1987/361, Erection Of A New		***
Two-Storey Teaching Laboratory Complex		
Property Applications: DA-1987/516, Addition To Existing Music		***
Theatre		
Property Applications: DA-1987/716, Car Park		***
Property Applications: DA-1987/938, Bicentennial Sculpture		***
Property Applications: DA-1989/109, Swimming Pool		***
Property Applications: DA-1989/181, General Purpose Academic		***
Building		
Property Applications: DA-1989/182, Residential Flat Building		***
For Student Accommodation		
Property Applications: DA-1989/809, New General Science		***
Building - Building 41 **Amended Consent - See 9809/89**		
Property Applications: DA-1990/38, Construction Of A Roadside		***
Layby & Viewing Area For The "Spirit Of Flight Sculpture"		
Property Applications: DA-1980/10172, Erection of solar		***
research platform		
CT		
Lot 10 DP 701239		

%Close

StatusDefault

Include
Sub-Properties

Applications Details		
Wollongong University, Northfields Avenue, GWYNNEVILLE NSW 2500		
Property Applications: BA-1964/1396, Alterations & Additions To Metallurgy & Union Buildings	###	
Property Applications: BA-1967/1507, Extensions To Garage	###	
Property Applications: BA-1968/1959, Pavilion	###	
Property Applications: BA-1968/2443, Teaching & Staff Building	###	
For Arts, Commerce & Science		
Property Applications: BA-1969/90, Stage 2 Union Building	###	
Property Applications: BA-1970/2921, Temporary Library	###	
Property Applications: BA-1971/1615, Laboratory	###	
Property Applications: BA-1971/1802, Substation	###	
Property Applications: BA-1971/1853, Science Building	###	
Property Applications: BA-1974/352, University Union	###	
Property Applications: BA-1974/1426, University College - 5	###	
Lecture Theatres		
Property Applications: BA-1974/1585, Offices	###	
Property Applications: BA-1974/1732, Extension To Science Building	###	
Property Applications: BA-1974/2911, Storage Shed - For 2 Years	###	
Property Applications: BA-1975/43, Car Park - Conditionally	###	
Property Applications: BA-1975/565, Sports Centre	###	
Property Applications: BA-1976/2828, Site Works, Drainage & Car	###	
Aprks		
Property Applications: BA-1977/2686, Inflammable Liquids Store	###	
Property Applications: BA-1977/3063, Concrete Mezzanine Floor	###	
Property Applications: BA-1977/3240, Timber & Concrete Joining	###	
Of Buildings 6 & 7		
Property Applications: BA-1978/304, Computer Room Additions	###	
Property Applications: BA-1978/1200, Additions To University	###	
Property Applications: BA-1978/1560, Additions To University	###	
Property Applications: BA-1978/2201, Drama Workshop	###	
Property Applications: BA-1978/3080, Social Science Building	###	
Property Applications: BA-1979/1260, Social Science Block	###	
Property Applications: BA-1979/1369, Indoor Sports Hall	###	
Property Applications: BA-1979/1563, Additions To Kitchen &	###	
Store		
Property Applications: BA-1979/1949, Additions To Union Building	###	
Property Applications: BA-1980/518, University Childcare Centre	###	
Property Applications: BA-1980/815, Service Complex Stage 1	###	
Property Applications: DA-1968/300, Additions To College	###	
Property Applications: DA-1973/124, Library Building Air	###	
Conditioning Plant Room		
Property Applications: DA-1974/32, Students Union (Stage 3)	###	
Property Applications: DA-1974/104, 5 Lecture Theatres	###	
Property Applications: DA-1974/180, Educational Liason Office	###	
Property Applications: DA-1975/45, Temporary Ground Level Car	###	
Park		
Property Applications: DA-1977/285, Flammable Liquid Storeroom	###	
Additions To Art, Commerce & Science Building		
Property Applications: DA-1977/433, Addition Of Mezzanine Floor	###	
To Building No. 3		
Property Applications: DA-1977/511, Laboratory	###	
Property Applications: DA-1977/584, Additions To Computer Room	###	
(Building No. 15)		
Property Applications: DA-1978/40, Drainage Work & Service Road	###	
Property Applications: DA-1978/217, Landscaping & Development	###	
Of Central Square		
Property Applications: DA-1978/300, Table Tennis Room, 2	###	
Additional Squash Courts Extensions To Bar & Bistro, Colonnade &		
Alterations To Projection Room		
Property Applications: DA-1978/529, Drama Workshop	###	
Property Applications: DA-1978/731, Additions To Social	###	
Sciences Building (North Wing)		
Property Applications: DA-1978/824, 1 Tennis Court, Fence &	###	
Alterations To Existing Courts - Conditionally		
Property Applications: DA-1979/188, Additions To Social	###	
Sciences Building (East Wing)		
Property Applications: DA-1979/215, Indoor Sports Hall	###	
Property Applications: DA-1979/406, Extensions To Union Kitchen	###	
& Store		
Property Applications: DA-1979/529, Tar Sealed Roadway	###	
Property Applications: DA-1979/668, Maintenance Workshops &	###	
Storage Area		
Property Applications: DA-1979/910, Childcare Centre	###	
Property Applications: DA-1980/11, Rebuilding Of Section Of	###	
Childcare Centre		
Property Applications: DA-1980/564, Mezzanine Floor To	###	

Metallurgy Workshop	Property Applications: DA-1981/183, Annexure To Geology Building	...
	Property Applications: DA-1981/254, Enclsoure To Science	...
Building (Stage 2) & Workshop & Demountable Classroom	Property Applications: DA-1981/1192, Erection Of Research	...
Laboratory	Property Applications: DA-1981/1469, Office Accommodation	...
	Property Applications: DA-1982/736, Additions To University Of	...
Counselling & Medical Centre & Co-Operative Book Shop	Property Applications: DA-1982/751, Research Laboratory	...
	Property Applications: DA-1983/370, Floodlights For Tennis	...
Courts	Property Applications: DA-1983/580, Additions To Kids University	...
	Property Applications: DA-1983/834, New Tertiary Building	...
	Property Applications: DA-1984/253, New Printery Building	...
	Property Applications: DA-1984/271, Computer Room Additions	...
	Property Applications: DA-1984/503, School Of Nursing	...
	Property Applications: DA-1985/740, New Library	...
	Property Applications: DA-1986/43, New Technology Centre	...
	Property Applications: DA-1986/145, Office Space Additions	...
	Property Applications: DA-1986/376, Commercial Development &	...
Alterations & Additions To Union Building	Property Applications: DA-1986/376, Approved Conditionally	...
	Property Applications: DA-1986/639, Relocate Entrance No. 1 &	...
Control Security Booth	Property Applications: DA-1986/664, Relocate Vehicular Entrance	...
No. 3 & Security Booth	Property Applications: DA-1986/937, Store	...
	Property Applications: DA-1987/111, Use Of Shop T.11 For	...
Hairdressing Salon	Property Applications: DA-1988/850, Stage 2 - Illawarra	...
Technology Centre	Property Applications: DA-1989/181, General Purpose Academic	...
Building	Property Applications: DA-1989/439, Extensions To Laboratory	...
Building	Property Applications: DA-1990/77, Stage 3 - Illawarra	...
Technology Centre		
CT		
Pt Lot DP 91459		

StatusDefault

Include
Sub-Properties

%Close

Property

Property Address 2 Northfields Avenue, KEIRAVILLE NSW 2500

(All 73 Parent Property/Default records)

2 Northfields Avenue, KEIRAVILLE NSW 2500

Property Applications: DE-2014/10, Liquor Licence - University Building 67 Room 210

Property Applications: DE-2014/34, Liquor Licence - University Hall & surrounding courtyard and food court

Property Applications: DE-2014/40, Liquor Licence - Unibar

Property Applications: DE-2014/72, Liquor licence - Wollongong UniCentre

Property Applications: PL-2014/33, Proposed student accommodation - 2 sites along Northfields Avenue Keiraville - part of the UOW campus

Property Applications: DA-2014/556, Demolition of existing retaining wall and construction of a new retaining wall

Property Applications: BA-1984/1562, School of Health Science Building

Property Applications: DA-2014/778, Construction of footpath and removal of 12 trees adjoining Building 39.

Property Applications: DA-2014/863, Alterations to existing bus interchange

Property Applications: DE-2014/113, Proposed mobile phone station (draft consultation plan)

Property Applications: PL-2014/90, Proposed student accommodation - 2 sites along Northfields Avenue Keiraville - part of the UOW campus

Property Applications: DA-2014/1474, Post Graduate Student Accommodation Facility - comprising six (6) storey (part 7 storey) building totalling 215 units (261 beds), communal area and courtyard, on site carparking for 69 cars, landscaping and site infrastructure works

Property Applications: DA-2014/1510, Demolition works and construction of student accommodation - comprising three (3) x 8 storey (part 7 storey) buildings totalling 802 beds, site managers dwellings, communal facilities and courtyards, carparking for 9 visitor spaces, landscaping and site infrastructure works

Property Applications: PC-2014/1448, Alterations to existing bus interchange - Stage 1 Demolition, and early works

Property Applications: RO-2015/2, Occupy 200 metres of the road reserve with traffic / pedestrian control during bus interchange alterations - DA-2014/863 (Plan 9933-4645).

Property Applications: BA-1970/2206, Library

Property Applications: DE-2015/10, Liquor Licence - University of Wollongong Social Club - Building 67 Room 201

Property Applications: DA-2014/1311, Extension to Northern Carpark

Property Applications: DE-2015/17, Liquor Licence - Wollongong Unicentre Ltd - Garden Party - Building 11 & 12

Property Applications: DE-2015/20, Liquor Licence - Wollongong Unicentre Ltd - Farmer & the Owl Festival - Music and Arts Festival

Property Applications: DA-2015/67, Music and Arts Festival

Property Applications: PC-2015/126, Alterations to existing bus interchange - Stage 2 works - all works excluding signage, lighting and disabled access finishes

Property Applications: PC-2015/138, Refurbishment of Main Foyer Area for Building 41

Property Applications: PC-2015/140, New informal learning space on first floor - building 17

Property Applications: PC-2015/420, Extension to Northern Carpark No 2

Property Applications: PC-2015/423, Business premises - first use of tenancy G01 for use as a food and drink premises - Espresso Warriors - Building 21 Early Start Facility

Property Applications: PC-2015/582, Cafe fit out - L1, Building 11

Property Applications: DE-2015/108, Liquor Licence - Campus Buildings 11 & 12 - Concert

Property Applications: PC-2015/693, New shade structure adjacent hockey field

Property Applications: DA-2015/908, Commercial - Uni Centre: alterations to tenancy layouts, minor external works including landscaping

Property Applications: DE-2015/147, Liquor Licence - UniBar - Building 12

Property Applications: RO-2015/595, Occupy roadway/footpath

Property Applications: RO-2015/608, Occupy 15 metres of the road reserve under traffic control to install temporary footpath for pedestrian access.

Property Applications: PC-2015/1065, Post Graduate Student Accommodation Facility - bulk earthworks and shoring

Property Applications: RO-2015/632, Occupy 20 metres of the road reserve with a float for the unloading of piling rig under traffic control.

Property Applications: DE-2015/177, Upgrade to a telecommunications facility at an existing site

Property Applications: DA-2015/1254, Multi-storey carpark and pedestrian bridge

Property Applications: RO-2015/649, New stormwater connection into council stormwater

Property Applications: TMO-2015/1330, Remove 3 x trees

Property Applications: PC-2015/1384, Post Graduate Student Accommodation Facility - overall building excluding external works

Property Applications: DE-2016/1, Liquor Licence - UOW Garden Party - Building 11 & 12 & garden surrounds

(All 73 Parent Property/Default records)

Property Applications: BA-1973/1972, Extensions to existing Library building

Property Applications: DA-2014/1474/A, Post Graduate Student Accommodation Facility - comprising six (6) storey (part 7 storey) building totalling 215 units (261 beds), communal area and courtyard, on site carparking for 69 cars, landscaping and site infrastructure works, Modification A - tree removal (x 2)

Property Applications: DA-2016/88, Annual Garden Party - five (5) year consent (2016 to 2020) to be held in March each year

Property Applications: PC-2016/195, Demolition works and construction of student accommodation - comprising three (3) x 8 storey (part 7 storey) buildings totalling 802 beds, site managers dwellings, communal facilities and courtyards, carparking for 9 visitor spaces, landscaping and site infrastructure works - Building 73, 74 and 75

Property Applications: DA-2016/250, Construction of a debris control structure

Property Applications: DA-2016/255, Construction of additional parking layback and landscaping works

Property Applications: DA-2016/256, Replacement of paving, construction of timber retaining wall, tree removal and landscape works

Property Applications: PL-2016/26, Riparian corridor works, decanting capark (150 spaces) and demountable relocation

Property Applications: PL-2016/34, Security facility building, associated carpark, site works and modification of a section of on street parking zone usage.

Property Applications: PC-2016/392, Demolition works

Property Applications: RO-2016/139, Cross footway to enter/exit , open footway/roadway 1 Northfields Ave Keiraville

Property Applications: DA-2015/908/A, Commercial - Uni Centre: alterations to tenancy layouts, minor external works including landscaping - Modification A - removal of condition 49 - Section 94A Levy

Property Applications: DE-2016/70, Liquor Licence - Opening Ceremony of the Eastern Australian University Games

Property Applications: PC-2016/868, Multi-storey carpark and pedestrian bridge, GDL - 150339 - Excludes building works above the Ground floor slab

Property Applications: RO-2016/307, Occupy part of the road reserve under traffic / pedestrian control during footpath upgrade works of relaying paving and new turf - New University accommodation development (2 months).

Property Applications: DE-2016/122, Liquor Licence - UniBar

Property Applications: PC-2016/1245, Construction of additional parking layback and landscaping works

Property Applications: RO-2016/319, Open and occupy part of the footpath for stormwater works associated with new development at Wollongong University.

Property Applications: PC-2016/1277, Replacement of paving, construction of timber retaining wall, tree removal and landscape works

Property Applications: PC-2016/1286, Multi-storey carpark and pedestrian bridge - Stage 2 construction of remaining development

Property Applications: RO-2016/330, Occupy 40 metres of the road reserve with Type A temporary fencing during landscaping works.

Property Applications: DA-2016/88/A, Annual Garden Party - five (5) year consent (2016 to 2020) to be held in March each year, Modification A - change from annual garden party event to enable a maximum of seven (7) events per year for the period between 2016 to 2020 inclusive

Property Applications: DC-2016/719, Driveway Crossing

Property Applications: RO-2016/382, Open and occupy part of the road reserve in Robsons Road for a new water service under traffic control.

Property Applications: PC-2016/1578, Post Graduate Student Accommodation Facility - comprising six (6) storey (part 7 storey) building totalling 215 units (261 beds), communal area and courtyard, on site carparking for 69 cars, landscaping and site infrastructure works, CC 142590/2 - External works

Property Applications: DE-2016/168, Molecular and Life Science Building

Property Applications: DA-2016/1825, Construction of a building for UOW security services, associated carparking and works

Property Applications: DE-2017/10, Minor works - relocation of existing demountable from western carpark to greenspace adjacent to Building 25

Property Applications: BA-1984/588, Proposed Engineering & Science Buildings

Pathway Internal Title

Lot 1 DP 1188267

Appendix F – Historical Title Search Results

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)

ABN 82 147 943 842

18/36 Osborne Road,
Manly NSW 2095

Telephone: +612 9977 6713

Mobile: 0412 169 809

Facsimile: +612 8076 3026

Email: search@alsearchers.com.au

23rd January, 2017

LOTSEARCH PTY LTD

**Level 3, 68 Alfred Street,
MILSONS POINT, NSW 2061**

Attention: Howard Waldron,

RE:

**University of Wollongong,
Northfields Avenue,
Wollongong
Reference: LS001055**

Note: Historical Report is over the footprint of the subject site as shown with instructions.

Current Search

Folio Identifier 1/1188267 (title attached)

DP 1188267 (plan attached)

Dated 20th January, 2017

Registered Proprietor:

UNIVERSITY OF WOLLONGONG

Title Tree
Lot 1 DP 1188267

Folio Identifier 1/1188267

Folio Identifier 1/1163615

Folio Identifier 6/843929

Folio Identifier 210/801683

Folio Identifier 1/113094

Certificate of Title Volume 13802 Folio 156

Certificate of Title Volume 8223 Folio 6

PA 41459

Government Gazettal 10th October 1958

Conveyance Book 1775 No. 95

Conveyance Book 1711 No. 419

Conveyance Book 397 No. 628

Summary of proprietor(s) Lot 1 DP 1188267

Year	Proprietor(s)
	(Lot 1 DP 1188267)
2013 – todate	University of Wollongong
<i>(2013 – todate)</i>	<i>(various current leases shown on Folio Identifier 1/1188267)</i>
<i>(2013 – todate)</i>	<i>(various leases shown on Historical Folio 1/1188267)</i>
	(Lot 1 DP 1163615)
2011 – 2013	University of Wollongong
<i>(2011 – 2013)</i>	<i>(various leases shown on Historical Folio 1/1163615)</i>
	(Lot 6 DP 843929)
2001 – 2011	University of Wollongong
<i>(2001 – 2011)</i>	<i>(various leases shown on Historical Folio 6/843929)</i>
	(Lot 210 DP 801683)
1990 – 2001	University of Wollongong
<i>(1990 – 2001)</i>	<i>(various leases shown on Historical Folio 210/801683)</i>
	(Lot 1 DP 113094)
1989 – 1990	University of Wollongong
<i>(1989 – 1990)</i>	<i>(various leases shown on Historical Folio 1/113094)</i>
	(Lots 1 DP 113094 – CTVol 13802 Fol 156)
1984 – 1989	The University of Wollongong
1979 – 1984	The Minister For Education
<i>(1979 – 1989)</i>	<i>(lease to The Illawarra County Council of substation no. 535)</i>
	(Lots 93 to 95 Keiraville Estate and other lands – Area 202 Acres 2 Roods 25 ¼ Perches – CTVol 8223 Fol 6)
1961 – 1979	The Minister For Education
	(Lots 93 to 95 Keiraville Estate and other lands – Area 202 Acres 2 Roods 25 ¼ Perches – PA 41459)
1958 – 1961	The Minister For Education <i>(vide resumption Government Gazette 10th October 1958)</i>
	(Lots 93 to 95 Keiraville Estate and other lands – Conv Bk 1775 No. 95)
1937 – 1958	Australian Iron & Steel Limited
	(Lots 93 to 95 Keiraville Estate and other lands – Conv Bk 1711 No. 419)
1935 – 1937	E. Vickery and Sons Limited
	(Lots 93 & 95 Keiraville Estate and other lands – Conv Bk 397 No. 628)
1888 – 1935	The Mount Pleasant Coal and Iron Mining Company Limited

Appendix G – SafeWork NSW Search Results



SafeWork NSW

Locked Bag 2906, Lisarow NSW 2252

Customer Experience 13 10 50

ABN 81 913 830 179 | www.safework.nsw.gov.au

Our Ref: D17/062071
Your Ref: Colee Quayle

Attention: Colee Quayle
Coffey Services Australia Pty Ltd
118 Auburn St
Wollongong NSW 2500

Dear Ms Quayle,

RE SITE: 2 Northfields Ave Keiraville NSW

I refer to your site search request received by SafeWork NSW on 20 January 2017 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above mentioned premises.

For further information or if you have any questions, please call us on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely,


Customer Service Officer
Customer Experience - Operations
SafeWork NSW

Appendix H – Borehole Logs

Rock Description Explanation Sheet (1 of 2)

The descriptive terms used by Coffey are given below. They are broadly consistent with Australian Standard AS1726-1993.						
DEFINITIONS: Rock substance, defect and mass are defined as follows: Rock Substance In engineering terms rock substance is any naturally occurring aggregate of minerals and organic material which cannot be disintegrated or remoulded by hand in air or water. Other material is described using soil descriptive terms. Effectively homogenous material, may be isotropic or anisotropic. Defect Discontinuity or break in the continuity of a substance or substances. Mass Any body of material which is not effectively homogeneous. It can consist of two or more substances without defects, or one or more substances with one or more defects.						
SUBSTANCE DESCRIPTIVE TERMS:			ROCK SUBSTANCE STRENGTH TERMS			
ROCK NAME	Simple rock names are used rather than precise geological classification.		Term	Abbre- viation	Point Load Index, I_{s(50)} (MPa)	Field Guide
PARTICLE SIZE	Grain size terms for sandstone are:		Very Low	VL	Less than 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with a knife; pieces up to 30mm thick can be broken by finger pressure.
Coarse grained	Mainly 0.6mm to 2mm					
Medium grained	Mainly 0.2mm to 0.6mm					
Fine grained	Mainly 0.06mm (just visible) to 0.2mm					
FABRIC	Terms for layering of penetrative fabric (eg. bedding, cleavage etc.) are:		Low	L	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show with firm bows of a pick point; has a dull sound under hammer. Pieces of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Massive	No layering or penetrative fabric.					
Indistinct	Layering or fabric just visible. Little effect on properties.					
Distinct	Layering or fabric is easily visible. Rock breaks more easily parallel to layering of fabric.					
CLASSIFICATION OF WEATHERING PRODUCTS						
Term	Abbreviation	Definition				
Residual Soil	RS	Soil derived from the weathering of rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.	Medium	M	0.3 to 1.0	Readily scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
Extremely Weathered Material	XW	Material is weathered to such an extent that it has soil properties, ie, it either disintegrates or can be remoulded in water. Original rock fabric still visible.	High	H	1 to 3	A piece of core 150mm long by 50mm can not be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Highly Weathered Rock	HW	Rock strength is changed by weathering. The whole of the rock substance is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Some minerals are decomposed to clay minerals. Porosity may be increased by leaching or may be decreased due to the deposition of minerals in pores.	Very High	VH	3 to 10	Hand specimen breaks after more than one blow of a pick; rock rings under hammer.
Moderately Weathered Rock	MW	The whole of the rock substance is discoloured, usually by iron staining or bleaching , to the extent that the colour of the fresh rock is no longer recognisable.	Extremely High	EH	More than 10	Specimen requires many blows with geological pick to break; rock rings under hammer.
Slightly Weathered Rock	SW	Rock substance affected by weathering to the extent that partial staining or partial discolouration of the rock substance (usually by limonite) has taken place. The colour and texture of the fresh rock is recognisable; strength properties are essentially those of the fresh rock substance.	Notes on Rock Substance Strength: In anisotropic rocks the field guide to strength applies to the strength perpendicular to the anisotropy. High strength anisotropic rocks may break readily parallel to the planar anisotropy. The term "extremely low" is not used as a rock substance strength term. While the term is used in AS1726-1993, the field guide therein makes it clear that materials in that strength range are soils in engineering terms. The unconfined compressive strength for isotropic rocks (and anisotropic rocks which fall across the planar anisotropy) is typically 10 to 25 times the point load index I _{s(50)} . The ratio may vary for different rock types. Lower strength rocks often have lower ratios than higher strength rocks.			
Fresh Rock	FR	Rock substance unaffected by weathering.				
Notes on Weathering: AS1726 suggests the term "Distinctly Weathered" (DW) to cover the range of substance weathering conditions between XW and SW. For projects where it is not practical to delineate between HW and MW or it is judged that there is no advantage in making such a distinction. DW may be used with the definition given in AS1726. Where physical and chemical changes were caused by hot gasses and liquids associated with igneous rocks, the term "altered" may be substituted for "weathering" to give the abbreviations XA, HA, MA, SA and DA.						

Rock Description Explanation Sheet (2 of 2)

COMMON DEFECTS IN ROCK MASSES					DEFECT SHAPE TERMS	
Term	Definition	Diagram	Map Symbol	Graphic Log (Note 1)		
Parting	A surface or crack across which the rock has little or no tensile strength, but which is not parallel or sub parallel to layering or planar anisotropy in the rock substance. May be open or closed.				Planar	The defect does not vary in orientation
Joint	A surface or crack across which the rock has little or no tensile strength, but which is not parallel or sub parallel to layering or planar anisotropy in the rock substance. May be open or closed.				Curved	The defect has a gradual change in orientation
Sheared Zone (Note 3)	Zone of rock substance with roughly parallel near planar, curved or undulating boundaries cut by closely spaced joints, sheared surfaces or other defects. Some of the defects are usually curved and intersect to divide the mass into lenticular or wedge shaped blocks.				Undulating	The defect has a wavy surface
Sheared Surface (Note 3)	A near planar, curved or undulating surface which is usually smooth, polished or slickensided.				Stepped	The defect has one or more well defined steps
Crushed Seam (Note 3)	Seam with roughly parallel almost planar boundaries, composed of disoriented, usually angular fragments of the host rock substance which may be more weathered than the host rock. The seam has soil properties				Irregular	The defect has many sharp changes of orientation
Infilled Seam	Seam of soil substance usually with distinct roughly parallel boundaries formed by the migration of soil into an open cavity or joint, infilled seams less than 1mm thick may be described as veneer or coating on joint surface.				Note: The assessment of defect shape is partly influenced by the scale of the observation.	
Extremely Weathered Seam	Seam of soil substance, often with gradational boundaries. Formad by weathering of the rock substance in place.				ROUGHNESS TERMS	
Notes on Defects:					Slickensided	Grooved or striated surface, usually polished
1. Usually borehole logs show the true dip of defects and face sketches and sections the apparent dip.					Polished	Shiny smooth surface
2. Partings and joints are not usually shown on the graphic log unless considered significant.					Smooth	Smooth to touch. Few or no surface irregularities
3. Sheared zones, sheared surfaces and crushed seams are faults in geological terms.					Rough	Many small surface irregularities (amplitude generally less than 1mm). Feels like fine to coarse sand paper.
					Very Rough	Many large surface irregularities (amplitude generally more than 1mm). Feels like, or coarser than very coarse sand paper.
					COATING TERMS	
					Clean	No visible coating
					Stained	No visible coating but surfaces are discoloured
					Veneer	A visible coating of soil or mineral, too thin to measure; may be patchy
					Veneer	A visible coating up to 1mm thick. Thicker soil material is usually described using appropriate defect terms (eg, infilled seam). Thicker rock strength material is usually described as a vein.
					BLOCK SHAPE TERMS	
					Blocky	Approximately equidimensional
					Tabular	Thickness much less than length or width
					Columnar	Height much greater than cross section

Soil Description Explanation Sheet (1 of 2)

DEFINITION:

In engineering terms soil includes every type of uncemented or partially cemented inorganic or organic material found in the ground. In practice, if the material can be remoulded or disintegrated by hand in its field condition or in water it is described as a soil. Other materials are described using rock description terms.

CLASSIFICATION SYMBOL & SOIL NAME

Soils are described in accordance with the Unified Soil Classification (UCS) as shown in the table on Sheet 2.

PARTICLE SIZE DESCRIPTIVE TERMS

NAME	SUBDIVISION	SIZE
Boulders		>200 mm
Cobbles		63 mm to 200 mm
Gravel	coarse	20 mm to 63 mm
	medium	6 mm to 20 mm
	fine	2.36 mm to 6 mm
Sand	coarse	600 µm to 2.36 mm
	medium	200 µm to 600 µm
	fine	75 µm to 200 µm

MOISTURE CONDITION

Dry	Looks and feels dry. Cohesive and cemented soils are hard, friable or powdery. Uncemented granular soils run freely through hands.
Moist	Soil feels cool and darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.
Wet	As for moist but with free water forming on hands when handled.

CONSISTENCY OF COHESIVE SOILS

TERM	UNDRAINED STRENGTH s_u (kPa)	FIELD GUIDE
Very Soft	<12	A finger can be pushed well into the soil with little effort.
Soft	12 – 25	A finger can be pushed into the soil to about 25mm depth.
Firm	25 – 50	The soil can be indented about 5mm with the thumb, but not penetrated.
Stiff	50 – 100	The surface of the soil can be indented with the thumb, but not penetrated.
Very Stiff	100 – 200	The surface of the soil can be marked, but not indented with thumb pressure.
Hard	>200	The surface of the soil can be marked only with the thumbnail.
Friable	–	Crumbles or powders when scraped by thumbnail.

DENSITY OF GRANULAR SOILS

TERM	DENSITY INDEX (%)
Very loose	Less than 15
Loose	15 – 35
Medium Dense	35 – 65
Dense	65 – 85
Very Dense	Greater than 85

MINOR COMPONENTS

TERM	ASSESSMENT GUIDE	PROPORTION OF MINOR COMPONENT IN:
Trace of	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary component.	Coarse grained soils: <5% Fine grained soils: <15%
With some	Presence easily detected by feel or eye, soil properties little different to general properties of primary component.	Coarse grained soils: 5 - 12% Fine grained soils: 15 - 30%

SOIL STRUCTURE

ZONING		CEMENTING	
Layers	Continuous across exposure or sample.	Weakly cemented	Easily broken up by hand in air or water.
Lenses	Discontinuous shape.	Moderately cemented	Effort is required to break up the soil by hand in air or water.
Pockets	Irregular inclusions of different material.		

GEOLOGICAL ORIGIN WEATHERED IN PLACE SOILS

Extremely weathered material	Structure and fabric of parent rock visible.
Residual soil	Structure and fabric of parent rock not visible.

TRANSPORTED SOILS

Aeolian soil	Deposited by wind.
Alluvial soil	Deposited by streams and rivers.
Colluvial soil	Deposited on slopes (transported downslope by gravity).
Fill	Man-made deposit. Fill may be significantly more variable between tested locations than naturally occurring soils.
Lacustrine soil	Deposited by lakes.
Marine soil	Deposited in ocean basins, bays, beaches and estuaries.

Soil Description Explanation Sheet (2 of 2)

SOIL CLASSIFICATION INCLUDING IDENTIFICATION AND DESCRIPTION

FIELD IDENTIFICATION PROCEDURES USC (Excluding particles larger than 60 mm and basing fractions on estimated mass)					USC	PRIMARY NAME	
COARSE GRAINED SOILS More than 50% of materials less than 63 mm is larger than 0.075 mm	(A 0.075 mm particle is about the smallest particle visible to the naked eye)	GRAVELS More than half of coarse fraction is larger than 2.36 mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes	GW	GRAVEL	
				Predominantly one size or a range of sizes with more intermediate sizes missing.	GP	GRAVEL	
			GRAVELS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below)	GM	SILTY GRAVEL	
				Plastic fines (for identification procedures see CL below)	GC	CLAYEY GRAVEL	
		SANDS More than half of coarse fraction is smaller than 2.36 mm	CLEAN SANDS (Little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate sizes	SW	SAND	
				Predominantly one size or a range of sizes with some intermediate sizes missing.	SP	SAND	
			SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).	SM	SILTY SAND	
				Plastic fines (for identification procedures see CL below).	SC	CLAYEY SAND	
FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	(A 0.075 mm particle is about the smallest particle visible to the naked eye)	SILTS & CLAYS Liquid limit less than 50	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2 mm				
			DRY STRENGTH	DILATANCY	TOUGHNESS		
			None to Low	Quick to slow	None	ML	SILT
			Medium to High	None	Medium	CL	CLAY
		SILTS & CLAYS Liquid limit greater than 50	Low to medium	Slow to very slow	Low	CL	ORGANIC SILT
			Low to medium	Slow to very slow	Low to medium	MH	SILT
			High	None	High	CH	CLAY
			Medium to High	None	Low to medium	OH	ORGANIC CLAY
HIGHLY ORGANIC SOILS		Readily identified by colour, odour, spongy feel and frequently by fibrous texture.			PT	PEAT	
● Low plasticity – Liquid Limit w _L less than 35%. ● Medium plasticity – w _L between 35% and 50%. ● High plasticity – w _L greater than 50%.							

● Low plasticity – Liquid Limit w_L less than 35%. ● Medium plasticity – w_L between 35% and 50%. ● High plasticity – w_L greater than 50%.

COMMON DEFECTS IN SOIL

TERM	DEFINITION	DIAGRAM	TERM	DEFINITION	DIAGRAM
PARTING	A surface or crack across which the soil has little or no tensile strength. Parallel or sub parallel to layering (eg bedding). May be open or closed.		SOFTENED ZONE	A zone in clayey soil, usually adjacent to a defect in which the soil has a higher moisture content than elsewhere.	
JOINT	A surface or crack across which the soil has little or no tensile strength but which is not parallel or sub parallel to layering. May be open or closed. The term 'fissure' may be used for irregular joints <0.2 m in length		TUBE	Tubular cavity. May occur singly or as one of a large number of separate or inter-connected tubes. Walls often coated with clay or strengthened by denser packing of grains. May contain organic matter.	
SHEARED ZONE	Zone in clayey soil with roughly parallel near planar, curved or undulating boundaries containing closely spaced, smooth or slickensided, curved intersecting joints which divide the mass into lenticular or wedge shaped blocks.		TUBE CAST	Roughly cylindrical elongated body of soil different from the soil mass in which it occurs. In some cases the soil which makes up the tube cast is cemented.	
SHEARED SURFACE	A near planar curved or undulating, smooth, polished or slickensided surface in clayey soil. The polished or slickensided surface indicates that movement (in many cases very little) has occurred along the defect.		INFILLED SEAM	Sheet or wall like body of soil substance or mass with roughly planar to irregular near parallel boundaries which cuts through a soil mass. Formed by infilling of open joints.	

Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH01**

sheet: 1 of 5

project no. **754-WOLGE205317**

date started: **24 May 2017**

date completed: **24 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter : 100 mm

drilling information						material substance											
method & support	penetration			water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations			
AD/T N	1	2	3	Not Observed			0.5			PAVEMENT Gravelly SAND: fine to coarse grained, grey, fine to coarse angular to sub-angular gravel.	D	MD		PAVEMENT ROADBASE PID: 3.1 ppm			
														CLAY: medium to high plasticity, brown, orange mottled, trace of fine to medium sub-rounded gravel, trace of rootlets.	F - St		FILL PID: 5.1 ppm
														Sandy CLAY: medium plasticity, brown, orange, red mottled, fine grained sand, trace of fine sub-rounded gravel, trace of coal.	St		PID: 2.1 ppm
					SPT 5, 8, 9 N=17	1.0			CLAY: medium to high plasticity, brown, orange, grey mottled, trace of fine grained sand, trace of fine to medium sub-rounded gravel.	VSt			ALLUVIAL PID: 3 ppm				
					SPT 3, 5, 6 N=11	1.5											
							2.0										
							2.5										
							3.0										
							3.5										

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	penetration  no resistance ranging to refusal water  10-Oct-12 water level on date shown water inflow water outflow		moisture D dry M moist W wet Wp plastic limit WI liquid limit	

Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH01**

sheet: 2 of 5

project no. **754-WOLGE205317**

date started: **24 May 2017**

date completed: **24 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter : 100 mm

drilling information						material substance										
method & support	penetration			water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations		
AD/T	1	2	3	Not Observed			4.0			CLAY: medium to high plasticity, brown, orange, grey mottled, trace of fine grained sand, trace of fine to medium sub-rounded gravel. <i>(continued)</i> - some fine to coarse grained sand bands	D	VSt		ALLUVIAL		
							4.5									
							5.0								Sandy CLAY: medium plasticity, pale brown, red, orange, grey mottled, fine to medium grained sand, trace of fine to coarse sub-angular to sub-rounded gravel.	RESIDUAL
							5.5									
							6.0									
6.5	Sandy CLAY: medium plasticity, grey, brown, orange, brown mottled, fine to coarse grained sand.															
7.0	SPT 7, 13, 13 N=26	7.5	Sandy CLAY: medium plasticity, grey, brown, orange mottled, fine to coarse grained sand, trace of fine to medium sub-rounded to sub-angular gravel.	VSt - H		EXTREMELY WEATHERED MATERIAL										

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	penetration  no resistance ranging to refusal water 10-Oct-12 water level on date shown water inflow water outflow		moisture D dry M moist W wet Wp plastic limit WL liquid limit	

Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH01**

sheet: 3 of 5

project no. **754-WOLGE205317**

date started: **24 May 2017**

date completed: **24 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter : 100 mm

drilling information					material substance									
method & support	penetration			water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
	1	2	3							SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components			100 200 300 400	
AD/T N				Not Observed	SPT 18, 15, 30 N=45				Clayey SAND /SANDY CLAY: fine to coarse grained, brown, grey, medium plasticity clay, trace of coal.	D	H		EXTREMELY WEATHERED MATERIAL	
									Clayey SAND: fine to coarse grained, dark grey, brown, medium plasticity clay, trace of fine to coarse sub-angular to sub-rounded gravel.					
									SAND: fine to medium grained, dark grey, trace of fine to coarse sub-angular to sub-rounded gravel.			VD		
									Sandy CLAY: medium to high plasticity, dark grey, fine to medium grained sand.	>Wp	St			
									SAND: fine to coarse grained, grey, trace of low plasticity clay, trace of extremely weathered to highly weathered rock.	H	EXTREMELY WEATHERED TO HIGHLY WEATHERED ROCK			
						10.0				Borehole CBH01 continued as cored hole				
							10.5							
							11.0							
							11.5							

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	penetration  no resistance ranging to refusal	water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	moisture D dry M moist W wet Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
e.g.
AD/T
B blank bit
T TC bit
V V bit

Engineering Log - Cored Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH01**

sheet: 4 of 5

project no. **754-WOLGE205317**

date started: **24 May 2017**

date completed: **24 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted drilling fluid: none hole diameter : 100 mm

drilling information				material substance				rock mass defects			
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is(50) X = axial; O = diametral	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)
					start coring at 9.95m						particular general
NMLC	Not Observed		10.0		SILTSTONE: fine grained, dark grey.	XW to HW		d=1.11 a=0.77 d=0.10 a=0.19	0% 		

method & support AS auger screwing AD auger drilling CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test HA hand auger	water 10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss water pressure test result (lugeons) for depth interval shown	graphic log / core recovery core recovered (graphic symbols indicate material) no core recovered core run & RQD barrel withdrawn RQD = Rock Quality Designation (%)	weathering & alteration* RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR irregular coating CN clean SN stain VN veneer CO coating
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Engineering Log - Cored Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH01**

sheet: 5 of 5

project no. **754-WOLGE205317**

date started: **24 May 2017**

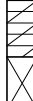
date completed: **24 May 2017**

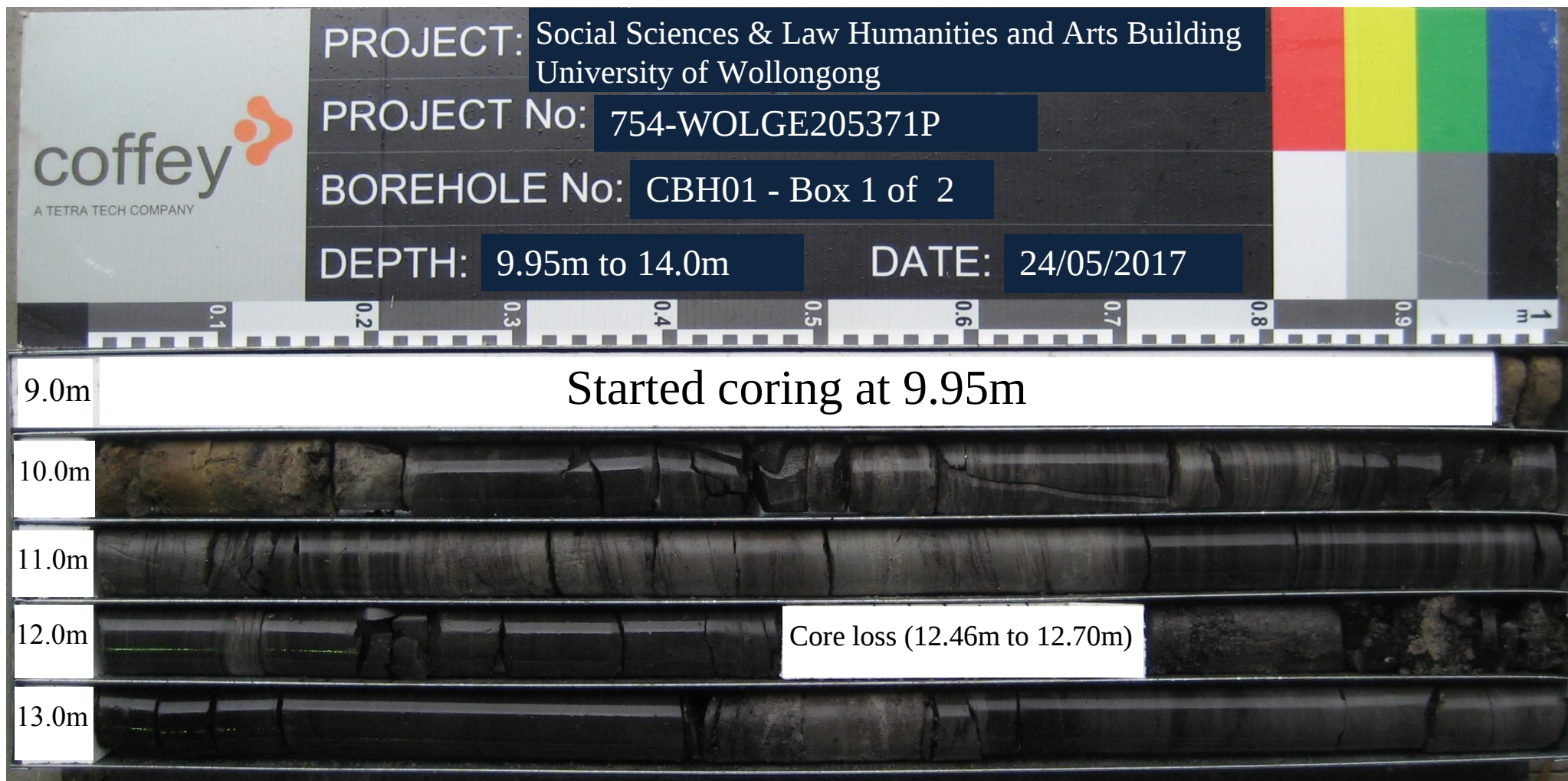
logged by: **MB**

checked by: **JPT**

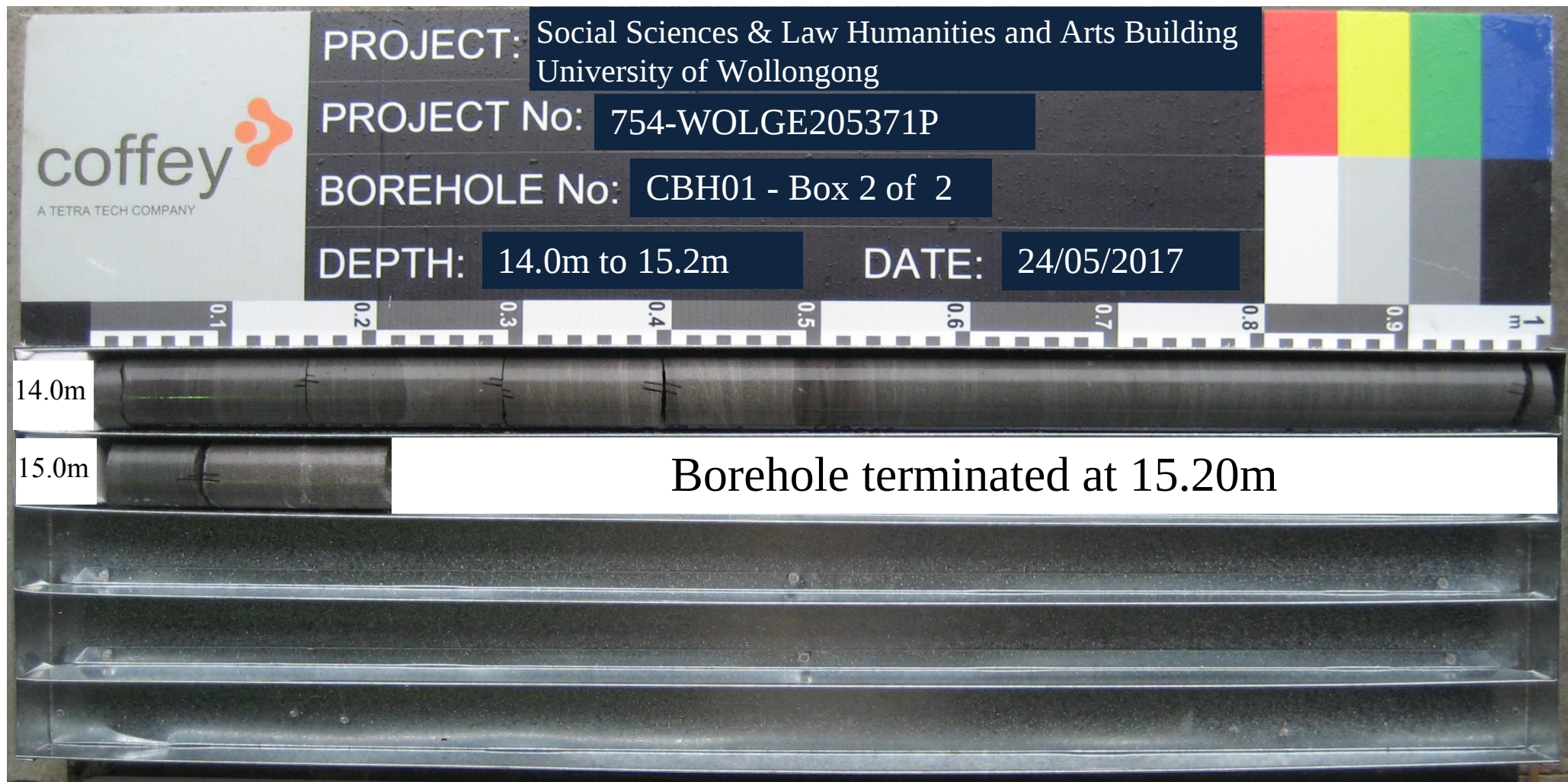
position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted drilling fluid: none hole diameter : 100 mm

drilling information				material substance				rock mass defects			
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 X = axial O = diametral a = axial d = diametral	samples, field tests & Is(50) (MPa)	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)
			14.0		- colour change to grey	SW to FR					
			14.5						79%		
			15.0								
			15.5		Borehole CBH01 terminated at 15.20 m Refusal						
			16.0								
			16.5								
			17.0								
			17.5								

method & support AS auger screwing AD auger drilling CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test HA hand auger	water  10/10/12, water level on date shown  water inflow  complete drilling fluid loss  partial drilling fluid loss  water pressure test result (lugeons) for depth interval shown	graphic log / core recovery  core recovered (graphic symbols indicate material)  no core recovered core run & RQD  barrel withdrawn RQD = Rock Quality Designation (%)	weathering & alteration* RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR irregular coating CN clean SN stain VN veneer CO coating
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drawn	MB		client:	University of Wollongong	
approved	JPT		project:	Social Sciences & Law Humanities and Arts Building	
date	24/05/2017		title:	Core photograph CBH01 – Box 1 of 2	
scale	N.T.S.		project no:	754-WOLGE205371P	figure no:
original size	A4				



drawn	MB	 A TETRA TECH COMPANY	client:	University of Wollongong	
approved	JPT		project:	Social Sciences & Law Humanities and Arts Building	
date	24/05/2017		title:	Core photograph CBH01 – Box 2 of 2	
scale	N.T.S.		project no:	754-WOLGE205371P	figure no:
original size	A4				

Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH02**

sheet: 1 of 1

project no. **754-WOLGE205317**

date started: **25 May 2017**

date completed: **25 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter :

drilling information					material substance							
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
AD/T N	1	Not Observed	SPT 5, 10, 8 N=18		0.5			Silty Sandy CLAY: medium plasticity, dark brown.	M	F	100 200 300 400	TOPSOIL / FILL
	2							St		PID: 1.8 ppm		
	3							St		ALLUVIAL PID: 1.7 ppm		
			SPT 4, 4, 6 N=10		2.5			Borehole CBH02 terminated at 2.95 m				
					3.0							
					3.5							

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. B blank bit T TC bit V V bit	support M mud C casing penetration  no resistance ranging to refusal water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WI liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH03**

sheet: 1 of 5

project no. **754-WOLGE205317**

date started: **25 May 2017**

date completed: **25 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter :

drilling information					material substance								
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations	
ADIT N	1	Not Observed	SPT 4, 6, 9 N=15		0.5			Silty Sandy CLAY: medium plasticity, dark brown, fine to medium grained sand, trace of rootlets.	M	F - St	100 200 300 400	TOPSOIL / FILL	
	2							M	St - VSt		PID: 2.4 ppm		
	3										ALLUVIAL		
											PID: 2.5 ppm		
			SPT 3, 4, 6 N=10		1.0			- colour change to dark brown, red, brown mottled		VSt	x		
				1.5									
				2.0									
				2.5				- trace of tree roots				x	
				3.0									
				3.5				Sandy CLAY: medium to high plasticity, brown, orange, red mottled, fine to coarse grained sand, trace of medium to coarse sub-rounded gravel, trace of organics.					
								- some medium to coarse grained sand (3.75-4.0m)					

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	penetration  no resistance ranging to refusal water 10-Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
e.g.
AD/T
B blank bit
T TC bit
V V bit

Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH03**

sheet: 2 of 5

project no. **754-WOLGE205317**

date started: **25 May 2017**

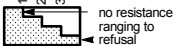
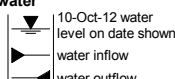
date completed: **25 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter :

drilling information					material substance				
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	structure and additional observations
AD	1		SPT 5, 6, 8 N=14		4.5			Sandy CLAY: medium to high plasticity, brown, orange, red mottled, fine to coarse grained sand, trace of medium to coarse sub-rounded gravel, trace of organics. <i>(continued)</i>	ALLUVIAL
					5.0				
					5.5			- colour changed to grey, brown, red, orange mottled	
			SPT 5, 8, 19 N=27		6.0			Sandy CLAY /CLAYEY SAND: medium plasticity, brown grey, medium to coarse grained sand.	RESIDUAL
					6.5			Sandy CLAY: medium to high plasticity, brown, grey, red mottled, fine to medium grained sand, trace of extremely weathered rock, trace of fine to medium sub-rounded gravel.	
					7.0				
			SPT 7, 12, 18 N=30		7.5				

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	penetration  no resistance ranging to refusal water  10-Oct-12 water level on date shown water inflow water outflow		moisture D dry M moist W wet Wp plastic limit WL liquid limit	

Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH03**

sheet: 3 of 5

project no. **754-WOLGE205317**

date started: **25 May 2017**

date completed: **25 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter :

drilling information						material substance								
method & support	penetration			water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
AD/T	1	2	3	Not Observed	SPT 18, 29, 19 N=R		8.5			Sandy CLAY: medium to high plasticity, brown, grey, red mottled, fine to medium grained sand, trace of extremely weathered rock, trace of fine to medium sub-rounded gravel. (continued) - trace of shale	M	VSt - H		EXTREMELY WEATHERED MATERIAL
	Z					SPT 28/100mm N=R	10.0			Clayey SAND /SANDY CLAY: fine to medium grained, dark grey, medium plasticity clay.		H		EXTREMELY WEATHERED TO HIGHLY WEATHERED ROCK
							10.5			Borehole CBH03 continued as cored hole				
							11.0							
							11.5							

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. B blank bit T TC bit V V bit	support M mud C casing penetration  no resistance ranging to refusal water 10-Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Cored Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH03**

sheet: 4 of 5

project no. **754-WOLGE205317**

date started: **25 May 2017**

date completed: **25 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted drilling fluid: none hole diameter :

drilling information		material substance				rock mass defects		
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration VL L M H VH EH	estimated strength & Is(50) X = axial O = diametral a = axial d = diametral	samples, field tests & Is(50) (MPa)
					start coring at 10.12m			core run & RQD
			10.5		CARBONACEOUS SILTSTONE: fine to medium grained, dark grey.	XW to HW		defect spacing (mm)
			11.0				a=0.04 d=0.01	30 100 300 1000 3000
			11.5		NO CORE: 0.21 m			particular
			12.0		COAL: fine grained, black.	XW to HW		general
			12.5		CLAYSTONE: medium plasticity. - colour change to grey			SM, Sandy clay
			13.0		COAL: fine grained, black.			PT, 10°, PL, RO, Clay CO
			13.5		NO CORE: 0.35 m			PT, 10 - 15°, PL, RO, Clay CO
			14.0		SANDSTONE: fine to medium grained, dark grey.	XW to HW		PT, 15°, IR, RO, Sandy clay CO
								PT, 15°, ST, RO, Sandy clay CO
								JT, 30°, IR, RO, Sandy clay CO
								PT, 10°, PL, RO, Sandy clay CO
								SM, Sandy clay
								PT, 15°, IR, RO, Sandy clay CO
								CS, 10 - 30°, IR, RO, VN
								CS, 10 - 20°, IR, RO, Sand CO
								JT, 30°, IR, RO, VN
								CS, 20 - 30°, IR, RO, Sand CO
								SM, Sandy clay
								PT, 10°, ST, RO, Clay CO
								PT, 10°, IR, RO, Clay CO
								CS, 10°, IR, RO, Sand CO
								CS, 10°, IR, RO, Sand CO
								PT, 10 - 15°, IR, RO, Sand CO
								CS, 10 - 20°, IR, RO, Sand CO
								PT, 15°, ST, RO, VN

method & support AS auger screwing AD auger drilling CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test HA hand auger	water 10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss water pressure test result (lugeons) for depth interval shown	graphic log / core recovery core recovered (graphic symbols indicate material) no core recovered core run & RQD barrel withdrawn RQD = Rock Quality Designation (%)	weathering & alteration* RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR irregular coating CN clean SN stain VN veneer CO coating
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Engineering Log - Cored Borehole

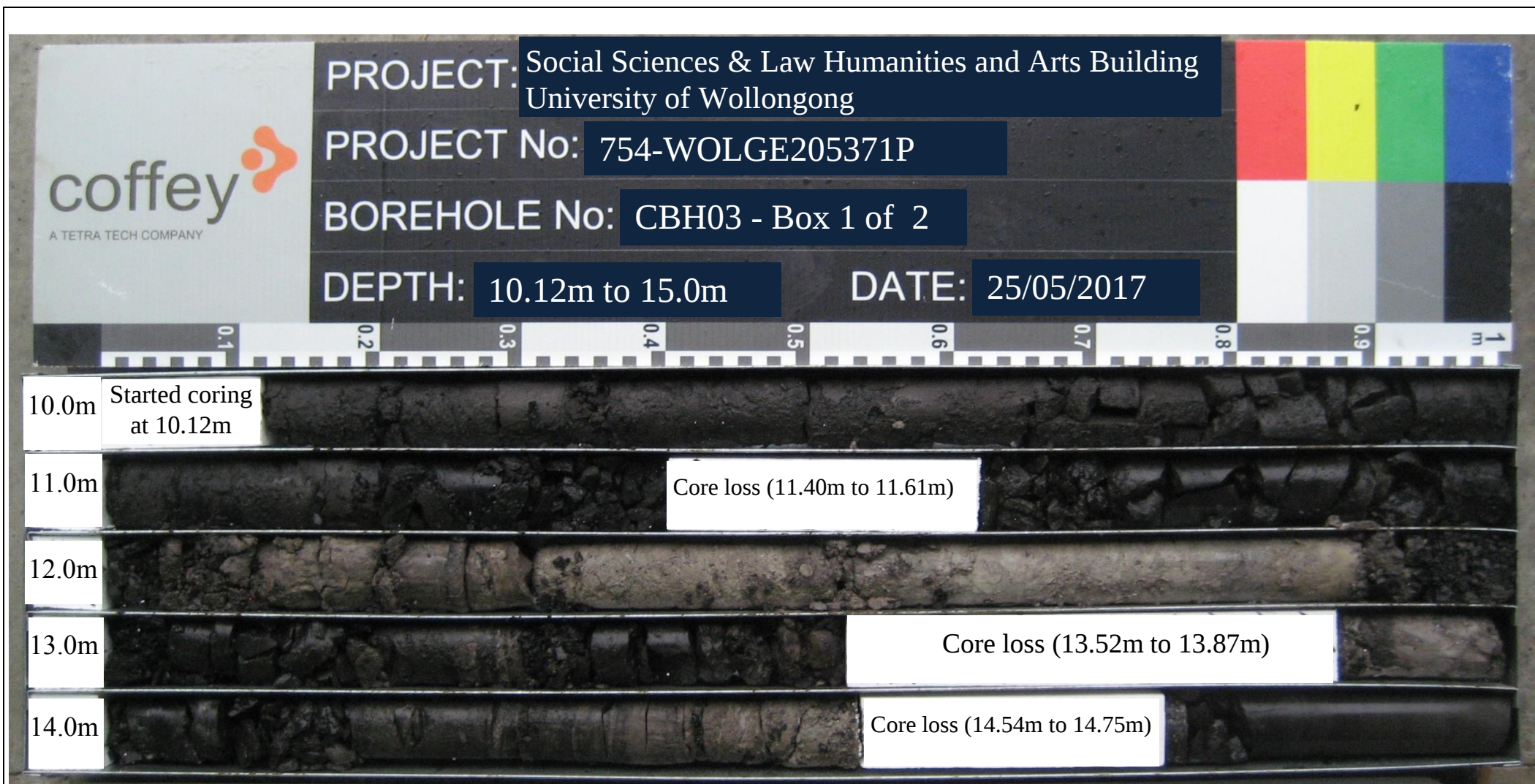
client: **University of Wollongong (Donald Cant Watts Corke)**
 principal:
 project: **Social Sciences & Law Humanities & Arts Buildings**
 location: **University of Wollongong**

Borehole ID: **CBH03**
 sheet: 5 of 5
 project no: **754-WOLGE205317**
 date started: **25 May 2017**
 date completed: **25 May 2017**
 logged by: **MB**
 checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
 drill model: Hanjin DB08, Trailer mounted drilling fluid: none hole diameter :

drilling information			material substance			rock mass defects		
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration VL L M H VH EH X = axial O = diametral a = axial d = diametral	estimated strength & Is(50) (MPa)	samples, field tests & Is(50) (MPa)
			14.5		SILTSTONE: fine to medium grained, dark grey. (continued)	XW to HW		a=0.05 d=0.02
					NO CORE: 0.21 m			
			15.0		SILTSTONE: fine to medium grained, dark grey.	MW SW		d=0.91 a=2.43
			15.5					
			16.0					
			16.5					
			17.0					
			17.5		Borehole CBH03 terminated at 17.05 m Refusal			
			18.0					

method & support AS auger screwing AD auger drilling CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test HA hand auger	water 10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss water pressure test result (lugeons) for depth interval shown	graphic log / core recovery core recovered (graphic symbols indicate material) no core recovered core run & RQD barrel withdrawn RQD = Rock Quality Designation (%)	weathering & alteration* RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR irregular coating CN clean SN stain VN veneer CO coating
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drawn	MB		client:	University of Wollongong	
approved	JPT		project:	Social Sciences & Law Humanities and Arts Building	
date	25/05/2017		title:	Core photograph CBH03 – Box 1 of 2	
scale	N.T.S.		project no:	754-WOLGE205371P	figure no:
original size	A4				



drawn	MB	 A TETRA TECH COMPANY	client:	University of Wollongong	
approved	JPT		project:	Social Sciences & Law Humanities and Arts Building	
date	25/05/2017		title:	Core photograph CBH03 – Box 2 of 2	
scale	N.T.S.		project no:	754-WOLGE205371P	figure no:
original size	A4				

Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH04**

sheet: 1 of 5

project no. **754-WOLGE205317**

date started: **26 May 2017**

date completed: **26 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter :

drilling information					material substance							
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
AD/T N	1	Not Observed	SPT 9, 9, 13 N=22		0.0			Silty Sandy CLAY: medium plasticity, dark brown, fine to coarse grained sand, some rootlets.	M	F - St	100 200 300 400	TOPSOIL / FILL
	0.5						Sandy CLAY: medium plasticity, dark brown, brown, orange mottled, fine to coarse grained sand, some 20-50mm tree roots.	D	St		ALLUVIAL PID: 3.2 ppm	
	1.0						- colour change to grey, orange, red mottled		VSt		PID: 3.1 ppm	
	1.5						Sandy CLAY /CLAYEY SAND: medium plasticity, brown, dark brown mottled, fine to coarse grained sand, trace of organics, trace of fine to coarse sub-rounded gravel, trace of tree roots, trace of coal.					
	2.0						Clayey SAND: fine to coarse grained, brown, orange mottled, low to medium plasticity clay, trace of coal, trace of fine to coarse sub-rounded to sub-angular gravel, trace of organics.					
SPT 6, 9, 12 N=21				2.5								
				3.0				Sandy CLAY /CLAYEY SAND: medium plasticity, brown, grey, orange mottled, medium to coarse grained sand, trace of medium to coarse sub-angular to sub-rounded gravel, trace of coal.				
					3.5							

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. B blank bit T TC bit V V bit	support M mud C casing N nil penetration  no resistance ranging to refusal water 10-Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WL liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH04**

sheet: 2 of 5

project no. **754-WOLGE205317**

date started: **26 May 2017**

date completed: **26 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter :

drilling information						material substance															
method & support	penetration			water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations							
ADIT	1	2	3	Not Observed	SPT 6, 15, 25 N=40					Sandy CLAY /CLAYEY SAND: medium plasticity, brown, grey, orange mottled, medium to coarse grained sand, trace of medium to coarse sub-angular to sub-rounded gravel, trace of coal. <i>(continued)</i>	D	H	100 200 300 400	ALLUVIAL							
										4.5						Sandy CLAY: medium plasticity, brown, fine to medium sand, trace of fine to medium sub-rounded gravel, trace of coal.					RESIDUAL
										5.0											
										5.5											
N				Not Observed	SPT 10, 12, 16 N=28																
										6.0											
					6.5																
				Not Observed	SPT 7, 12, 26 N=38					Sandy CLAY: medium plasticity, grey, brown, orange mottled, fine to medium grained sand, trace of fine to medium sub-rounded to sub-angular gravel.	M	H		EXTREMELY WEATHERED MATERIAL							
							7.0														
					7.5																

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	penetration  no resistance ranging to refusal water 10-Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
e.g.
AD/T
B blank bit
T TC bit
V V bit

Engineering Log - Borehole

Borehole ID.	CBH04
sheet:	3 of 5
project no.	754-WOLGE205317
date started:	26 May 2017
date completed:	26 May 2017
logged by:	MB
checked by:	JPT

client: **University of Wollongong (Donald Cant Watts Corke)**
principal: **University of Wollongong**
project: **Social Sciences & Law Humanities & Arts Buildings**
location: **University of Wollongong**

from horizontal: 90°
diameter :

position: Not Specified						surface elevation: Not Specified						angle from horizontal: 90°					
drill model: Jinan DB08, Trailer mounted												hole diameter :					
drilling information						material substance											
method & support	penetration			water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations			
	1	2	3										100	EXTREMELY WEATHERED MATERIAL			
													200				
													300				
													400				

Engineering Log - Cored Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH04**

sheet: 4 of 5

project no. **754-WOLGE205317**

date started: **26 May 2017**

date completed: **26 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted drilling fluid: none hole diameter :

drilling information			material substance			rock mass defects		
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration VL XW HW MW SW FR	estimated strength & Is(50) X = axial O = diametral a = axial d = diametral	samples, field tests & Is(50) (MPa) a = axial d = diametral
					start coring at 11.37m			
			11.5		CARBONACEOUS SILTSTONE: fine grained, dark grey, some clay band.	XW to HW		
			12.0			XW		
					NO CORE: 0.23 m			
			12.5		SANDSTONE: fine to medium grained, grey, dark grey.	XW to HW		
					- colour change to grey	HW to MW		
			13.0			MW to SW		
								a=0.53 d=0.49
			13.5			SW		
					- distinctly bedded			a=0.71 d=0.04
			14.0					
			14.5					
			15.0					
								a=0.48 d=0.05

method & support AS auger screwing AD auger drilling CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test HA hand auger	water  10/10/12, water level on date shown  water inflow  complete drilling fluid loss  partial drilling fluid loss  water pressure test result (lugeons) for depth interval shown	graphic log / core recovery  core recovered (graphic symbols indicate material)  no core recovered core run & RQD  barrel withdrawn RQD = Rock Quality Designation (%)	weathering & alteration* RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR irregular coating CN clean SN stain VN veneer CO coating
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Engineering Log - Cored Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID: **CBH04**

sheet: 5 of 5

project no. **754-WOLGE205317**

date started: **26 May 2017**

date completed: **26 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted drilling fluid: none hole diameter :

drilling information				material substance				rock mass defects			
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain characteristics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 X = axial O = diametral a = axial d = diametral	samples, field tests & Is(50) (MPa)	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)
NMLC Not Observed			15.5		SANDSTONE: fine to medium grained, grey, dark grey. (continued)	SW					
			16.0		Borehole CBH04 terminated at 16.00 m Refusal						
			16.5								
			17.0								
			17.5								
			18.0								
			18.5								
			19.0								

method & support AS auger screwing AD auger drilling CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test HA hand auger	water  10/10/12, water level on date shown  water inflow  complete drilling fluid loss  partial drilling fluid loss  water pressure test result (lugeons) for depth interval shown	graphic log / core recovery  core recovered (graphic symbols indicate material)  no core recovered core run & RQD  barrel withdrawn RQD = Rock Quality Designation (%)	weathering & alteration* RS residual soil XW extremely weathered HW highly weathered DW distinctly weathered MW moderately weathered SW slightly weathered FR fresh *W replaced with A for alteration strength VL very low L low M medium H high VH very high EH extremely high	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR irregular coating CN clean SN stain VN veneer CO coating
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drawn	MB	 A TETRA TECH COMPANY	client:	University of Wollongong	
approved	JPT		project:	Social Sciences & Law Humanities and Arts Building	
date	26/05/2017		title:	Core photograph CBH04 – Box 1 of 1	
scale	N.T.S.		project no:	754-WOLGE205371P	figure no:
original size	A4				

Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH05**

sheet: 1 of 1

project no. **754-WOLGE205317**

date started: **26 May 2017**

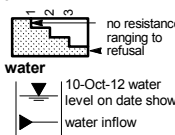
date completed: **26 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter :

drilling information					material substance							
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
HA	1	Not Observed						Sandy CLAY: medium plasticity, brown, dark brown mottled, fine to medium grained sandstone, trace of rootlets.	M	F - St		TOPSOIL
								Borehole CBH05 terminated at 0.25 m Refusal				PID: 3.6 ppm
					0.5							
					1.0							
					1.5							
					2.0							
					2.5							
					3.0							
					3.5							

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	penetration 		moisture D dry M moist W wet Wp plastic limit WI liquid limit	

Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH06**

sheet: 1 of 1

project no. **754-WOLGE205317**

date started: **26 May 2017**

date completed: **26 May 2017**

logged by: **MB**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter :

drilling information					material substance									
method & support		penetration			samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
HA	N	1	2	3										
HA	N	1	2	3	Not Observed					Silty Sandy CLAY: medium plasticity, dark brown, fine to medium grained sand, trace of rootlets.		F - St	100 200 300 400	TOPSOIL / FILL
							0.5			Borehole CBH06 terminated at 0.25 m Refusal				PID: 2.6 ppm
							1.0							
							1.5							
							2.0							
							2.5							
							3.0							
							3.5							

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger	support M mud C casing N nil	penetration  no resistance ranging to refusal water 10-Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WI liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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* bit shown by suffix
e.g.
AD/T
B blank bit
T TC bit
V V bit

Engineering Log - Borehole

client: **University of Wollongong (Donald Cant Watts Corke)**

principal:

project: **Social Sciences & Law Humanities & Arts Buildings**

location: **University of Wollongong**

Borehole ID. **CBH07**

sheet: 1 of 1

project no. **754-WOLGE205317**

date started: **24 May 2017**

date completed: **24 May 2017**

logged by: **IL**

checked by: **JPT**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°
drill model: Hanjin DB08, Trailer mounted hole diameter :

drilling information							material substance							
method & support	penetration			water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
HA N	1	2	3	Not Observed			0.5			Sandy SILT: brown, fine to medium grained sand, trace rootlets.	M	F	100 200 300 400	
										Silty CLAY: low to medium plasticity, grey, brown, trace of fine to medium angular to sub-angular gravels, trace of rootlets.		St		
							1.0			Borehole CBH07 terminated at 0.8 m Refusal				
							1.5							
							2.0							
							2.5							
							3.0							
							3.5							

method AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing penetration  no resistance ranging to refusal water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit WI liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Appendix I – Data Validation

QA/QC DATA VALIDATION REPORT

Job No: 754-WOLGE205371

Batches: 548245 (Soil)



I. SAMPLE HANDLING

1. Were the sample **holding times** met?
2. Were the samples in **proper custody** between the field and reaching the laboratory?
3. Were the samples **properly and adequately** preserved?
This includes keeping the samples chilled, where applicable.
4. Were the samples received by the laboratory in good condition?

Yes	No (Comment below)
☒	☐
☒	☐
☐	☒
☒	☐

COMMENTS:

- The sample temperature recorded upon receipt by Eurofins was above the advised preservation temperature of 6 degrees Celsius at 13.5 degrees Celsius. The reported concentrations within trip spike/blank samples is consistent with several lines of evidence including:
 - o Trip spike recoveries were reported within the control limits. This suggests a low potential for loss of volatiles to have occurred.
 - o Trip blank concentrations were not detected which was consistent with olfactory and visual observations suggesting a low likelihood for volatile contaminants to be present in primary samples.
 - o No odours were noted during sampling and PID results were < 10ppm.

Therefore, this exceedance of preservation temperature does not affect the usability of the sample data.

Sample Handling was:

☐ Satisfactory
☒ Partially Satisfactory

☐ Unsatisfactory

QA/QC DATA VALIDATION REPORT

Job No: 754-WOLGE205371

Batches: 548245 (Soil)



II PRECISION/ACCURACY ASSESSMENT

1. Was a NATA registered laboratory used?
2. Did the laboratory perform the requested tests?
3. Were the laboratory methods adopted NATA endorsed?
4. Were the appropriate test procedures followed?
5. Were the reporting limits satisfactory?
6. Was the NATA Seal on the reports?
7. Were the reports signed by an authorised person?

Yes	No (Comment below)
☒	☐
☒	☐
☒	☐
☒	☐
☒	☐
☒	☐
☒	☐

COMMENTS:

Precision/Accuracy of the Laboratory Report	☒ Satisfactory	☐ Unsatisfactory
	☐ Partially Satisfactory	

QA/QC DATA VALIDATION REPORT

Job No: 754-WOLGE205371

Batches: 548245 (Soil)



III. Number of Primary Samples Analysed Soil: 10
Water: 0

2. Number of Days of Sampling: Soil: 3
Water: 0

3. Number and Type of QA/QC Samples Collected:

	SOIL	WATER
Field Duplicates (at least 1 in 10 samples)	1 intra-laboratory duplicates	N/A
Field Triplicates (at least 1 in 20 samples)	N/A	N/A
Trip Spikes	1	N/A
Trip Blanks (at least 1/day or sampling event)	1	N/A
Wash Blanks (at least 1/day/matrix/equipment)	1	N/A
Other (Field Blanks, etc.)	N/A	N/A

4. FIELD DUPLICATES

A. Were an Adequate Number of field duplicates analysed for each chemical (min. 10%)?

B. Were RPDs within Control Limits*?

- a. Organics
- b. Metals/Inorganics
- c. Microbiological

Yes	No (Comment below)
☒	☐
☒ ☒ N/A	☐ ☐ N/A

* - Result < 10 times LOR then No Limit
- Result > 10 times LOR then control limit of 30%

COMMENTS:

- The RPD results of samples are presented in Table QAQC2 (water).

QA/QC DATA VALIDATION REPORT

Job No: 754-WOLGE205371

Batches: 548245 (Soil)



5. TRIP BLANKS

- A. Were an adequate number of trip blanks collected?
- B. Were the trip blanks free of contaminants?
(If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)

Yes	No (Comment below)
☒	☐
☒	☐

6. TRIP SPIKES

- A. Were an adequate number of trip spikes collected?
- B. Were the spike recoveries within control limits (60% to 110%)?

Yes	No (Comment below)
☒	☐
☒	☐

7. WASH BLANKS

- A. Were an adequate number of Wash Blanks collected?
- B. Were the Wash Blanks free of contaminants?
(If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)

Yes	No (Comment below)
☒	☐
☒	☐ N/A

COMMENTS:

- Trip spike/blank was used on a single sampling date, 25th May 2017, the activities and procedures on this date were undertaken on this day are representative of and consistent with Coffey procedures and the methodology used for sampling on other sampling dates, therefore these results for the trip spike/blank are considered representative of all sampling undertaken.
- Results of quality control samples, spikes and blanks, are presented in Tables QAQC3.

Field QA/QC was:	☒ Satisfactory	☐ Unsatisfactory
	☐ Partially Satisfactory	

QA/QC DATA VALIDATION REPORT

Job No: 754-WOLGE205371

Batches: 548245 (Soil)



IV LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Type of QA/QC Samples

	TRH	BTEX	PAHs	Metals	OCP/OPP	PCBs	Acid Herbicides
Laboratory Blanks/Reagent Blanks (at least 1 per batch)	✓	✓	✓	✓	✓	✓	✓
Laboratory Duplicates (at least 1 per batch or 1 per 10 samples whichever is the smaller)	✓	✓	✓	✓	✓	✓	✓
Laboratory Control Spike	✓	✓	✓	✓	✓	✓	✓
Matrix Spikes/Matrix Spike Duplicates	✓	✓	✓	✓	✓	✓	✓
Surrogate (where appropriate)*	✓	✓	✓	✓	✓	✓	✓

- 2 Were the laboratory blanks/reagents blanks free of contamination?
3. Were the spike recoveries within laboratory control limits?*
- a. Organics
- b. Metals/Inorganic
4. Were the RPDs of the laboratory duplicates within control limits?#
5. Were the surrogate recoveries within control limits?

Yes	No (Comment below)
☒	☐
☒ ☒	☐ ☐
☒	☐
☒	☐

Eurofins Laboratory control limits:

- * - General: MS & LCS (70 to 130%) & surrogates (50 to 150%)
 - Phenols: MS & LCS (30 to 130%) & surrogates (20 to 130%)
- # - Result < 10 times LOR then No Limit
 - Result between 10 and 20 times LOR then control limit of 0 to 50%
 - Result > 20 times LOR then control limit of 0 to 30%

COMMENTS:

- In all batches, a sufficient number of field duplicates, method blanks and laboratory control spikes samples were carried out for these analytes. The laboratory control limits for these indicators were assessed as adequate.

5. The laboratory internal QA/QC was: ☒ Satisfactory ☐ Unsatisfactory
☐ Partially Satisfactory

QA/QC DATA VALIDATION REPORT

Job No: 754-WOLGE205371

Batches: 548245 (Soil)



V. DATA USABILITY

- | | | |
|----|---|--|
| 1. | Data Directly Usable | ☒ |
| 2. | Data Usable with the following corrections/modifications (see comments below) | ☐ |
| 3. | Data Not Usable | ☐ |

COMMENTS:

Based on the data validation assessment, it is considered that the data collected for this contamination assessment are adequate and meet the Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs) (completeness, comparability, representativeness, precision, and accuracy) for both field and laboratory procedures and results.

QA/QC Report Prepared by

Christopher Cook

QA/QC Report Reviewed by:

Manuel Fernandez

(Reviewer)

Table QAQC1: Relative Percentage Difference for Soil Samples

Batch		548245		
		Primary Sample Conc. (mg/kg)	Intra-laboratory duplicate Sample Conc. (mg/Kg)	RPD (%)
Sample No.	Laboratory Reporting Limits (mg/kg)	SS3	QC2	
Depth (m)	Eurofins	0.0-0.1	0.0-0.1	
HEAVY METALS				
Arsenic	2	7.4	7.9	7
Cadmium	0.4	< 0.4	< 0.4	ND
Chromium	5	27	29	7
Copper	5	29	33	13
Lead	5	39	46	16
Mercury	0.1	< 0.1	< 0.1	ND
Nickel	5	16	18	12
Zinc	5	280	350	22
TOTAL RECOVERABLE HYDROCARBONS				
F1 (C6-C10)	20	< 20	< 20	ND
F1 (C6-C10 less BTEX)	20	< 20	< 20	ND
F2 (>C10-C16)	50	< 50	< 50	ND
F2 (>C10-C16 less napthalene)	50	< 50	< 50	ND
F3 (>C16-C34)	100	< 100	< 100	ND
F4 (>C34-C40)	100	< 100	< 100	ND
BTEX				
Benzene	0.1	< 0.1	< 0.1	ND
Toluene	0.1	< 0.1	< 0.1	ND
Ethylbenzene	0.1	< 0.1	< 0.1	ND
Total Xylene	0.3	< 0.3	< 0.3	ND
POLYCYCLIC AROMATIC HYDROCARBONS				
	various	< 0.5	< 0.5	ND
ORGANOCHLORINE PESTICIDES				
	various	< LOR	< LOR	ND
ORGANOPHOSPHORUS PESTICIDES				
	various	< LOR	< LOR	ND
ACID HERBICIDES				
	various	< LOR	< LOR	ND

Notes:

Bold	RPD exceeds control limit of 30% for soil if: - Result < 10 times LOR then No Limit - Result > 10 times LOR then control limit of 30%
RPD Relative Percentage Difference	
NA Not Applicable	
ND Not Detected	
NC Contaminant is not detected in primary sample but is detected in duplicate sample, or vice versa	
LOR Limit of Reporting	
- No result or guideline	

TABLE QAQC2
SUMMARY OF FIELD CONTROL SAMPLES LABORATORY RESULTS

Sample ID	Trip Blank	Trip Spike	WB1
Date of Sampling	05-May-17	05-May-17	19-May-17
QAQC Type	Trip Blank	Trip Spike	Rinsate
Batch	546109	546109	547365
Unit	mg/kg	%	mg/L
Matrix	Soil	Soil	Water
HEAVY METALS (TOTAL)			
Arsenic	-	-	< 0.001
Cadmium	-	-	< 0.0002
Chromium	-	-	0.001
Copper	-	-	< 0.001
Lead	-	-	< 0.001
Mercury	-	-	< 0.0001
Nickel	-	-	< 0.001
Zinc	-	-	< 0.005
TOTAL PETROLEUM HYDROCARBONS			
F1 (C6-C10)	<20	92%	< 0.02
F1 (C6-C10 less BTEX)	<20	-	< 0.02
F2 (>C10-C16)	-	-	< 0.05
F2 (>C10-C16 less naphthalene)	-	-	< 0.05
F3 (>C16-C34)	-	-	< 0.1
F4 (>C34-C40)	-	-	< 0.1
BTEX			
Benzene	< 0.1	95%	< 0.001
Toluene	< 0.1	94%	< 0.001
Ethylbenzene	< 0.1	93%	< 0.001
Total Xylene	< 0.3	93%	< 0.003
POLYCYCLIC AROMATIC HYDROCARBONS			
Naphthalene	< 0.5	-	< 0.001
Total PAHs	-	-	< 0.001
ORGANOCHLORINE PESTICIDES			
	-	-	< LOR
ORGANOPHOSPHORUS PESTICIDES			
	-	-	< LOR

Notes:

Bold

Concentration exceeds control limit

- Not Analysed

ND Not Detected

QAQC Control Ordinates

Rinsate Blank Recovery concentrations to be ND

Trip Spike Recovery concentrations to be between 60% and 110%

Trip Blank Recovery concentrations to be ND

Appendix J – Laboratory Reports

Certificate of Analysis

Coffey Environments Pty Ltd Wollongong
118 Auburn Street
Wollongong
NSW 2500



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Manuel Fernandez**

Report **548245-S**
Project name CONTAMINATION ASSESSMENT
Project ID 754-WOLGE205371
Received Date May 30, 2017

Client Sample ID			CBH01_0.5-0.7	CBH02_0.25-0.4	CBH03_0.1-0.3	CBH04_0.05-0.25
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S17-My30418	S17-My30419	S17-My30420	S17-My30421
Date Sampled			May 24, 2017	May 25, 2017	May 25, 2017	May 26, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	-	< 0.5	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	< 20	-	-
TRH C6-C10	20	mg/kg	-	< 20	-	-
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	< 100	-	-
TRH >C34-C40	100	mg/kg	-	< 100	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	-	-
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	< 50	-	-
TRH C29-C36	50	mg/kg	-	53	-	-
TRH C10-36 (Total)	50	mg/kg	-	53	-	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	-	103	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	-
Acenaphthene	0.5	mg/kg	-	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-
Anthracene	0.5	mg/kg	-	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	< 0.5	-	-
Benzo(g,h,i)perylene	0.5	mg/kg	-	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Chrysene	0.5	mg/kg	-	< 0.5	-	-
Dibenz(a,h)anthracene	0.5	mg/kg	-	< 0.5	-	-

Client Sample ID			CBH01_0.5-0.7	CBH02_0.25-0.4	CBH03_0.1-0.3	CBH04_0.05-0.25
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S17-My30418	S17-My30419	S17-My30420	S17-My30421
Date Sampled			May 24, 2017	May 25, 2017	May 25, 2017	May 26, 2017
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Fluorene	0.5	mg/kg	-	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	-
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	< 0.5	-	-
Pyrene	0.5	mg/kg	-	< 0.5	-	-
Total PAH*	0.5	mg/kg	-	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	-	97	-	-
p-Terphenyl-d14 (surr.)	1	%	-	77	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	< 0.1	-
4,4'-DDD	0.05	mg/kg	-	< 0.05	< 0.05	-
4,4'-DDE	0.05	mg/kg	-	< 0.05	< 0.05	-
4,4'-DDT	0.05	mg/kg	-	< 0.05	< 0.05	-
α-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Aldrin	0.05	mg/kg	-	< 0.05	< 0.05	-
β-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
δ-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Dieldrin	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan I	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan II	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin ketone	0.05	mg/kg	-	< 0.05	< 0.05	-
γ-BHC (Lindane)	0.05	mg/kg	-	< 0.05	< 0.05	-
Heptachlor	0.05	mg/kg	-	< 0.05	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	-
Methoxychlor	0.05	mg/kg	-	< 0.05	< 0.05	-
Toxaphene	1	mg/kg	-	< 1	< 1	-
Dibutylchloredate (surr.)	1	%	-	96	111	-
Tetrachloro-m-xylene (surr.)	1	%	-	71	93	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	< 0.2	< 0.2	-
Bolstar	0.2	mg/kg	-	< 0.2	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	-	< 0.2	< 0.2	-
Chlorpyrifos	0.2	mg/kg	-	< 0.2	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	-	< 0.2	< 0.2	-
Coumaphos	2	mg/kg	-	< 2	< 2	-
Demeton-S	0.2	mg/kg	-	< 0.2	< 0.2	-
Demeton-O	0.2	mg/kg	-	< 0.2	< 0.2	-
Diazinon	0.2	mg/kg	-	< 0.2	< 0.2	-
Dichlorvos	0.2	mg/kg	-	< 0.2	< 0.2	-
Dimethoate	0.2	mg/kg	-	< 0.2	< 0.2	-
Disulfoton	0.2	mg/kg	-	< 0.2	< 0.2	-
EPN	0.2	mg/kg	-	< 0.2	< 0.2	-
Ethion	0.2	mg/kg	-	< 0.2	< 0.2	-
Ethoprop	0.2	mg/kg	-	< 0.2	< 0.2	-

Client Sample ID			CBH01_0.5-0.7 Soil S17-My30418 May 24, 2017	CBH02_0.25-0.4 Soil S17-My30419 May 25, 2017	CBH03_0.1-0.3 Soil S17-My30420 May 25, 2017	CBH04_0.05-0.25 Soil S17-My30421 May 26, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Ethyl parathion	0.2	mg/kg	-	< 0.2	< 0.2	-
Fenitrothion	0.2	mg/kg	-	< 0.2	< 0.2	-
Fensulfothion	0.2	mg/kg	-	< 0.2	< 0.2	-
Fenthion	0.2	mg/kg	-	< 0.2	< 0.2	-
Malathion	0.2	mg/kg	-	< 0.2	< 0.2	-
Merphos	0.2	mg/kg	-	< 0.2	< 0.2	-
Methyl parathion	0.2	mg/kg	-	< 0.2	< 0.2	-
Mevinphos	0.2	mg/kg	-	< 0.2	< 0.2	-
Monocrotophos	2	mg/kg	-	< 2	< 2	-
Naled	0.2	mg/kg	-	< 0.2	< 0.2	-
Omethoate	2	mg/kg	-	< 2	< 2	-
Phorate	0.2	mg/kg	-	< 0.2	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	-	< 0.2	< 0.2	-
Pyrazophos	0.2	mg/kg	-	< 0.2	< 0.2	-
Ronnel	0.2	mg/kg	-	< 0.2	< 0.2	-
Terbufos	0.2	mg/kg	-	< 0.2	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	-	< 0.2	< 0.2	-
Tokuthion	0.2	mg/kg	-	< 0.2	< 0.2	-
Trichloronate	0.2	mg/kg	-	< 0.2	< 0.2	-
Triphenylphosphate (surr.)	1	%	-	88	89	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1248	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	-	-	< 0.1	-
Total PCB*	0.1	mg/kg	-	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	-	-	111	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	93	-
Acid Herbicides						
2,4-D	0.5	mg/kg	< 0.5	-	-	< 0.5
2,4-DB	0.5	mg/kg	< 2	-	-	< 0.5
2,4,5-T	0.5	mg/kg	< 0.5	-	-	< 0.5
2,4,5-TP	0.5	mg/kg	< 0.5	-	-	< 0.5
Actril (loxynil)	0.5	mg/kg	< 0.5	-	-	< 0.5
Dicamba	0.5	mg/kg	< 0.5	-	-	< 0.5
Dichlorprop	0.5	mg/kg	< 0.5	-	-	< 0.5
Dinitro-o-cresol	0.5	mg/kg	< 0.5	-	-	< 0.5
Dinoseb	0.5	mg/kg	< 0.5	-	-	< 0.5
MCPA	0.5	mg/kg	< 0.5	-	-	< 0.5
MCPB	0.5	mg/kg	< 0.5	-	-	< 0.5
Mecoprop	0.5	mg/kg	< 0.5	-	-	< 0.5
Warfarin (surr.)	1	%	67	-	-	64

Client Sample ID			CBH01_0.5-0.7	CBH02_0.25-0.4	CBH03_0.1-0.3	CBH04_0.05-0.25
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S17-My30418	S17-My30419	S17-My30420	S17-My30421
Date Sampled			May 24, 2017	May 25, 2017	May 25, 2017	May 26, 2017
Test/Reference	LOR	Unit				
% Clay	1	%	-	-	16	-
Conductivity (1:5 aqueous extract at 25°C)	10	uS/cm	-	-	75	-
pH (units)(1:5 soil:CaCl2 extract)	0.1	pH Units	-	-	7.7	-
Total Organic Carbon	0.1	%	-	-	3.6	-
Cation Exchange Capacity	0.05	meq/100g	-	-	12	-
% Moisture	1	%	22	17	23	19
Heavy Metals						
Arsenic	2	mg/kg	11	8.1	7.7	5.0
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	24	23	19	17
Copper	5	mg/kg	38	26	22	46
Iron	20	mg/kg	-	-	31000	-
Lead	5	mg/kg	17	37	36	33
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	18	19	17	15
Zinc	5	mg/kg	42	70	69	71
Heavy Metals						
Iron (%)	0.01	%	-	-	3.1	-

Client Sample ID			CBH06_0.05-0.25	CBH07_0.5-0.6	SS1	SS2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S17-My30422	S17-My30423	S17-My30424	S17-My30425
Date Sampled			May 26, 2017	May 24, 2017	May 24, 2017	May 24, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	-	< 0.5	-	< 0.5
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	< 20	-	< 20
TRH C6-C10	20	mg/kg	-	< 20	-	< 20
TRH >C10-C16	50	mg/kg	-	< 50	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	< 50	-	< 50
TRH >C16-C34	100	mg/kg	-	< 100	-	< 100
TRH >C34-C40	100	mg/kg	-	< 100	-	< 100
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	-	< 20
TRH C10-C14	20	mg/kg	-	< 20	-	< 20
TRH C15-C28	50	mg/kg	-	< 50	-	< 50
TRH C29-C36	50	mg/kg	-	55	-	51
TRH C10-36 (Total)	50	mg/kg	-	55	-	51
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	111	-	108

Client Sample ID			CBH06_0.05-0.25 Soil S17-My30422 May 26, 2017	CBH07_0.5-0.6 Soil S17-My30423 May 24, 2017	SS1 Soil S17-My30424 May 24, 2017	SS2 Soil S17-My30425 May 24, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5	-	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5	-	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5	-	< 0.5
Phenanthrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Pyrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Total PAH*	0.5	mg/kg	-	< 0.5	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	97	-	95
p-Terphenyl-d14 (surr.)	1	%	-	78	-	79
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	< 0.1
4,4'-DDD	0.05	mg/kg	-	< 0.05	-	< 0.05
4,4'-DDE	0.05	mg/kg	-	< 0.05	-	< 0.05
4,4'-DDT	0.05	mg/kg	-	< 0.05	-	< 0.05
a-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
Aldrin	0.05	mg/kg	-	< 0.05	-	< 0.05
b-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
d-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
Dieldrin	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan I	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan II	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	< 0.05
Endrin	0.05	mg/kg	-	< 0.05	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	< 0.05
Endrin ketone	0.05	mg/kg	-	< 0.05	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	< 0.05
Heptachlor	0.05	mg/kg	-	< 0.05	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	< 0.05
Methoxychlor	0.05	mg/kg	-	< 0.05	-	< 0.05
Toxaphene	1	mg/kg	-	< 1	-	< 1
Dibutylchloroendate (surr.)	1	%	-	138	-	98
Tetrachloro-m-xylene (surr.)	1	%	-	78	-	83

Client Sample ID			CBH06_0.05-0.25 Soil S17-My30422 May 26, 2017	CBH07_0.5-0.6 Soil S17-My30423 May 24, 2017	SS1 Soil S17-My30424 May 24, 2017	SS2 Soil S17-My30425 May 24, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	< 0.2	-	< 0.2
Bolstar	0.2	mg/kg	-	< 0.2	-	< 0.2
Chlorfenvinphos	0.2	mg/kg	-	< 0.2	-	< 0.2
Chlorpyrifos	0.2	mg/kg	-	< 0.2	-	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	-	< 0.2	-	< 0.2
Coumaphos	2	mg/kg	-	< 2	-	< 2
Demeton-S	0.2	mg/kg	-	< 0.2	-	< 0.2
Demeton-O	0.2	mg/kg	-	< 0.2	-	< 0.2
Diazinon	0.2	mg/kg	-	< 0.2	-	< 0.2
Dichlorvos	0.2	mg/kg	-	< 0.2	-	< 0.2
Dimethoate	0.2	mg/kg	-	< 0.2	-	< 0.2
Disulfoton	0.2	mg/kg	-	< 0.2	-	< 0.2
EPN	0.2	mg/kg	-	< 0.2	-	< 0.2
Ethion	0.2	mg/kg	-	< 0.2	-	< 0.2
Ethoprop	0.2	mg/kg	-	< 0.2	-	< 0.2
Ethyl parathion	0.2	mg/kg	-	< 0.2	-	< 0.2
Fenitrothion	0.2	mg/kg	-	< 0.2	-	< 0.2
Fensulfothion	0.2	mg/kg	-	< 0.2	-	< 0.2
Fenthion	0.2	mg/kg	-	< 0.2	-	< 0.2
Malathion	0.2	mg/kg	-	< 0.2	-	< 0.2
Merphos	0.2	mg/kg	-	< 0.2	-	< 0.2
Methyl parathion	0.2	mg/kg	-	< 0.2	-	< 0.2
Mevinphos	0.2	mg/kg	-	< 0.2	-	< 0.2
Monocrotophos	2	mg/kg	-	< 2	-	< 2
Naled	0.2	mg/kg	-	< 0.2	-	< 0.2
Omethoate	2	mg/kg	-	< 2	-	< 2
Phorate	0.2	mg/kg	-	< 0.2	-	< 0.2
Pirimiphos-methyl	0.2	mg/kg	-	< 0.2	-	< 0.2
Pyrazophos	0.2	mg/kg	-	< 0.2	-	< 0.2
Ronnel	0.2	mg/kg	-	< 0.2	-	< 0.2
Terbufos	0.2	mg/kg	-	< 0.2	-	< 0.2
Tetrachlorvinphos	0.2	mg/kg	-	< 0.2	-	< 0.2
Tokuthion	0.2	mg/kg	-	< 0.2	-	< 0.2
Trichloronate	0.2	mg/kg	-	< 0.2	-	< 0.2
Triphenylphosphate (surr.)	1	%	-	86	-	81
Acid Herbicides						
2,4-D	0.5	mg/kg	-	-	< 0.5	-
2,4-DB	0.5	mg/kg	-	-	< 0.5	-
2,4,5-T	0.5	mg/kg	-	-	< 0.5	-
2,4,5-TP	0.5	mg/kg	-	-	< 0.5	-
Actril (loxynil)	0.5	mg/kg	-	-	< 0.5	-
Dicamba	0.5	mg/kg	-	-	< 0.5	-
Dichlorprop	0.5	mg/kg	-	-	< 0.5	-
Dinitro-o-cresol	0.5	mg/kg	-	-	< 0.5	-
Dinoseb	0.5	mg/kg	-	-	< 0.5	-
MCPA	0.5	mg/kg	-	-	< 0.5	-
MCPB	0.5	mg/kg	-	-	< 0.5	-
Mecoprop	0.5	mg/kg	-	-	< 0.5	-
Warfarin (surr.)	1	%	-	-	69	-

Client Sample ID			CBH06_0.05-0.25	CBH07_0.5-0.6	SS1	SS2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S17-My30422	S17-My30423	S17-My30424	S17-My30425
Date Sampled			May 26, 2017	May 24, 2017	May 24, 2017	May 24, 2017
Test/Reference	LOR	Unit				
% Moisture	1	%	16	18	10	13
Heavy Metals						
Arsenic	2	mg/kg	5.5	6.8	6.1	6.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	0.4
Chromium	5	mg/kg	19	19	17	20
Copper	5	mg/kg	63	35	41	30
Lead	5	mg/kg	63	51	25	36
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	10	14	12	16
Zinc	5	mg/kg	85	58	160	110

Client Sample ID			SS3	SS4	QC2	R20^{TRIP SPIKE}
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S17-My30426	S17-My30427	S17-My30430	S17-My30432
Date Sampled			May 24, 2017	May 24, 2017	May 24, 2017	May 25, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	-	< 20	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	92
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	93
TRH C10-C14	20	mg/kg	< 20	-	< 20	-
TRH C15-C28	50	mg/kg	< 50	-	< 50	-
TRH C29-C36	50	mg/kg	< 50	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	95
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	94
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	93
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	93
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	92
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	93
4-Bromofluorobenzene (surr.)	1	%	119	-	128	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	SS3 Soil S17-My30426 May 24, 2017	SS4 Soil S17-My30427 May 24, 2017	QC2 Soil S17-My30430 May 24, 2017	R20 TRIP SPIKE Soil S17-My30432 May 25, 2017
Polycyclic Aromatic Hydrocarbons						
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	94	-	97	-
p-Terphenyl-d14 (surr.)	1	%	71	-	78	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4,4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4,4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4,4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
α-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
β-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
δ-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
γ-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchloroendate (surr.)	1	%	114	-	116	-
Tetrachloro-m-xylene (surr.)	1	%	83	-	79	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	-
Bolstar	0.2	mg/kg	< 0.2	-	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Chlorpyrifos	0.2	mg/kg	< 0.2	-	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	-
Coumaphos	2	mg/kg	< 2	-	< 2	-
Demeton-S	0.2	mg/kg	< 0.2	-	< 0.2	-
Demeton-O	0.2	mg/kg	< 0.2	-	< 0.2	-
Diazinon	0.2	mg/kg	< 0.2	-	< 0.2	-
Dichlorvos	0.2	mg/kg	< 0.2	-	< 0.2	-

Client Sample ID			SS3	SS4	QC2	R20 TRIP SPIKE
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S17-My30426	S17-My30427	S17-My30430	S17-My30432
Date Sampled			May 24, 2017	May 24, 2017	May 24, 2017	May 25, 2017
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Dimethoate	0.2	mg/kg	< 0.2	-	< 0.2	-
Disulfoton	0.2	mg/kg	< 0.2	-	< 0.2	-
EPN	0.2	mg/kg	< 0.2	-	< 0.2	-
Ethion	0.2	mg/kg	< 0.2	-	< 0.2	-
Ethoprop	0.2	mg/kg	< 0.2	-	< 0.2	-
Ethyl parathion	0.2	mg/kg	< 0.2	-	< 0.2	-
Fenitrothion	0.2	mg/kg	< 0.2	-	< 0.2	-
Fensulfothion	0.2	mg/kg	< 0.2	-	< 0.2	-
Fenthion	0.2	mg/kg	< 0.2	-	< 0.2	-
Malathion	0.2	mg/kg	< 0.2	-	< 0.2	-
Merphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Methyl parathion	0.2	mg/kg	< 0.2	-	< 0.2	-
Mevinphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Monocrotophos	2	mg/kg	< 2	-	< 2	-
Naled	0.2	mg/kg	< 0.2	-	< 0.2	-
Omethoate	2	mg/kg	< 2	-	< 2	-
Phorate	0.2	mg/kg	< 0.2	-	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	-
Pyrazophos	0.2	mg/kg	< 0.2	-	< 0.2	-
Ronnel	0.2	mg/kg	< 0.2	-	< 0.2	-
Terbufos	0.2	mg/kg	< 0.2	-	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Tokuthion	0.2	mg/kg	< 0.2	-	< 0.2	-
Trichloronate	0.2	mg/kg	< 0.2	-	< 0.2	-
Triphenylphosphate (surr.)	1	%	94	-	89	-
Acid Herbicides						
2,4-D	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
2,4-DB	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
2,4,5-T	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
2,4,5-TP	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Actril (loxynil)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dicamba	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dichlorprop	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dinitro-o-cresol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dinoseb	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
MCPA	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
MCPB	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Mecoprop	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Warfarin (surr.)	1	%	63	66	62	-
% Moisture	1	%	18	30	17	-
Heavy Metals						
Arsenic	2	mg/kg	7.4	3.5	7.9	-
Cadmium	0.4	mg/kg	< 0.4	0.6	< 0.4	-
Chromium	5	mg/kg	27	12	29	-
Copper	5	mg/kg	29	39	33	-
Lead	5	mg/kg	39	22	46	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	16	13	18	-
Zinc	5	mg/kg	280	140	350	-

Client Sample ID			TRIP BLANK
Sample Matrix			Soil
Eurofins mgt Sample No.			S17-My30433
Date Sampled			May 25, 2017
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH C6-C10	20	mg/kg	< 20
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	76

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Volatile Organics	Melbourne	May 31, 2017	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 01, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
TRH C6-C10 less BTEX (F1)	Melbourne	May 30, 2017	14 Day
- Method: LM-LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 31, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Jun 01, 2017	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Melbourne	Jun 01, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Eurofins mgt Suite B10			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 01, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Jun 01, 2017	14 Day
- Method: LTM-ORG-2140 PAH and Phenols in Soils by GCMS			
Organochlorine Pesticides	Melbourne	Jun 01, 2017	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Organophosphorus Pesticides	Melbourne	Jun 01, 2017	14 Day
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS			
Metals M8	Melbourne	Jun 01, 2017	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Eurofins mgt Suite B15			
Polychlorinated Biphenyls	Melbourne	Jun 01, 2017	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Acid Herbicides	Melbourne	Jun 01, 2017	14 Day
- Method: LTM-ORG-2180 Phenoxy Acid Herbicides			
NEPM Screen for Soil Classification			
% Clay	Brisbane	Jun 07, 2017	6 Day
- Method: LTM-GEN-7040			
Conductivity (1:5 aqueous extract at 25°C)	Melbourne	Jun 01, 2017	7 Day
- Method: LTM-INO-4030			
pH (units)(1:5 soil:CaCl2 extract)	Melbourne	Jun 01, 2017	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Total Organic Carbon	Melbourne	Jun 05, 2017	28 Day
- Method: APHA 5310B Total Organic Carbon			
Cation Exchange Capacity	Melbourne	Jun 02, 2017	28 Day
- Method: LTM-MET-3060 - Cation Exchange Capacity (CEC) & Exchangeable Sodium Percentage (ESP)			
Heavy Metals	Melbourne	Jun 01, 2017	180 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	May 30, 2017	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name: Coffey Environments Pty Ltd Wollongong
Address: 118 Auburn Street
Wollongong
NSW 2500
Project Name: CONTAMINATION ASSESSMENT
Project ID: 754-WOLGE205371

Order No.:
Report #: 548245
Phone: 02 4201 1400
Fax: 02 4201 1401

Received: May 30, 2017 3:59 PM
Due: Jun 6, 2017
Priority: 5 Day
Contact Name: Manuel Fernandez

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos Absence / Presence	HOLD	Acid Herbicides	Metals M8	Eurofins mgt Suite B15	Moisture Set	NEPM Screen for Soil Classification	Eurofins mgt Suite B10	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
External Laboratory														
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID									
1	CBH01_0.5-0.7	May 24, 2017		Soil	S17-My30418			X	X		X			
2	CBH02_0.25-0.4	May 25, 2017		Soil	S17-My30419	X					X		X	
3	CBH03_0.1-0.3	May 25, 2017		Soil	S17-My30420	X			X	X	X	X		
4	CBH04_0.05-0.25	May 26, 2017		Soil	S17-My30421			X	X		X			
5	CBH06_0.05-0.25	May 26, 2017		Soil	S17-My30422				X		X			
6	CBH07_0.5-	May 24, 2017		Soil	S17-My30423						X		X	

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Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
	0.6													
7	SS1	May 24, 2017		Soil	S17-My30424	X		X	X		X			
8	SS2	May 24, 2017		Soil	S17-My30425	X					X		X	
9	SS3	May 24, 2017		Soil	S17-My30426			X			X		X	
10	SS4	May 24, 2017		Soil	S17-My30427			X	X		X			
11	ACM1	May 24, 2017		Other	S17-My30428	X								
12	ACM2	May 24, 2017		Other	S17-My30429	X								
13	QC2	May 24, 2017		Soil	S17-My30430			X			X		X	
14	WB1	May 24, 2017		Water	S17-My30431								X	
15	TRIP SPIKE	May 25, 2017		Soil	S17-My30432									X
16	TRIP BLANK	May 25, 2017		Soil	S17-My30433									X
17	SPIKELAB	May 25, 2017		Soil	S17-My30434									X

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Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
18	CBH01_0.0-0.1	May 24, 2017		Soil	S17-My30435		X							
19	CBH01_0.1-0.25	May 24, 2017		Soil	S17-My30436		X							
20	CBH01_1.0-1.45	May 24, 2017		Soil	S17-My30437		X							
21	CBH02_0.1-1.45	May 25, 2017		Soil	S17-My30438		X							
22	CBH03_0.3-0.5	May 25, 2017		Soil	S17-My30439		X							
23	CBH04_0.2-0.5	May 26, 2017		Soil	S17-My30440		X							
24	CBH04_1.0-1.25	May 26, 2017		Soil	S17-My30441		X							

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Sample Detail						Asbestos Absence /Presence	HOLD	Acid Herbicides	Metals M8	Eurofins mgt Suite B15	Moisture Set	NEPM Screen for Soil Classification	Eurofins mgt Suite B10	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
25	CBH05_0.05-0.25	May 26, 2017		Soil	S17-My30442		X							
26	CBH07_0.0-0.1	May 24, 2017		Soil	S17-My30443		X							
27	QC1	May 24, 2017		Soil	S17-My30444		X							
28	QC1A	May 24, 2017		Soil	S17-My30445		X							
Test Counts						6	11	6	6	1	11	1	6	3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Acid Herbicides							
2,4-D	mg/kg	< 0.5			0.5	Pass	
2,4-DB	mg/kg	< 0.5			0.5	Pass	
2,4,5-T	mg/kg	< 0.5			0.5	Pass	
2,4,5-TP	mg/kg	< 0.5			0.5	Pass	
Actril (loxynil)	mg/kg	< 0.5			0.5	Pass	
Dicamba	mg/kg	< 0.5			0.5	Pass	
Dichlorprop	mg/kg	< 0.5			0.5	Pass	
Dinitro-o-cresol	mg/kg	< 0.5			0.5	Pass	
Dinoseb	mg/kg	< 0.5			0.5	Pass	
MCPA	mg/kg	< 0.5			0.5	Pass	
MCPB	mg/kg	< 0.5			0.5	Pass	
Mecoprop	mg/kg	< 0.5			0.5	Pass	
Method Blank							
% Clay	%	< 1			1	Pass	
Total Organic Carbon	%	< 0.1			0.1	Pass	
Cation Exchange Capacity	meq/100g	< 0.05			0.05	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Iron	mg/kg	< 20			20	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	98			70-130	Pass	
TRH C6-C10	%	98			70-130	Pass	
TRH >C10-C16	%	88			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	100			70-130	Pass	
TRH C10-C14	%	74			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	92			70-130	Pass	
Toluene	%	88			70-130	Pass	
Ethylbenzene	%	87			70-130	Pass	
m&p-Xylenes	%	84			70-130	Pass	
Xylenes - Total	%	84			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	96			70-130	Pass	
Acenaphthylene	%	100			70-130	Pass	
Anthracene	%	88			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	%	98			70-130	Pass	
Benzo(a)pyrene	%	96			70-130	Pass	
Benzo(b&j)fluoranthene	%	98			70-130	Pass	
Benzo(g,h,i)perylene	%	91			70-130	Pass	
Benzo(k)fluoranthene	%	96			70-130	Pass	
Chrysene	%	90			70-130	Pass	
Dibenz(a,h)anthracene	%	113			70-130	Pass	
Fluoranthene	%	96			70-130	Pass	
Fluorene	%	97			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	103			70-130	Pass	
Naphthalene	%	95			70-130	Pass	
Phenanthrene	%	107			70-130	Pass	
Pyrene	%	97			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	92			70-130	Pass	
4,4'-DDE	%	95			70-130	Pass	
4,4'-DDT	%	93			70-130	Pass	
a-BHC	%	100			70-130	Pass	
Aldrin	%	101			70-130	Pass	
b-BHC	%	94			70-130	Pass	
d-BHC	%	99			70-130	Pass	
Dieldrin	%	95			70-130	Pass	
Endosulfan I	%	96			70-130	Pass	
Endosulfan II	%	95			70-130	Pass	
Endosulfan sulphate	%	94			70-130	Pass	
Endrin	%	98			70-130	Pass	
Endrin aldehyde	%	92			70-130	Pass	
Endrin ketone	%	98			70-130	Pass	
g-BHC (Lindane)	%	98			70-130	Pass	
Heptachlor	%	95			70-130	Pass	
Heptachlor epoxide	%	98			70-130	Pass	
Hexachlorobenzene	%	92			70-130	Pass	
Methoxychlor	%	91			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	99			70-130	Pass	
Dimethoate	%	80			70-130	Pass	
Ethion	%	105			70-130	Pass	
Fenitrothion	%	84			70-130	Pass	
Methyl parathion	%	82			70-130	Pass	
Mevinphos	%	76			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	124			70-130	Pass	
LCS - % Recovery							
Acid Herbicides							
2,4-D	%	112			70-130	Pass	
2,4-DB	%	99			70-130	Pass	
2,4,5-T	%	115			70-130	Pass	
2,4,5-TP	%	90			70-130	Pass	
Actril (loxynil)	%	92			70-130	Pass	
Dicamba	%	103			70-130	Pass	
Dichlorprop	%	102			70-130	Pass	

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dinitro-o-cresol				%	80			70-130	Pass	
Dinoseb				%	91			70-130	Pass	
MCPA				%	124			70-130	Pass	
MCPB				%	91			70-130	Pass	
Mecoprop				%	85			70-130	Pass	
LCS - % Recovery										
% Clay				%	86			70-130	Pass	
Total Organic Carbon				%	99			70-130	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	115			80-120	Pass	
Cadmium				%	113			80-120	Pass	
Chromium				%	99			80-120	Pass	
Copper				%	99			80-120	Pass	
Lead				%	101			80-120	Pass	
Mercury				%	107			75-125	Pass	
Nickel				%	98			80-120	Pass	
Zinc				%	117			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Acid Herbicides				Result 1						
2,4-D	M17-My30752	NCP	%	100				70-130	Pass	
Dichlorprop	M17-My30752	NCP	%	98				70-130	Pass	
MCPA	M17-My30752	NCP	%	116				70-130	Pass	
MCPB	M17-My30752	NCP	%	88				70-130	Pass	
Spike - % Recovery										
Polycyclic Aromatic Hydrocarbons				Result 1						
Acenaphthene	M17-My30167	NCP	%	111				70-130	Pass	
Acenaphthylene	M17-My30167	NCP	%	120				70-130	Pass	
Anthracene	M17-My30167	NCP	%	106				70-130	Pass	
Benz(a)anthracene	M17-My30167	NCP	%	113				70-130	Pass	
Benzo(a)pyrene	M17-My30167	NCP	%	114				70-130	Pass	
Benzo(b&i)fluoranthene	M17-My30167	NCP	%	118				70-130	Pass	
Benzo(g,h,i)perylene	M17-My30167	NCP	%	129				70-130	Pass	
Benzo(k)fluoranthene	M17-My30167	NCP	%	107				70-130	Pass	
Chrysene	M17-My30167	NCP	%	106				70-130	Pass	
Dibenz(a,h)anthracene	M17-My30167	NCP	%	109				70-130	Pass	
Fluoranthene	M17-My30167	NCP	%	105				70-130	Pass	
Fluorene	M17-My30167	NCP	%	113				70-130	Pass	
Indeno(1,2,3-cd)pyrene	M17-My30167	NCP	%	129				70-130	Pass	
Naphthalene	M17-My30167	NCP	%	114				70-130	Pass	
Phenanthrene	M17-My30167	NCP	%	122				70-130	Pass	
Pyrene	M17-My30167	NCP	%	112				70-130	Pass	
Spike - % Recovery										
Organochlorine Pesticides				Result 1						
4,4'-DDD	B17-My30937	NCP	%	107				70-130	Pass	
4,4'-DDE	B17-My30937	NCP	%	95				70-130	Pass	
4,4'-DDT	B17-My30937	NCP	%	107				70-130	Pass	
a-BHC	B17-My30937	NCP	%	89				70-130	Pass	
Aldrin	B17-My30937	NCP	%	87				70-130	Pass	
b-BHC	B17-My30937	NCP	%	84				70-130	Pass	
d-BHC	B17-My30937	NCP	%	93				70-130	Pass	
Dieldrin	B17-My30937	NCP	%	90				70-130	Pass	
Endosulfan I	B17-My30937	NCP	%	87				70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan II	B17-My30937	NCP	%	92		70-130	Pass	
Endosulfan sulphate	B17-My30937	NCP	%	96		70-130	Pass	
Endrin	B17-My30937	NCP	%	118		70-130	Pass	
Endrin aldehyde	B17-My30937	NCP	%	88		70-130	Pass	
Endrin ketone	B17-My30937	NCP	%	97		70-130	Pass	
g-BHC (Lindane)	B17-My30937	NCP	%	91		70-130	Pass	
Heptachlor	B17-My30937	NCP	%	97		70-130	Pass	
Heptachlor epoxide	B17-My30937	NCP	%	89		70-130	Pass	
Hexachlorobenzene	B17-My30937	NCP	%	84		70-130	Pass	
Methoxychlor	M17-My27510	NCP	%	126		70-130	Pass	
Spike - % Recovery								
Polychlorinated Biphenyls				Result 1				
Aroclor-1260	M17-My30535	NCP	%	99		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	S17-My30423	CP	%	81		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	S17-My30423	CP	%	70		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	S17-My30424	CP	%	110		75-125	Pass	
Cadmium	S17-My30424	CP	%	112		75-125	Pass	
Chromium	S17-My30424	CP	%	117		75-125	Pass	
Copper	S17-My30424	CP	%	110		75-125	Pass	
Lead	S17-My30424	CP	%	114		75-125	Pass	
Mercury	S17-My30424	CP	%	107		70-130	Pass	
Nickel	S17-My30424	CP	%	115		75-125	Pass	
Zinc	S17-My30424	CP	%	93		75-125	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	S17-My30425	CP	%	96		70-130	Pass	
TRH C6-C10	S17-My30425	CP	%	105		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	S17-My30425	CP	%	105		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	S17-My30425	CP	%	97		70-130	Pass	
Toluene	S17-My30425	CP	%	91		70-130	Pass	
Ethylbenzene	S17-My30425	CP	%	91		70-130	Pass	
m&p-Xylenes	S17-My30425	CP	%	87		70-130	Pass	
o-Xylene	S17-My30425	CP	%	87		70-130	Pass	
Xylenes - Total	S17-My30425	CP	%	87		70-130	Pass	
Spike - % Recovery								
Organophosphorus Pesticides				Result 1				
Diazinon	S17-My30430	CP	%	108		70-130	Pass	
Dimethoate	S17-My30430	CP	%	87		70-130	Pass	
Ethion	S17-My30430	CP	%	111		70-130	Pass	
Fenitrothion	S17-My30430	CP	%	82		70-130	Pass	
Methyl parathion	S17-My30430	CP	%	81		70-130	Pass	
Mevinphos	S17-My30430	CP	%	81		70-130	Pass	
Spike - % Recovery								
Acid Herbicides				Result 1				
Actril (loxylinil)	S17-My30430	CP	%	85		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S17-My30419	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S17-My30419	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S17-My30419	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S17-My30419	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S17-My30419	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S17-My30419	CP	mg/kg	53	< 50	64	30%	Fail	Q15
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M17-My30535	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M17-My30535	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M17-My30535	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S17-My30419	CP	%	17	17	3.0	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M17-My30535	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M17-My30535	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M17-My30535	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M17-My30535	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M17-My30535	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M17-My30535	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M17-My30535	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M17-My30535	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Clay	M17-Jn00742	NCP	%	15	13	13	30%	Pass	
Conductivity (1:5 aqueous extract at 25°C)	M17-My31183	NCP	uS/cm	180	170	3.0	30%	Pass	
Total Organic Carbon	M17-Jn01048	NCP	%	0.3	0.4	9.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Iron	M17-Jn01039	NCP	mg/kg	27000	26000	4.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (%)	M17-Jn01039	NCP	%	2.7	2.6	4.0	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S17-My30423	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S17-My30423	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S17-My30423	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S17-My30423	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S17-My30423	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S17-My30423	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S17-My30423	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S17-My30423	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S17-My30423	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S17-My30423	CP	mg/kg	6.8	6.7	2.0	30%	Pass
Cadmium	S17-My30423	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S17-My30423	CP	mg/kg	19	23	18	30%	Pass
Copper	S17-My30423	CP	mg/kg	35	32	10	30%	Pass
Lead	S17-My30423	CP	mg/kg	51	49	4.0	30%	Pass
Mercury	S17-My30423	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S17-My30423	CP	mg/kg	14	14	2.0	30%	Pass
Zinc	S17-My30423	CP	mg/kg	58	64	9.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S17-My30424	CP	mg/kg	6.1	6.2	1.0	30%	Pass
Cadmium	S17-My30424	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S17-My30424	CP	mg/kg	17	18	1.0	30%	Pass
Copper	S17-My30424	CP	mg/kg	41	42	1.0	30%	Pass
Lead	S17-My30424	CP	mg/kg	25	26	2.0	30%	Pass
Mercury	S17-My30424	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S17-My30424	CP	mg/kg	12	12	<1	30%	Pass
Zinc	S17-My30424	CP	mg/kg	160	160	2.0	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S17-My30426	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	S17-My30426	CP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfthion	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	S17-My30426	CP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	S17-My30426	CP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tokuthion	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	S17-My30426	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Acid Herbicides				Result 1	Result 2	RPD		
2.4-D	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2.4-DB	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2.4.5-T	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2.4.5-TP	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Actril (loxynil)	S17-My30427	CP	mg/kg	< 0.5	< 1	<1	30%	Pass
Dicamba	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dichlorprop	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dinitro-o-cresol	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dinoseb	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
MCPA	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
MCPB	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Mecoprop	S17-My30427	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
R20	This sample is a Trip Spike and therefore all results are reported as a percentage

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Jonathon Angell	Senior Analyst-Inorganic (QLD)
Joseph Edouard	Senior Analyst-Organic (VIC)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Coffey Environments Pty Ltd Wollongong
118 Auburn Street
Wollongong
NSW 2500



Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Manuel Fernandez**

Report **548245-W**
Project name CONTAMINATION ASSESSMENT
Project ID 754-WOLGE205371
Received Date May 30, 2017

Client Sample ID			WB1
Sample Matrix			Water
Eurofins mgt Sample No.			S17-My30431
Date Sampled			May 24, 2017
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.01	mg/L	< 0.01
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02
TRH C6-C10	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001

Client Sample ID			WB1
Sample Matrix			Water
Eurofins mgt Sample No.			S17-My30431
Date Sampled			May 24, 2017
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Naphthalene	0.001	mg/L	< 0.001
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001
Total PAH*	0.001	mg/L	< 0.001
2-Fluorobiphenyl (surr.)	1	%	82
p-Terphenyl-d14 (surr.)	1	%	116
Organochlorine Pesticides			
Chlordanes - Total	0.001	mg/L	< 0.001
4,4'-DDD	0.0001	mg/L	< 0.0001
4,4'-DDE	0.0001	mg/L	< 0.0001
4,4'-DDT	0.0001	mg/L	< 0.0001
α-BHC	0.0001	mg/L	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001
β-BHC	0.0001	mg/L	< 0.0001
δ-BHC	0.0001	mg/L	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001
Endosulfan II	0.0001	mg/L	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001
Endrin	0.0001	mg/L	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001
γ-BHC (Lindane)	0.0001	mg/L	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001
Toxaphene	0.01	mg/L	< 0.01
Dibutylchloroendate (surr.)	1	%	51
Tetrachloro-m-xylene (surr.)	1	%	58
Organophosphorus Pesticides			
Azinphos-methyl	0.002	mg/L	< 0.002
Bolstar	0.002	mg/L	< 0.002
Chlorfenvinphos	0.002	mg/L	< 0.002
Chlorpyrifos	0.02	mg/L	< 0.02
Chlorpyrifos-methyl	0.002	mg/L	< 0.002
Coumaphos	0.02	mg/L	< 0.02
Demeton-S	0.02	mg/L	< 0.02
Demeton-O	0.002	mg/L	< 0.002
Diazinon	0.002	mg/L	< 0.002
Dichlorvos	0.002	mg/L	< 0.002
Dimethoate	0.002	mg/L	< 0.002
Disulfoton	0.002	mg/L	< 0.002
EPN	0.002	mg/L	< 0.002
Ethion	0.002	mg/L	< 0.002
Ethoprop	0.002	mg/L	< 0.002
Ethyl parathion	0.002	mg/L	< 0.002
Fenitrothion	0.002	mg/L	< 0.002
Fensulfothion	0.002	mg/L	< 0.002

Client Sample ID			WB1
Sample Matrix			Water
Eurofins mgt Sample No.			S17-My30431
Date Sampled			May 24, 2017
Test/Reference	LOR	Unit	
Organophosphorus Pesticides			
Fenthion	0.002	mg/L	< 0.002
Malathion	0.002	mg/L	< 0.002
Merphos	0.002	mg/L	< 0.002
Methyl parathion	0.002	mg/L	< 0.002
Mevinphos	0.002	mg/L	< 0.002
Monocrotophos	0.002	mg/L	< 0.002
Naled	0.002	mg/L	< 0.002
Omethoate	0.002	mg/L	< 0.002
Phorate	0.002	mg/L	< 0.002
Pirimiphos-methyl	0.02	mg/L	< 0.02
Pyrazophos	0.002	mg/L	< 0.002
Ronnel	0.002	mg/L	< 0.002
Terbufos	0.002	mg/L	< 0.002
Tetrachlorvinphos	0.002	mg/L	< 0.002
Tokuthion	0.002	mg/L	< 0.002
Trichloronate	0.002	mg/L	< 0.002
Triphenylphosphate (surr.)	1	%	90
Heavy Metals			
Arsenic	0.001	mg/L	< 0.001
Cadmium	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	0.001
Copper	0.001	mg/L	< 0.001
Lead	0.001	mg/L	< 0.001
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Jun 01, 2017	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 31, 2017	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 31, 2017	7 Day
Eurofins mgt Suite B10			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jun 01, 2017	7 Day
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Water by GCMS	Melbourne	Jun 01, 2017	7 Day
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Melbourne	Jun 01, 2017	7 Day
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS	Melbourne	Jun 01, 2017	7 Day
Metals M8 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 31, 2017	28 Days

Company Name: Coffey Environments Pty Ltd Wollongong
Address: 118 Auburn Street
Wollongong
NSW 2500

Project Name: CONTAMINATION ASSESSMENT
Project ID: 754-WOLGE205371

Order No.:
Report #: 548245
Phone: 02 4201 1400
Fax: 02 4201 1401

Received: May 30, 2017 3:59 PM
Due: Jun 6, 2017
Priority: 5 Day
Contact Name: Manuel Fernandez

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos Absence / Presence	HOLD	Acid Herbicides	Metals M8	Eurofins mgt Suite B15	Moisture Set	NEPM Screen for Soil Classification	Eurofins mgt Suite B10	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
External Laboratory														
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID									
1	CBH01_0.5-0.7	May 24, 2017		Soil	S17-My30418			X	X		X			
2	CBH02_0.25-0.4	May 25, 2017		Soil	S17-My30419	X					X		X	
3	CBH03_0.1-0.3	May 25, 2017		Soil	S17-My30420	X			X	X	X	X		
4	CBH04_0.05-0.25	May 26, 2017		Soil	S17-My30421			X	X		X			
5	CBH06_0.05-0.25	May 26, 2017		Soil	S17-My30422				X		X			
6	CBH07_0.5-	May 24, 2017		Soil	S17-My30423						X		X	

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Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
	0.6													
7	SS1	May 24, 2017		Soil	S17-My30424	X		X	X		X			
8	SS2	May 24, 2017		Soil	S17-My30425	X					X		X	
9	SS3	May 24, 2017		Soil	S17-My30426			X			X		X	
10	SS4	May 24, 2017		Soil	S17-My30427			X	X		X			
11	ACM1	May 24, 2017		Other	S17-My30428	X								
12	ACM2	May 24, 2017		Other	S17-My30429	X								
13	QC2	May 24, 2017		Soil	S17-My30430			X			X		X	
14	WB1	May 24, 2017		Water	S17-My30431								X	
15	TRIP SPIKE	May 25, 2017		Soil	S17-My30432									X
16	TRIP BLANK	May 25, 2017		Soil	S17-My30433									X
17	SPIKELAB	May 25, 2017		Soil	S17-My30434									X

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Sample Detail						Asbestos Absence /Presence	HOLD	Acid Herbicides	Metals M8	Eurofins mgt Suite B15	Moisture Set	NEPM Screen for Soil Classification	Eurofins mgt Suite B10	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
18	CBH01_0.0-0.1	May 24, 2017		Soil	S17-My30435		X							
19	CBH01_0.1-0.25	May 24, 2017		Soil	S17-My30436		X							
20	CBH01_1.0-1.45	May 24, 2017		Soil	S17-My30437		X							
21	CBH02_0.1-1.45	May 25, 2017		Soil	S17-My30438		X							
22	CBH03_0.3-0.5	May 25, 2017		Soil	S17-My30439		X							
23	CBH04_0.2-0.5	May 26, 2017		Soil	S17-My30440		X							
24	CBH04_1.0-1.25	May 26, 2017		Soil	S17-My30441		X							

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos Absence /Presence	HOLD	Acid Herbicides	Metals M8	Eurofins mgt Suite B15	Moisture Set	NEPM Screen for Soil Classification	Eurofins mgt Suite B10	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
25	CBH05_0.05-0.25	May 26, 2017		Soil	S17-My30442		X							
26	CBH07_0.0-0.1	May 24, 2017		Soil	S17-My30443		X							
27	QC1	May 24, 2017		Soil	S17-My30444		X							
28	QC1A	May 24, 2017		Soil	S17-My30445		X							
Test Counts						6	11	6	6	1	11	1	6	3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.001			0.001	Pass	
4,4'-DDD	mg/L	< 0.0001			0.0001	Pass	
4,4'-DDE	mg/L	< 0.0001			0.0001	Pass	
4,4'-DDT	mg/L	< 0.0001			0.0001	Pass	
a-BHC	mg/L	< 0.0001			0.0001	Pass	
Aldrin	mg/L	< 0.0001			0.0001	Pass	
b-BHC	mg/L	< 0.0001			0.0001	Pass	
d-BHC	mg/L	< 0.0001			0.0001	Pass	
Dieldrin	mg/L	< 0.0001			0.0001	Pass	
Endosulfan I	mg/L	< 0.0001			0.0001	Pass	
Endosulfan II	mg/L	< 0.0001			0.0001	Pass	
Endosulfan sulphate	mg/L	< 0.0001			0.0001	Pass	
Endrin	mg/L	< 0.0001			0.0001	Pass	
Endrin aldehyde	mg/L	< 0.0001			0.0001	Pass	
Endrin ketone	mg/L	< 0.0001			0.0001	Pass	
g-BHC (Lindane)	mg/L	< 0.0001			0.0001	Pass	
Heptachlor	mg/L	< 0.0001			0.0001	Pass	
Heptachlor epoxide	mg/L	< 0.0001			0.0001	Pass	
Hexachlorobenzene	mg/L	< 0.0001			0.0001	Pass	
Methoxychlor	mg/L	< 0.0001			0.0001	Pass	
Toxaphene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/L	< 0.002			0.002	Pass	
Bolstar	mg/L	< 0.002			0.002	Pass	
Chlorfenvinphos	mg/L	< 0.002			0.002	Pass	
Chlorpyrifos	mg/L	< 0.02			0.02	Pass	
Chlorpyrifos-methyl	mg/L	< 0.002			0.002	Pass	
Coumaphos	mg/L	< 0.02			0.02	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Demeton-S	mg/L	< 0.02			0.02	Pass	
Demeton-O	mg/L	< 0.002			0.002	Pass	
Diazinon	mg/L	< 0.002			0.002	Pass	
Dichlorvos	mg/L	< 0.002			0.002	Pass	
Dimethoate	mg/L	< 0.002			0.002	Pass	
Disulfoton	mg/L	< 0.002			0.002	Pass	
EPN	mg/L	< 0.002			0.002	Pass	
Ethion	mg/L	< 0.002			0.002	Pass	
Ethoprop	mg/L	< 0.002			0.002	Pass	
Ethyl parathion	mg/L	< 0.002			0.002	Pass	
Fenitrothion	mg/L	< 0.002			0.002	Pass	
Fensulfothion	mg/L	< 0.002			0.002	Pass	
Fenthion	mg/L	< 0.002			0.002	Pass	
Malathion	mg/L	< 0.002			0.002	Pass	
Merphos	mg/L	< 0.002			0.002	Pass	
Methyl parathion	mg/L	< 0.002			0.002	Pass	
Mevinphos	mg/L	< 0.002			0.002	Pass	
Monocrotophos	mg/L	< 0.002			0.002	Pass	
Naled	mg/L	< 0.002			0.002	Pass	
Omethoate	mg/L	< 0.002			0.002	Pass	
Phorate	mg/L	< 0.002			0.002	Pass	
Pirimiphos-methyl	mg/L	< 0.02			0.02	Pass	
Pyrazophos	mg/L	< 0.002			0.002	Pass	
Ronnel	mg/L	< 0.002			0.002	Pass	
Terbufos	mg/L	< 0.002			0.002	Pass	
Tetrachlorvinphos	mg/L	< 0.002			0.002	Pass	
Tokuthion	mg/L	< 0.002			0.002	Pass	
Trichloronate	mg/L	< 0.002			0.002	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	92			70-130	Pass	
TRH C10-C14	%	91			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	102			70-130	Pass	
Toluene	%	101			70-130	Pass	
Ethylbenzene	%	96			70-130	Pass	
m&p-Xylenes	%	101			70-130	Pass	
Xylenes - Total	%	99			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	98			70-130	Pass	
TRH C6-C10	%	81			70-130	Pass	
TRH >C10-C16	%	82			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	91			70-130	Pass	
Acenaphthylene	%	93			70-130	Pass	
Anthracene	%	88			70-130	Pass	
Benz(a)anthracene	%	114			70-130	Pass	
Benzo(a)pyrene	%	95			70-130	Pass	
Benzo(b&j)fluoranthene	%	87			70-130	Pass	
Benzo(g,h,i)perylene	%	92			70-130	Pass	
Benzo(k)fluoranthene	%	107			70-130	Pass	
Chrysene	%	121			70-130	Pass	
Dibenz(a,h)anthracene	%	98			70-130	Pass	
Fluoranthene	%	112			70-130	Pass	
Fluorene	%	94			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	91			70-130	Pass	
Naphthalene	%	83			70-130	Pass	
Phenanthrene	%	105			70-130	Pass	
Pyrene	%	113			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	119			70-130	Pass	
4,4'-DDD	%	82			70-130	Pass	
4,4'-DDE	%	97			70-130	Pass	
4,4'-DDT	%	102			70-130	Pass	
α-BHC	%	121			70-130	Pass	
Aldrin	%	114			70-130	Pass	
β-BHC	%	121			70-130	Pass	
δ-BHC	%	123			70-130	Pass	
Dieldrin	%	122			70-130	Pass	
Endosulfan I	%	106			70-130	Pass	
Endosulfan II	%	127			70-130	Pass	
Endosulfan sulphate	%	113			70-130	Pass	
Endrin	%	120			70-130	Pass	
Endrin aldehyde	%	88			70-130	Pass	
Endrin ketone	%	111			70-130	Pass	
γ-BHC (Lindane)	%	125			70-130	Pass	
Heptachlor	%	128			70-130	Pass	
Heptachlor epoxide	%	116			70-130	Pass	
Hexachlorobenzene	%	127			70-130	Pass	
Methoxychlor	%	93			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	73			70-130	Pass	
Dimethoate	%	75			70-130	Pass	
Ethion	%	84			70-130	Pass	
Fenitrothion	%	71			70-130	Pass	
Methyl parathion	%	106			70-130	Pass	
Mevinphos	%	121			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	101			80-120	Pass	
Cadmium	%	106			80-120	Pass	
Chromium	%	101			80-120	Pass	
Copper	%	101			80-120	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead			%	106			80-120	Pass	
Mercury			%	98			75-125	Pass	
Nickel			%	101			80-120	Pass	
Zinc			%	99			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	M17-My31629	NCP	%	113			70-130	Pass	
4,4'-DDD	M17-My31629	NCP	%	96			70-130	Pass	
4,4'-DDE	M17-My31629	NCP	%	129			70-130	Pass	
4,4'-DDT	M17-My31629	NCP	%	124			70-130	Pass	
a-BHC	M17-My31629	NCP	%	115			70-130	Pass	
Aldrin	M17-My31629	NCP	%	111			70-130	Pass	
b-BHC	M17-My31629	NCP	%	111			70-130	Pass	
d-BHC	M17-My31629	NCP	%	117			70-130	Pass	
Dieldrin	M17-My31629	NCP	%	119			70-130	Pass	
Endosulfan I	M17-My31629	NCP	%	121			70-130	Pass	
Endosulfan II	M17-My31629	NCP	%	125			70-130	Pass	
Endosulfan sulphate	M17-My31629	NCP	%	128			70-130	Pass	
Endrin	M17-My31629	NCP	%	128			70-130	Pass	
Endrin aldehyde	M17-My31629	NCP	%	103			70-130	Pass	
Endrin ketone	M17-My31629	NCP	%	117			70-130	Pass	
g-BHC (Lindane)	M17-My31629	NCP	%	111			70-130	Pass	
Heptachlor	M17-My31629	NCP	%	123			70-130	Pass	
Heptachlor epoxide	M17-My31629	NCP	%	123			70-130	Pass	
Hexachlorobenzene	M17-My31629	NCP	%	111			70-130	Pass	
Methoxychlor	M17-My31629	NCP	%	115			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	B17-My30400	NCP	%	101			75-125	Pass	
Cadmium	B17-My30400	NCP	%	103			75-125	Pass	
Chromium	B17-My30400	NCP	%	99			75-125	Pass	
Copper	B17-My30400	NCP	%	100			75-125	Pass	
Lead	B17-My30400	NCP	%	104			75-125	Pass	
Mercury	P17-My30791	NCP	%	149			70-130	Fail	Q08
Nickel	B17-My30400	NCP	%	99			75-125	Pass	
Zinc	M17-Jn00470	NCP	%	68			75-125	Fail	Q08
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M17-My30771	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M17-My31289	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M17-My31289	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M17-My31289	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M17-My30771	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M17-My30771	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M17-My30771	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M17-My30771	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M17-My30771	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M17-My30771	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M17-My30771	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	M17-My30771	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH >C10-C16	M17-My31289	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M17-My31289	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M17-My31289	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	M17-My31628	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
4,4'-DDD	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
4,4'-DDE	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
4,4'-DDT	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
a-BHC	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Aldrin	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
b-BHC	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
d-BHC	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Dieldrin	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan I	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan II	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan sulphate	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin aldehyde	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin ketone	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
g-BHC (Lindane)	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Heptachlor	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Heptachlor epoxide	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Hexachlorobenzene	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Methoxychlor	M17-My31628	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Toxaphene	B17-My22093	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	B17-My30400	NCP	mg/L	0.002	0.002	6.0	30%	Pass
Cadmium	B17-My30400	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	B17-My30400	NCP	mg/L	0.008	0.009	6.0	30%	Pass
Copper	B17-My30400	NCP	mg/L	< 0.001	0.001	6.0	30%	Pass
Lead	B17-My30400	NCP	mg/L	0.004	0.004	2.0	30%	Pass
Mercury	B17-My30400	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	B17-My30400	NCP	mg/L	0.003	0.003	2.0	30%	Pass
Zinc	M17-Jn00470	NCP	mg/L	0.22	0.21	6.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Certificate of Analysis



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Coffey Environments Pty Ltd Wollongong
118 Auburn Street
Wollongong
NSW 2500

Attention: Manuel Fernandez
Report 548245-AID
Project Name CONTAMINATION ASSESSMENT
Project ID 754-WOLGE205371
Received Date May 30, 2017
Date Reported Jun 07, 2017

Methodology:

Asbestos Fibre
 Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.
NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.

Unknown Mineral
 Fibres

Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity.
NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.

Subsampling Soil
 Samples

The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed.
NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.

Bonded asbestos-
 containing material
 (ACM)

The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964 - 2004.
NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.

Limit of Reporting

The performance limitation of the AS4964 method is around 0.1 g/kg (0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis where required, this is considered to be at the nominal reporting limit of 0.01 % (w / w). The examination of large sample sizes (500 mL is recommended) may improve the likelihood of identifying ACM in the > 2mm fraction. The NEPM screening level of 0.001 % (w / w) asbestos in soil for FA (friable asbestos) and AF (asbestos fines) then applies where they are able to be quantified by gravimetric procedures. This quantitative screening is not generally applicable to FF (free fibres) and results of Trace Analysis are referred.
NOTE: NATA News March 2014, p.7, states in relation to AS4964: "This is a qualitative method with a nominal reporting limit of 0.01%" and that currently in Australia "there is no validated method available for the quantification of asbestos". Accordingly, NATA Accreditation does not cover the performance of this service (indicated with an asterisk). This report is consistent with the analytical procedures and reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended) and the Western Australia Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2009, including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil, June 2011.

Project Name CONTAMINATION ASSESSMENT
Project ID 754-WOLGE205371
Date Sampled May 24, 2017 to May 25, 2017
Report 548245-AID

Client Sample ID	Eurofins mgt Sample No.	Date Sampled	Sample Description	Result
CBH02_0.25-0.4	17-My30419	May 25, 2017	Approximate Sample 154g Sample consisted of: Dark grey coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
CBH03_0.1-0.3	17-My30420	May 25, 2017	Approximate Sample 233g Sample consisted of: Dark grey coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
SS1	17-My30424	May 24, 2017	Approximate Sample 85g Sample consisted of: Dark grey coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
SS2	17-My30425	May 24, 2017	Approximate Sample 79g Sample consisted of: Dark grey coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
ACM1	17-My30428	May 24, 2017	Approximate Sample 9g / 60x40x3mm Sample consisted of: Brown layered fibre cement fragments and white paint	No asbestos detected. Organic fibre detected.
ACM2	17-My30429	May 24, 2017	Approximate Sample 15g / 6030x5mm Sample consisted of: Light grey layered fibre cement fragments	No asbestos detected. Organic fibre detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	May 30, 2017	Indefinite

Company Name: Coffey Environments Pty Ltd Wollongong
Address: 118 Auburn Street
Wollongong
NSW 2500

Project Name: CONTAMINATION ASSESSMENT
Project ID: 754-WOLGE205371

Order No.:
Report #: 548245
Phone: 02 4201 1400
Fax: 02 4201 1401

Received: May 30, 2017 3:59 PM
Due: Jun 6, 2017
Priority: 5 Day
Contact Name: Manuel Fernandez

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos Absence / Presence	HOLD	Acid Herbicides	Metals M8	Eurofins mgt Suite B15	Moisture Set	NEPM Screen for Soil Classification	Eurofins mgt Suite B10	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
External Laboratory														
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID									
1	CBH01_0.5-0.7	May 24, 2017		Soil	S17-My30418			X	X		X			
2	CBH02_0.25-0.4	May 25, 2017		Soil	S17-My30419	X					X		X	
3	CBH03_0.1-0.3	May 25, 2017		Soil	S17-My30420	X			X	X	X	X		
4	CBH04_0.05-0.25	May 26, 2017		Soil	S17-My30421			X	X		X			
5	CBH06_0.05-0.25	May 26, 2017		Soil	S17-My30422				X		X			
6	CBH07_0.5-	May 24, 2017		Soil	S17-My30423						X		X	

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Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
	0.6													
7	SS1	May 24, 2017		Soil	S17-My30424	X		X	X		X			
8	SS2	May 24, 2017		Soil	S17-My30425	X					X		X	
9	SS3	May 24, 2017		Soil	S17-My30426			X			X		X	
10	SS4	May 24, 2017		Soil	S17-My30427			X	X		X			
11	ACM1	May 24, 2017		Other	S17-My30428	X								
12	ACM2	May 24, 2017		Other	S17-My30429	X								
13	QC2	May 24, 2017		Soil	S17-My30430			X			X		X	
14	WB1	May 24, 2017		Water	S17-My30431								X	
15	TRIP SPIKE	May 25, 2017		Soil	S17-My30432									X
16	TRIP BLANK	May 25, 2017		Soil	S17-My30433									X
17	SPIKELAB	May 25, 2017		Soil	S17-My30434									X

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Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
18	CBH01_0.0-0.1	May 24, 2017		Soil	S17-My30435		X							
19	CBH01_0.1-0.25	May 24, 2017		Soil	S17-My30436		X							
20	CBH01_1.0-1.45	May 24, 2017		Soil	S17-My30437		X							
21	CBH02_0.1-1.45	May 25, 2017		Soil	S17-My30438		X							
22	CBH03_0.3-0.5	May 25, 2017		Soil	S17-My30439		X							
23	CBH04_0.2-0.5	May 26, 2017		Soil	S17-My30440		X							
24	CBH04_1.0-1.25	May 26, 2017		Soil	S17-My30441		X							

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos Absence /Presence	HOLD	Acid Herbicides	Metals M8	Eurofins mgt Suite B15	Moisture Set	NEPM Screen for Soil Classification	Eurofins mgt Suite B10	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X							X	X
Brisbane Laboratory - NATA Site # 20794												X		
Perth Laboratory - NATA Site # 18217														
25	CBH05_0.05-0.25	May 26, 2017		Soil	S17-My30442		X							
26	CBH07_0.0-0.1	May 24, 2017		Soil	S17-My30443		X							
27	QC1	May 24, 2017		Soil	S17-My30444		X							
28	QC1A	May 24, 2017		Soil	S17-My30445		X							
Test Counts						6	11	6	6	1	11	1	6	3

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w:	weight for weight basis	grams per kilogram
Filter loading:		fibres/100 graticule areas
Reported Concentration:		fibres/mL
Flowrate:		L/min

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Western Australia Department of Health
NOHSC	National Occupational Health and Safety Commission
ACM	Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release.
FA	FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling).
PACM	Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.
AF	Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substantial degree of damage which increases the potential for fibre release.)
AC	Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Authorised by:

Nibha Vaidya

Senior Analyst-Asbestos (NSW)



Glenn Jackson

National Operations Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd Wollongong**
Contact name: **Manuel Fernandez**
Project name: **CONTAMINATION ASSESSMENT**
Project ID: **754-WOLGE205371**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **May 30, 2017 3:59 PM**
Eurofins | mgt reference: **548245**

Sample information

- ☒ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☒ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 13.5 degrees Celsius.
- ☒ All samples have been received as described on the above COC.
- ☒ COC has been completed correctly.
- ☒ Attempt to chill was evident.
- ☒ Appropriately preserved sample containers have been used.
- ☒ All samples were received in good condition.
- ☒ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☒ Appropriate sample containers have been used.
- ☒ Sample containers for volatile analysis received with zero headspace.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8400 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Manuel Fernandez - Manuel_Fernandez@coffey.com.



Consigning Office: Wollongong

Report Results to: Iain Lindley

Mobile: 0428 690 185

Email:

iain.lindley@coffey.com

Invoices to: Manuel Fernandez

Phone: 0401 106 772

Email:

manuel.fernandez@coffey.com

Project No: 754-WOLGE205371 Task No:

Project Name: Contamination Assessment Laboratory: Eurofins

Sampler's Name: Michael Biabani/Iain Lindley Project Manager: Manuel Fernandez

Special Instructions:

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Metals (Suite M8)	Herbicides	Suite B10	Suite B15	Suite R21	Asbestos ID	On hold	NOTES
	CBH01 (0.0-0.1)	24/05/17		Soil	J, I, Z	5 days								Suite B10 = TRH, BTEX, PAH, OC, OP, PCB and metals
	CBH01 (0.1-0.25)	24/05/17		Soil	J, I, Z	5 days								Suite B15 = OC/OP/PCB
	CBH01 (0.5-0.7)	24/05/17		Soil	J, I, Z	5 days	X	X						Suite M8 = As, Cd, Cr, Cu, Pb, Hg, Ni, Zn
	CBH01 (1.0-1.45)	24/05/17		Soil	J, I, Z	5 days								Suite R21 = % Fe/ CEC/ pH(CaCl2)/ TOC/ % Clay Content
	CBH02 (0.25-0.4)	25/05/17		Soil	J, I, Z	5 days			X			X		
	CBH02 (0.1-1.45)	25/05/17		Soil	J, I, Z	5 days								
	CBH03 (0.1-0.3)	25/05/17		Soil	J, I, Z	5 days	X			X	X	X		
	CBH03 (0.3-0.5)	25/05/17		Soil	J, I, Z	5 days								
	CBH04 (0.05-0.25)	26/05/17		Soil	J, I, Z	5 days	X	X						
	CBH04 (0.2-0.5)	26/05/17		Soil	J, I, Z	5 days								
	CBH04 (1.0-1.25)	26/05/17		Soil	J, I, Z	5 days								
	CBH05 (0.05-0.25)	26/05/17		Soil	J, I, Z	5 days								
	CBH06 (0.05-0.25)	26/05/17		Soil	J, I, Z	5 days	X							
	CBH07 (0.0-0.1)	24/05/17		Soil	J, I, Z	5 days								
	CBH07 (0.5-0.6)	24/05/17		Soil	J, I, Z	5 days	X		X					
	SS1	24/05/17		Soil	J, I, Z	5 days	X	X				X		
	SS2	24/05/17		Soil	J, I, Z	5 days			X			X		
	SS3	24/05/17		Soil	J, I, Z	5 days		X	X					
	SS4	24/05/17		Soil	J, I, Z	5 days	X	X						

RELINQUISHED BY

Name: Iain Lindley Date: 30/05/2017

Coffey Environments Time:

Name: Date:

Company: Time:

RECEIVED BY

Name: *Rupam* Date: *30/05*Company: *Euro* Time: *15:59*

Name: Date:

Company: Time:

Sample Receipt Advice: (Lab Use Only)

All Samples Received in Good Condition ☒All Documentation is in Proper Order ☒Samples Received Properly Chilled ☒

Lab. Ref/Batch No.

548245

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Wollongong

Report Results to: Iain Lindley

Mobile: 0428 690 185

Email:

iain.lindley@coffey.com

Invoices to: **Manuel Fernandez**

Phone: 0401 106 772

Email:

manuel.fernandez@coffey.com

Project No: 754-WOLGE205371

Task No:

Project Name: Contamination Assessment

Laboratory:

Eurofins

Sampler's Name: Michael Biabani/Iain Lindley

Project Manager:

Manuel Fernandez

Special Instructions:

Analysis Request Section

[illegible]

RELINQUISHED BY

Name: Iain Lindley

Date: 30/05/2017

Coffey Environments

Time:

Name: _____

Date:

RECEIVED BY

Name: Y. Pan

Company:

Name: _____

Date: 30/05

Time: 15:59

Date:

Sample Receipt Advice: (Lab Use Only)

All Samples Recieved in Good Condition

All Documentation is in Proper Order

Samples Received Properly Chilled

