NSW Department of Education
C/- SINSW

Detailed Site Investigation: Cronulla High School, Captain Cook Drive, Cronulla, NSW

P2108205JR01V02
August 2022

martens consulting engineers

ENVIRONMENTAL

WATER

WASTEWATER

GEOTECHNICAL

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General Abbreviations

AASS	Actual acid sulfate soil
ABC	Ambient background concentrations
ACM	Asbestos containing material
AEC	Area of environmental concern
AF	Asbestos fines
AMP	Asbestos Management Plan
ANZECC	Australia and New Zealand Environment Conservation Council
ANZG	Australian and New Zealand Governments
ASC NEPM	National Environmental Protection (Assessment of Site Contamination) Measure (2013)
ASS	Acid sulfate soil
ASSMAC	Acid Sulfate Soils Management Advisory Committee
AST	Above ground storage tank
BGL	Below ground level
BH	Borehole
BTEXN	Benzene, toluene, ethylbenzene, xylene, naphthalene
CEMP	Construction Environmental Management Plan
COC	Chain of custody
COPC	Contaminants of potential concern
DA	Development application
DBT	Dibutyltin
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DNAPL	Dense non aqueous phase liquid
DP	Deposited Plan
DPI	NSW Department of Primary Industry
DPIW	NSW Department of Primary Industry – Water
DQI	Data quality indicators
DQO	Data quality objectives
DSI	Detailed Site Investigation
EAC	Ecological assessment criteria
EIL	Ecological investigation level
EMP	Environmental Management Plan
EPA	NSW Environmental Protection Authority
EQL	Estimated quantitation limit (interchangeable with PQL and LOR)
ESA	Environmental Site Assessment
ESL	Ecological screening level
FA	Fibrous asbestos
GIL	Groundwater investigation level
HIL	Health investigation level
HM	Heavy metals
HSL	Health screening level
IA	Investigation area
ISQG	Interim Sediment Quality Guideline
ITP	Inspection Testing Plan
LGA	Local government area
LNAPL	Light non aqueous phase liquid
LOR	Limit of reporting (interchangeable with EQL and PQL)
MA	Martens & Associates Pty Ltd
mAHD	Metres, Australian Height Datum
mbgl	Metres below ground level

MBT	Monobutyltin
MNA	Monitored natural attenuation
MPE	Multi phase extraction
NAPL	Non aqueous phase liquid
NATA	National Association of Testing Authorities
ND	No data
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
OCP	Organochloride pesticides
OEH	NSW Office of Environment and Heritage
OPP	Organophosphorus pesticides
PACM	Potential asbestos containing material
PAH	Polycyclic aromatic hydrocarbons
PASS	Potential acid sulfate soil
PCB	Polychlorinated biphenyl
PCEMP	Post Construction Environmental Management Plan
PESA	Preliminary Environmental Site Assessment
PFAS	Per and polyfluoroalkyl substances
PID	Photoionisation detector
ppb	Parts per billion
ppm	Parts per million
PQL	Practical quantitative limit (interchangeable with EQL and LOR)
PSI	Preliminary Site Investigation
QA/QC	Quality assurance / quality control
RAC	Remediation acceptance criteria
RAP	Remedial Action Plan
HHRA	Human Health Risk Assessment
RPD	Relative percentage difference
SAC	Site assessment criteria
SAQP	Sampling and Analysis Quality Plan
SEPP	State Environmental Planning Policy
SIL	Soil investigation level
SOP	Standard operating procedure
SWL	Standing water level
SWMS	Safe Work Method Statement
TB	Trip blank
TBT	Tributyl tin
TCLP	Toxicity characteristics leaching procedure
TEQ	Toxic equivalency factor
TP	Test pit
TPH	Total petroleum hydrocarbons
TRH	Total recoverable hydrocarbons
TS	Trip spike
UCL	Upper confidence limit
UPSS	Underground petroleum storage system
UST	Underground storage tank
VHC	Volatile halogenated compounds
VOC	Volatile organic compounds
WHS	Work health and safety
WHSP	Work Health and Safety Plan

1 Introduction

1.1 Overview

This report prepared by Martens and Associates (MA) documents a Detailed Site Investigation (DSI) at Cronulla High School, Captain Cook Drive, Cronulla, NSW (the site). This assessment has been commissioned by School Infrastructure NSW (SINSW) on behalf of the NSW Department of Education for proposed redevelopment works at the site.

With reference to the provided concept design plans (Fulton Trotter Architects, 2021), the investigation areas (IA) for this DSI were limited to proposed development locations in the south western site portion, being areas in the vicinity of Building 'L', Building 'M', Building 'I', and the new carpark and main entry area adjacent to Bate Bay Rd.

DSI intrusive investigation works were initially undertaken on 22 and 23 May 2021 to support a due diligence assessment, with subsequent investigations undertaken on 6 July 2022 to provide supplementary data following concept design refinement. Both investigations were conducted concurrently with geotechnical investigations at the site by MA (being MA, 2022a, Ref. P2108205JR02V01, and MA, 2022b, Ref. P2108205JR03V01, respectively).

1.2 Proposed Development

MA understands from concept design plans (Fulton Trotter Architects, 24 June 2022) and preliminary cut / fill plans provided by Cardno (May 2022) that proposed works in the IA are to include:

- Removal of demountable classroom buildings from the south western site portion.
- Construction of two new double storey buildings (Building 'L' and Building 'M') and a new on grade car park.
- Relocation of shade structure adjacent to Building D.
- Construction of a new onsite stormwater detention (OSD) system.
- Landscaping of main entry off Bate Bay Road.
- Internal refurbishment of existing Building D (no ground works associated with this).

Proposed development plans are provided in Attachment B. From review of the cut / fill plans (Cardno, 2022), it is understood that bulk

excavations will predominantly be limited to the new carpark, OSD and landscaping locations for the main entry.

1.3 Objectives

The objectives for this DSI were:

- Evaluation of areas of environmental concern (AEC) and associated contaminants of potential concern (COPC) within the IA.
- Provision of comment on the suitability of the IA for the future development use, and where required, recommendations for additional investigations.
- Provision of preliminary waste classification assessment for material that may be required to be removed from the site.

1.4 Scope of Works

The scope of works included:

- Review of available previous reports and site documentation related to land contamination.
- Intrusive investigation and soil sampling in proposed development locations (conducted concurrently with the geotechnical investigations).
- Sampling and laboratory testing of existing asphaltic cement pavement material (for presence of coal tar and asbestos) that is likely to be removed for development works.
- Laboratory analysis of representative samples for COPC.
- Provision of a preliminary waste classification.
- Preparation of a detailed site contamination investigation report in general accordance with the relevant sections of ASC NEPM (2013), NSW EPA (2017) and NSW EPA (2020).

1.5 Reference Guidelines

This assessment was prepared in with reference to the following guidelines:

- NEPC (1999, amended 2013) National Environmental Protection (Assessment of Site Contamination) Measure. Referred to as ASC NEPM (2013).

- NSW EPA (1995) Sampling Design Guidelines.
- NSW EPA (2014) Waste Classification Guidelines – Part 1 (Classifying Waste).
- NSW EPA (2014) The reclaimed asphalt pavement exemption 2014.
- NSW EPA (2017) 3rd Ed. Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme.
- NSW EPA (2020) Contaminated Land Guidelines: Consultants Reporting on Contaminated Land.

2 Site Background Information

2.1 Site Details

Site information is summarised in Table 1, with the site area and general surrounds plans provided in Map 01 of Attachment A.

Table 1: Site background information.

Item	Description / Detail
Site address	Captain Cook Drive, Cronulla, NSW
Legal identifier	Lot 1, DP 815804
Local Government Area	Sutherland Shire Council
Current zoning	SP2 – Special purpose infrastructure
Site description	At the time of investigations, the site contained classroom buildings, teaching facilities and on grade car parking in the south western portion, and sports fields in the north eastern portion.
Surrounding land uses	Surrounding land use was as follows: o Woolooware Wader Lagoon and Woolooware Bay to the west and north west. o Cronulla Golf Course to the south west. o Low to medium density residential properties to the north east, east and south. o Cronulla Wastewater Treatment Plant beyond residential properties to the north east (approximately 700 m from the site). o Greenhills Beach and Bate Bay beyond residential properties to the east.
Topography	The site was generally flat, with mild slopes no greater than 2%. A batter slope with grades of approximately 20% was located in the south western portion of the site, sloping down towards the western boundary. Elevation ranged between approximately 6 mAHD at the eastern boundary, and 2 mAHD western boundary (LandPartners, 2020).
Surface hydrology	The site was drained by various stormwater drains located on the site, with discharge to Captain Cook Drive to the west.
Geology and soil mapping	The *Wollongong – Port Hacking 1:100,000 Geological Sheet 9029 – 9129* describes site geology as being Quaternary deposits, comprising medium to fine "marine" quartz sand with podzols. The NSW Environment and Heritage eSPADE website identifies the site as being located in an area of 'disturbed terrain', with potential for highly variable soils to depths of at least 1 mbgl, where most of the original natural material may have been removed, buried, or greatly disturbed.

2.2 Local Meteorology

A summary of local meteorology from the closest operational BOM station/s with rainfall and temperature data (station 066037 Sydney Airport AMO, 1939 - 2020) is provided in Table 2.

Table 2: Meteorological data.

Month	Mean Rainfall (mm)	Mean Maximum Temperature (°C)
January	93.8	26.7
February	114.3	26.5
March	120.7	25.4
April	105.0	23.0
May	95.2	20.2
June	124.8	17.7
July	69.2	17..2
August	75.6	18.4
September	59.7	20.7
October	70.1	22.7
November	79.5	24.2
December	72.8	25.9
Annual	**1118.0**	**22.4**

2.3 Hydrogeology

A review of the BOM groundwater bore database indicated that there were 11 registered groundwater bores within 200 m of the IA (Table 3). Available bore data did not include water level records.

Table 3: Available hydrogeological information.

Bore / Spring Identification	Record Date	Intended Use	Standing Water Level (mbgl)	Distance and Direction from IA
GW109954	2008	Monitoring	-	25 m east
GW111559	2007	Water Supply	-	100 m south
GW107448	2005	Water Supply	-	80 m south east
GW106724	2005	Water Supply	-	50 m south
GW106228	2004	Water Supply	-	140 m south
GW106191	2004	Water Supply	-	90 m south east
GW106188	2004	Water Supply	-	110 m south east
GW106171	2004	Water Supply	-	110 m south east
GW101508	1997	Other	-	45 m south east
GW064913	1991	Other	-	Within IA
GW023190	1965	Other	-	Within IA

No springs were listed within 500 m of the site according to NSW Government Hydrography Spatial Data (SEED, 2019).

Four wells were observed on the site during the initial walkover inspection (to the east of proposed building 'M'). No details on well construction or reasons for installation have been provided to MA by SINSW. A summary of encountered groundwater conditions during field investigations is provided in section 8.3.

3 Previous Site Investigations

3.1 Preliminary Site Investigation (Cardno, 2020)

A preliminary site investigation (PSI) was previously completed for the site by Cardno in November 2020 (Ref. 80821137), which identified potential sources of contamination across the site. The scope and findings of this PSI are summarised in Table 4.

Table 4: Preliminary site investigation (Cardno, 2020) summary.

Investigation Details	Investigation Task and Finding
Scope of works	Desktop review of historical aerial photographs and land title information. Review of local hydrogeology, acid sulfate soil and salinity mapping. Site walkover to review existing site conditions, not including subsurface investigations.
Key findings of historical site review and walkover	Cardno's review of historical aerials indicated that the site had been used as a school since 1961, with some additional construction and renovation of school buildings and sports fields occurring in the years since. Prior to its use as a school, the site contained minor roads and trails. Quarrying of sand dunes at Greenhill Beach to the east of the site occurred between 1956 and 1990, and the Cronulla Wastewater Treatment Plant to the north west of the site was constructed sometime between 1975 and 1983. The site walkover identified the following: o The site predominantly contained hardstand with a few maintained garden beds. o A number of school buildings included vermiculite ceilings, which has the potential to contain asbestos. o Minor chemicals and dangerous goods including organic and kerosene waste were kept in prep rooms for science classes. o Rainwater tanks were observed on the site. o The assembly hall and surrounding walkways were unable to be visually assessed due to ongoing examinations.
Preliminary Conceptual Site Model	Cardno identified one potential contaminant source, being the vermiculite ceilings which had the potential to contain asbestos.
Conclusions and Recommendations	Based on the findings of the PSI, Cardno concluded the following: o There is low potential for site soils to be significantly contaminated. o Should buildings containing vermiculite ceilings be disturbed or redeveloped, a suitably qualified hygienist should be present during construction works to ensure removal of asbestos waste. o Asbestos waste should be disposed of at a facility licenced to accept Special Waste.

3.2 Asbestos Management Plan (WSP, 2020)

An asbestos management plan (AMP) was previously completed by WSP in June 2020 (Ref. 8261_ASB_301017_AMP_RevA). The AMP detailed the presence of asbestos containing materials (ACM) at the site, and outlined procedures used to remediate ACM and manage asbestos related health risks.

The AMP (WSP, 2020) identified surficial bonded ACM in five areas, located in the grassed south western portions of the site. All locations were sparrow picked to remove visually accessible ACM, however WSP noted that ACM may have also impacted subsurface fill material. The AMP assessed risk to human health to be 'low' provided that this material remained undisturbed. Should the material be disturbed, the AMP recommended a Remedial Action Plan (RAP) be implemented for areas of ACM impacted soil.

Locations where WSP identified surficial ACM contamination are shown in Attachment G.

3.3 Fill Characterisation Assessment (MA, 2022c)

Findings of the WSP (2020) AMP indicated the former presence of surficial ACM in five locations across the south western site portion. However, given that fill material has been identified in these locations, MA considered, that there is a reasonable risk of additional ACM contamination at depth within the fill profile.

In consideration of the proposed development plans, MA undertook a separate Fill Characterisation Assessment (FCA) via test pitting to assess the extent of subsurface asbestos impact within the IA in accordance with ASC NEPM (2013) and WA DoH (2009). Asbestos investigation locations are provided on Map 04 in Attachment A. The FCA is documented in report reference P2108205JC02V01, dated 11 March 2022 and should be read in conjunction with this report.

FCA investigations encountered a single fragment of bonded asbestos at depth, which, based on results of laboratory analysis and w/w% calculation, was found to be below the adopted HSL (0.02% w/w) provided in ASC NEPM (2013). Laboratory testing of collected soil subsamples did not detect any AF / FA, and no PACM was observed at the ground surface. Additionally, air monitoring completed by Airsafe reported no detections of measurable airborne asbestos fibres during FCA investigations. Therefore, MA considered that fill material assessed to date carries a very low contamination risk for current and future site receptors.

4 Initial Field Investigations

A walkover investigation of the site was undertaken by a senior MA environmental consultant on 19 May 2021 prior to intrusive investigations being undertaken. School grounds and surrounding properties were examined for signs of potential contamination (odours, staining, anthropogenic material in surficial soil, etc.), or potentially contaminating activity (such as past filling).

The following observations were made:

- The south western site portion contained all classroom buildings and teaching facilities for the Cronulla High School campus.
- The south western site portion was mostly covered by hardstand, with managed lawns and scattered trees along the western and southern boundaries.
- The north eastern site portion contained grassed sports fields and a sports club house.
- The batter slope located parallel with the south western boundary appeared to consist of fill and was an unnatural topographical feature. Filling was likely undertaken to create site levels. No anthropogenic inclusions, soil staining or unnatural odours were observed at the surface of the fill material.
- No surficial ACM was observed during the inspection. However, it should be noted that a detailed inspection of the north eastern site portion containing sports fields (outside the IA) was not undertaken as part of this assessment.
- All site buildings and pavement were observed to be in good condition.
- Cronulla Golf Course and Woolooware Wader Lagoon were located to the west and north west of the site, respectively. The site was surrounded in all other directions by low to medium density residential development.
- No obvious current potentially contaminating activities were noted on or adjacent to the site during the inspection.

5 Conceptual Site Model

The following assessment of AEC and COPC (Table 4) has been made for the site based on observations from the site walkover, and the findings of the previous PSI (Cardno, 2020) and AMP (WSP, 2020).

Table 5: AEC and COPC.

AEC	Description	COPC
AEC A Buildings (including 2 m curtilage)	School buildings may have been constructed using potentially contaminating materials including PACM, zinc treated (galvanised) metals, and lead based paints. Pesticides and heavy metals may have been used underneath buildings for pest control.	HM, OCP / OPP and asbestos
AEC B Fill material	Fill from unknown sources in the south western site portion may have introduced contamination including hydrocarbons, heavy metals, pesticides, PCB and asbestos. This fill material includes 'Area E' identified by WSP (2020) to be potentially impacted by ACM. Additionally, the site is located in an area of 'disturbed terrain', indicating that there is potential for the presence of fill material due to extensive soil disturbance or replacement from past human activity.	HM, TRH, BTEXN, PAH, OCP / OPP, PCB and asbestos

A conceptual site model (CSM), based on the AEC and COPC identified in Table 5, and the associated exposure pathways to potential receptors are summarised in Table 6.

Table 6: Conceptual site model.

Affected Media	Soil has been identified as the primary source of contamination for the site.
Potential Receptors	Potential on site human receptors include current and future students and staff, as well as construction and maintenance workers. Potential off site human receptors include and current and future users of adjacent land. Potential ecological receptors include flora and fauna that may inhabit or migrate through the site and adjacent land.
Potential Exposure Pathways	Potential exposure pathways include ingestion, dermal absorption, and inhalation of dust (for all contaminants) and vapours (for volatile hydrocarbons). At the time of this DSI, the site surface was covered by hardstand in areas of higher traffic / student circulation, and managed lawns in all other areas. There were also no areas of edible crop growing observed during inspections. Therefore there was no easily identifiable complete pathway between contaminants and current receptors. However the proposed development may present complete exposure pathways where hardstand is to be removed, or subsurface material is to be disturbed such as during earthworks and / or excavations. In particular, the area of the site containing identified filling and potential subsurface ACM presents an increased risk to human health should soils be disturbed.

6 Sampling, Analytical and Quality Plan

A Sampling Analytical and Quality Plan (SAQP) was developed to ensure that data collected for the DSI is representative and provides a robust basis for site assessment decisions. Preparation of the SAQP was completed in general accordance with ASC NEPM (2013) methodology and includes:

- Data quality objectives (DQO).
- Data quality indicators (DQI).
- Sampling methodologies and procedures.
- Analytical QA / QC.

The following sections summarise the SAQP.

6.1 Data Quality Objectives

DQO were prepared as statements specifying qualitative and quantitative data required to support project decisions. DQO were prepared in general accordance with NSW EPA (2017, 2020) and ASC NEPM (2013) guidelines, and are presented in Table 7.

Table 7: Data quality objectives.

Step 1 **Stating the Problem**	This DSI has been conducted to assess potential contamination within investigation areas (i.e. the proposed redevelopment locations) that may be accessible to human and environmental receptors, in support of the proposed redevelopment of the IA by the NSW Department of Education.
Step 2 **Identifying the Decision(s)**	To assess the suitability of the site for future land use, decisions are to be made based on the following questions: o What is the contaminant exposure pathway? o Has previous or current site use impacted the IA that may pose a risk to humans or the environment for future land use? o Does the IA require remediation or management prior to constructing the proposed development?
Step 3 **Identification of Inputs to the Decision**	The inputs to the assessment include: o Data from previous reports. o Soil sampling at nominated locations across the IA. o Laboratory analytical results for relevant COPC. o Assessment of analytical results against site suitable guidelines.
Step 4 **Study Boundary Definitions**	Study boundaries are as follows: o Lateral – Lateral boundary of the assessment is defined by the IA boundary. o Vertical – Vertical boundary is governed by the maximum depth reached during subsurface investigations. o Temporal – Two rounds of soil sampling has been undertaken at this stage.
Step 5 **Development of Decision Rules**	The decision rule for this investigation is as follows: If the concentration of contaminants exceeds the adopted assessment criteria, a risk assessment is required. Should the risk be unacceptable, additional investigations to remediate and / or manage the onsite impacts, in relation to the proposed development, will be undertaken.
Step 6 **Specification of Limits on Decision Errors**	Guidance found in ASC NEPM (2013) Schedule B2 regarding 95% upper confidence limit (UCL) states that the 95% UCL of the arithmetic mean provides a 95% confidence level that the true population mean will be less than or equal to this value. Therefore a decision can be made based on a probability that 95% of the data collected will satisfy the site acceptance criteria. A limit on decision error will be 5% that a conclusive statement may be incorrect.
Step 7 **Optimisation of Sampling Design**	Proposed sampling locations shall provide even coverage across the IA. Sampling shall attempt to ensure that critical locations are assessed, sampled, and analysed for appropriate contaminants of concern. Soil sampling locations were set subject to site access and selected using a combined judgemental and grid pattern across the IA.

6.2 Data Quality Indicators

In accordance with NSW EPA (2017), the investigation data set has been compared with DQI outlined in Table 8 to ensure that collected data meets the project needs and that DQO has been met.

Table 8: Data quality indicators.

Assessment Measure (DQI)	Comment
Precision – A measure of the variability (or reproducibility) of data.	Precision is assessed by calculating the relative percent difference (RPD) between blind field duplicates and primary samples. Data precision is deemed acceptable where results are 0 - 10 x EQL or where RPDs <50% (10 - 30 x EQL) or <30% (>30 x EQL). Exceedance of this range may still be considered acceptable where heterogeneous materials such as fill are sampled.
Accuracy – A measure of the closeness of reported data to the "true value".	Data accuracy is assessed by: o Laboratory control samples. o Field spikes and blanks.
Representativeness – The confidence that data are representative of each media present on the site.	To ensure data representativeness the following field and laboratory procedures are followed: o Ensure that the design and implementation of the sampling program have been completed in accordance with MA standard operating procedures (SOP). o Trip blank and trip spike samples shall be used for volatiles during field sampling to ensure no cross contamination or laboratory artefacts. o Ensure that all laboratory hold times are met and that sample handling and transport are completed in accordance with the MA SOP.
Completeness – A measure of the amount of usable data from a data collection activity.	To ensure data set completeness, the following is required: o Confirmation that all sampling methodology was completed in general accordance with the MA SOP. o COC and receipt forms. o Results from all laboratory QA / QC samples (lab blanks, lab duplicates). o NATA accreditation stamp on all laboratory reports.
Comparability - The confidence that data may be considered to be equivalent for each sampling and analytical event.	Comparability is maintained by ensuring that: o All site sampling events are undertaken following methodologies outlined in MA SOP and published guidelines. o NATA accredited laboratory methodologies shall be followed on all laboratory analysis.

6.3 Methodology and Quality Assurance / Quality Control

Site investigation and soil sampling methodology as shown in Table 9, was completed to meet the project DQO.

Table 9: Investigation and sampling methodology.

Activity	Detail / Comments
Fieldworks	Subsurface soil investigations were completed on 22 and 23 May 2021 concurrently with the geotechnical investigation (MA, 2022a), and involved: o Excavation of 10 boreholes (BH101 - 110) using a 4WD mounted drill rig fitted with solid flight augers, to a maximum investigation depth of 10.0 mbgl. o Collection and analysis of representative soil samples. o Collection of three QA / QC samples for laboratory analysis. Additional subsurface soil investigations were completed on 6 July 2022 concurrently with the geotechnical investigation (MA, 2022b), and involved: o Excavation of 8 boreholes (BH201 - 208) using a 4WD mounted drill rig fitted with solid flight augers, to a maximum investigation depth of 1.5 mbgl. o Collection and analysis of representative soil samples. o Collection and analysis of four surficial asphaltic cement samples. o Collection of one QA / QC samples for laboratory analysis. Sampling locations are shown in Map 03 of Attachment A, and borehole logs are provided in Attachment B.
Soil and material sampling	Soil sampling was completed by an experienced MA environmental consultant using a clean pair of nitrile gloves for each sample. Samples were taken from the end of the clean lead auger. Each soil sample was placed into a laboratory supplied, 250 mL glass jar with no headspace to limit volatile loss, and labelled with a unique identification number. Asphaltic cement material was placed in a double Ziplock bag and labelled with a unique identifier.
QA / QC sampling	QA samples were collected for the initial investigation as follows: o A total of two soil duplicate sample was collected for intra laboratory analysis for the investigations undertaken. o Trip spike and trip blank samples were used during both soil sampling events.
Sample handling and transport	Sample collection, storage and transport were conducted according to MA SOP. Collected soil samples were placed immediately into an ice chilled cooler box. Samples were dispatched to a NATA accredited laboratory (Envirolab) under chain of custody documentation within holding times.

6.4 Laboratory Analytical Suite

Laboratory analysis was carried out by Envirolab Pty Ltd a NATA accredited laboratory. Summary of laboratory analyses for both sampling events is provided in Table 10.

Table 10: Summary of initial soil laboratory analyses.

COPC	Primary Samples Analysed	QA / QC Samples Analysed
BTEXN	17	2 trip spike
TRH	17	2 trip blank
PAH	17	
Heavy metals [1]	17	2 duplicate
OCP / OPP	17	
Asbestos in soil (AS 4964)	17	
Coal tar in AC	4	
Asbestos in AC	4	

Notes
[1] Heavy metals – arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc.

7 Site Assessment Criteria

The site assessment criteria (SAC) adopted for this DSI are listed in Table 11 and derived from the ASC NEPM (2013).

Table 11: Site assessment criteria.

Media	Adopted Guidelines	Applicability
Soil	ASC NEPM (2013)	Health investigation levels (HIL) HIL C – Public open space was adopted based on the current and proposed land use as a secondary school. Health screening levels (HSL) HSL A – Residential for sand was adopted as a conservative measure based on proposed land use and encountered sandy fill and natural material. Ecological Investigation Levels (EIL) Site specific EILs were derived from methodology from ASC NEPM (2013) for the protection of terrestrial ecosystems for urban residential areas and public spaces. The following physiochemical properties were conservatively selected based on site observations, data from the NSW eSPADE website, and results of acid sulfate soils testing completed as part of the geotechnical investigation (MA, 2021). o 6.3 pH o CEC value of 7.5 cmol/kg o Contamination is considered as "aged" (>2 years) o From an area of "high" traffic volumes. Ecological Screening Levels (ESL) ESLs for urban residential and public open space for coarse soil were adopted based on proposed land use and encountered fill and natural material. Management Limits Management limits for residential, parkland and public open space for coarse soil were adopted based on proposed land use and encountered fill and natural material. Asbestos Assessed on a detect / non-detect basis.

8 Results

8.1 General Field Observations

Subsurface contamination investigation works were undertaken on 22 and 23 May 2021, and 6 July 2022; both of which were undertaken concurrently with geotechnical investigations (MA, 2021 and MA, 2022).

All testing locations and borehole spoil did not observe any signs of contamination (odours, staining, anthropogenic inclusions etc.). Site structures and conditions had remained generally unchanged between the times of both inspections.

8.2 Soil Conditions

Intrusive soil investigations on 22 and 23 May 2021 observed the following:

- Boreholes excavated in the grassed site portions at the top of the batter along the south western boundary (BH103 – 105, 109 and 110) encountered overlying sandy fill material, to between 1.1 and 3.7 mbgl.
- Anthropogenic inclusions consisting of nails, concrete, brick and glass fragments were observed in fill layer for BH104, BH109 and BH110. No signs of odours and staining or other forms of anthropogenic inclusions (other than listed above) were observed within the subsurface soil profile.
- Sandy topsoil was encountered to 0.3 mbgl in BH108 (located below the batter).
- Remaining boreholes were conducted in paved areas (pavement thickness of approximately 100 mm). BH102 encountered a layer of sandy fill material beneath pavement, to a depth of 0.4 mbgl.
- Naturally occurring marine / aeolian sands were observed underlying fill material, pavement or topsoil in all boreholes, to a maximum target depth of 10.0 mbgl.

Intrusive soil investigations on 6 July 2022 observed the following:

- Borehole excavations undertaken on asphalt pavement encountered overlying gravelly and sandy fill material (either roadbase placed to form the pavement or shallow disturbed natural sands) to 0.6 mbgl.

- Naturally occurring marine / aeolian sands were observed underlying fill material and asphalt pavement in all boreholes, to a maximum target depth of 1.5 mbgl.

Borehole locations are shown on Map 03 in Attachment A and borehole logs are provided in Attachment C.

8.3 Groundwater Conditions

Initial borehole investigations (22 and 23 May 2021), groundwater inflow was encountered within marine sands in all boreholes except BH110, at depths ranging from 1.5 mbgl to 5.5 mbgl. Four existing groundwater wells (MW01 – MW04) were identified adjacent to Building M in the access lane in the south eastern portion of the site. Well depths and measurements are summarised in Table 12. MW04 was not measured as the well cover was not able to be removed at the time of investigations.

Table 12: Well details.

Well ID	Total Depth of Well (mbgl)	Depth to Water [1] (mbgl)	Depth to Water (mAHD)
MW01	6.60	4.60	0.69
MW02	6.20	4.30	1.10
MW03	6.00	4.21	1.14
MW04	N/A [2]	N/A [2]	N/A [2]

Notes
[1.] Recorded 23 May 2021.
[2.] N/A – access to well not available during inspection.

Based on groundwater depths encountered in boreholes and existing wells, a permanent groundwater table is expected within the underlying marine sands at approximately 0.5 – 1.5 mAHD. No odours were detected from within the accessible groundwater wells.

Groundwater inflow was not encountered during the second investigation (6 July 2022), however borehole termination depths were significantly shallower (1.5m below grade).

It is noted that the groundwater wells were not observed during the second round of intrusive investigations. We assume that the wells had either been rmeoived or buried as a result of recent road works undertaken in the access lane in the south eastern portion of the site.

Should further information on site hydrogeology and permanent groundwater levels be required (e.g. level fluctuations and gradient / flow direction), additional investigations would need to be carried out (i.e. installation of groundwater monitoring wells / piezometers as well as long-term monitoring with data loggers).

8.4 Analytical Results

The following sections summarise the results of laboratory analysis. Detailed tabulated results showing individual sample concentrations compared to the adopted SAC are available in Attachment D.

Laboratory analytical documentation is available in Attachment F.

8.4.1 Soil Results

Laboratory analytical results for soil samples are summarised in Table 13.

Table 13: Summary of soil analytical results.

Analyte	Results Compared to SAC
Heavy metals	HIL All results below SAC. EIL All results below SAC.
TRH/BTEXN	HSL All results below SAC. ESL All results below SAC. Management Limits All results below SAC.
OCP/OPP	HIL All results below SAC. EIL All results below SAC.
PAH	HIL All results below SAC. HSL All results below SAC. EIL All results below SAC. ESL All results below SAC.
Asbestos in soil	No asbestos detected.
Coal tar in AC	No coal tar detected.
Asbestos in AC	No asbestos detected.

8.5 Preliminary Waste Classification

8.5.1 Soil

17 soil samples, selected as representative of site fill and natural soil material, were analysed for hydrocarbons (TPH, BTEXN and PAH), heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and

zinc), organochlorine and organophosphorus (OC / OP) pesticides and asbestos in soil.

Initial laboratory results indicated that all results did not exceed the specific contamination concentration (SCC) for general solid waste (SCC1), and contamination threshold (CT) limit for general solid waste (CT1) apart for nickel in BH201/0.2-0.3 and BH204/0.2-0.3.

Further analysis using toxicity characteristic leaching procedure (TCLP) was carried out, which indicated that the nickel leachability in BH201/0.2-0.3 and BH204/0.2-0.3 were less than TCLP1.

A summary of chemical analysis for the waste classification is in Attachment D and laboratory certificates.

From visual inspection and review of laboratory results, insitu fill is preliminary classified as **General Solid Waste** (non putrescible), in accordance with NSW EPA (2014a).

8.5.2 Asphaltic Cement

Four asphaltic cement samples (0-0.05 mbgl) from existing paved areas were analysed for presence / absence of coal tar and asbestos. Laboratory analysis confirmed that no coal tar or asbestos was identified in any sample.

Therefore, the existing asphaltic cement in the IA meets the requirement of the NSW EPA (2014b) reclaimed asphalt pavement exemption and can be reused or recycled as outlined in Section 7 of NSW EPA (2014b).

8.5.3 Asbestos

Any fill and surface soils within the IA as noted as being potentially impacted by ACM are pre classified as **special waste (asbestos waste)** as outlined in MA's FCA (2021) and summarised in Section 3.3 of this report.

8.6 Data QA / QC

Field QA / QC data was collected as per the SAQP. A review of QA / QC procedure has been completed and is presented in the data validation report in Attachment E.

The report concludes that data is suitable for the purposes of the assessment.

9 Discussion and Conclusion

This DSI was undertaken by MA to provide an assessment of potential land contamination issues at Cronulla High School, and determine site suitability for the proposed redevelopment which involve bulk earthworks as shown on the architectural plan in Attachment B. The DSI was conducted in general accordance with the project SAQP (Section 6).

Based on the scope of this DSI and the previously prepared FCA (2022c), the adopted sampling density does present a full site characterisation in accordance with NSW EPA (1995) sampling guidelines. Subsurface investigation locations were selected to provide a general coverage of these areas, particularly targeting proposed earthwork and construction areas where filling and potential asbestos contamination was identified through reviews of the previous PSI (Cardno, 2020) and AMP (WSP, 2020), as well as observations from our site walkover. Due to access restrictions, however, subsurface investigations could not be conducted within existing structure footprints.

Sandy fill material was generally encountered in borehole locations along the south western site boundary, to depths of between 1.1 mbgl (BH109), and 3.7 mbgl (BH110). Thin layers of fill material were also encountered below the asphalt road surface in BH102, and BH201 to BH204 to a depth of 0.6 mbgl, however this material appeared to be predominantly associated with imported roadbase material for pavement and disturbed natural soils directly below. All boreholes encountered underlying marine sands to target depths of up to 10 mbgl.

Based on borehole testing and observations of existing groundwater wells, no groundwater odours or other obvious signs of contamination were noted. We do not expect groundwater to be a source or receptor of contamination.

Soil samples were collected from all main soil horizons within each borehole, and representative samples of fill material (where fill was present) or surficial marine sands were laboratory tested for COPC. Laboratory results (Envirolab report 269822 and 299900) found contaminant concentrations to be below the adopted SAC in all samples. No ACM was observed in any borehole, and only trace anthropogenic inclusions were observed in fill material in BH104, BH109 and BH110. However, we note that subsurface investigation works were limited to boreholes, thereby limiting the capacity to visually assess subsurface material.

Based of visual inspection and laboratory analysis, the preliminary waste classification of site fill material is General Solid Waste (non putrescible) apart from material potentially impacted by ACM which will also be classified as special waste (asbestos waste). Natural soils are expected

to be considered virgin excavated natural material (VENM), based on the limited natural soil testing undertaken as part of this DSI and consideration that soil material is not acid sulfate impacted (MA, 2022a). The existing asphaltic cement pavement surface within the IA is also suitable for re use as it does not contain asbestos or coal tar.

All investigation locations assessed as part of this DSI were found to carry a very low risk of chemical contamination based on assessment against NEPM (2013) guidelines. However, given that the proposed redevelopment works involve bulk earthworks within the IA, the IA can only be considered suitable subject to the implementation of a RAP for areas of ACM impacted soils (outlined by blue hatches in Map04 of Attachment A) as recommended in the AMP (WSP, 2020).

If any other soil material not identified as part of this assessment is to be removed from site, additional formal waste classification assessment shall be required in accordance with the NSW EPA Waste Classification Guidelines (2014).

10 Limitations

This DSI was undertaken in accordance with current industry standards.

It is important to note that no land contamination study can be considered to be a complete and exhaustive characterisation of a site nor can it be guaranteed that any assessment shall identify and characterise all areas of potential contamination or all past potentially contaminating land uses. This is particularly the case where onsite filling has occurred, or sampling is affected by to restrictions to site access. Therefore, this report should not be read as a guarantee that only contamination identified shall be found on the site. Should material be exposed in future which appears to be contaminated, additional testing may be required to determine the implications for the site. The management of such 'unexpected finds' is to be included in the proposed site RAP.

Martens & Associates Pty Ltd has undertaken this assessment for the purposes of assessing potential site contamination. No reliance on this report should be made for any other investigation or proposal. Martens & Associates Pty Ltd accepts no responsibility, and provides no guarantee regarding the characteristics of areas of the site not specifically studied in this investigation.

11 References

Cardno (2020) *Preliminary Site Investigation – Cronulla High School.* Ref. 80821137.

Fulton Trotter Architects (2021) *Concept Design – Cronulla High School.* Ref. CD-102C.

LandPartners (2020) *Detailed Survey of Lot 1 DP 815804, Captain Cook Drive, Cronulla.* Ref. SY075045.000.1.1.

Martens and Associates Pty Ltd (2022a) *Geotechnical and Acid Sulfate Soil Assessment: Cronulla High School, Cronulla, NSW*. Ref. P2108205JR01V01.

Martens and Associates Pty Ltd (2022b) Supplementary *Geotechnical Assessment: Cronulla High School, Cronulla, NSW*. Ref. P2108205JR03V01.

Martens and Associates Pty Ltd (2022c) *Fill Characterisation Assessment: Cronulla High School, Cronulla, NSW*. Ref. P2108205JC02V01.

NEPC (1999, amended 2013) *National Environmental Protection (Assessment of Site Contamination) Measure.* Referred to as ASC NEPM (2013).

NSW Department of Environment & Heritage (eSPADE, NSW soil and land information), www.environment.nsw.gov.au.

NSW EPA (1995) *Contaminated Sites: Sampling Design Guidelines.*

NSW EPA (2014a) *Waste Classification Guidelines- Part 1 Classifying Waste.*

NSW EPA (2014b) *Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation – The reclaimed asphalt pavement exemption.*

NSW EPA (2017) *3rd Ed. Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme.*

NSW EPA (2020) *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land.*

Standards Australia (1997) Australian Standard AS 4482.1 – *Guide to sampling and investigation of potentially contaminated soil: Part 2: Non-volatile and semi-volatile substances.*

Standards Australia (1999) Australian Standard AS 4482.1 – *Guide to sampling and investigation of potentially contaminated soil: Part 2: Volatile substances.*

State Environmental Planning Policy No. *55 – Remediation of Contaminated Land*.

Western Australia Department of Health (2009) *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.* Referred to as WA DoH (2009).

WSP (2020) *Cronulla High School Asbestos in Grounds Management Plan.* Ref. 8261_ASB_301017_AMP_RevA.

Attachment A: Site Plans

Map	Title
Map 01	Site Overview
Map 02	Topography
Map 03	Borehole Locations
Map 04	FCA Testing Plan

0 30 60 90 120 150 m

1:2500 @ A3

Aerial: Nearmap (2021)

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Map Title / Figure:
Site Overview

Map 01

Cronulla High School, Captain Cook Drive, Cronulla, NSW	Site
Cronulla High School Redevelopment	Project
Fill Contamination Assessment	Sub-Project
NSW Department of Education	Client
29/07/2022	Date

Project No: P2108205 Map Set: MS01-R01 EPSG: 28356

0 9 18 27 36 45 m

1:750 @ A3

Viewport A

Aerial: Nearmap (2021).
Department of Finance, Service and Innovation.

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Map Title / Figure:
Topography

Map 02	Map
Cronulla High School, Captain Cook Drive, Cronulla, NSW	Site
Cronulla High School Redevelopment	Project
Fill Contamination Assessment	Sub-Project
NSW Department of Education	Client
29/07/2022	Date

Project No: P2108205 Map Set: MS01-R01 EPSG: 28356

Project No: P2108205 Map Set: MS01-R01 EPSG: 28356

0 9 18 27 36 45 m

1:750 @ A3

Viewport A

Aerial: Nearmap (2021)

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Map Title / Figure:

Borehole Locations

Map 03	Map
Cronulla High School, Captain Cook Drive, Cronulla, NSW	Site
Cronulla High School Redevelopment	Project
Fill Contamination Assessment	Sub-Project
NSW Department of Education	Client
29/07/2022	Date

0 9 18 27 36 45 m

1:750 @ A3

Viewport A

Aerial: Nearmap (2021)

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Map Title / Figure:

FCA Testing Plan

Map 04	Map
Cronulla High School, Captain Cook Drive, Cronulla, NSW	Site
Cronulla High School Redevelopment	Project
Fill Contamination Assessment	Sub-Project
NSW Department of Education	Client
29/07/2022	Date

Project No: P2108205 Map Set: MS01-R01 EPSG: 28356

Attachment B: Proposed Development Plans

1 PLAN
PROPOSED SITE PLAN
SCALE: 1:500

01	CONSULTANT COORDINATION - PLANNER REVIEW	29/04/22	LW / NE
02	CONSULTANT COORDINATION	05/05/22	NE
03	CONSULTANT COORDINATION	10/05/22	NE
04	CONSULTANT COORDINATION ISSUE	19/05/22	LW / NE / JP
05	SCHEMATIC DESIGN ISSUE - DRAFT	02/06/22	LW / JP / SZ / NE
06	Consultant Co-ordination	20/06/22	LW
07	Consultant Co-ordination	24.06.22	LW
REV.	DESCRIPTION	DATE	INIT.

PROPOSED SITE PLAN LEGEND

- EXISTING BUILDINGS
- PERMANENT DEMOUNTABLE
- EXISTING TREE RETAINED
- ROOF OVER
- CONTOUR
- FENCE
- PROPOSED BUILDINGS
- PROPOSED COLA
- REFURBISHED AREAS
- PROPOSED TREES
- PROPOSED HYDRANT (FH)

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Katerina Dracopoulos raia QLD 4529
Mark Trotter fraia VIC 17691 NSW 4421 QLD 1870
Paul Sekava raia NSW 7180 QLD 3108
Paul Trotter fraia NSW 7177 QLD 2646
Ryan Loveday raia QLD 4500
www.fultontrotter.com.au

PHASE: **SCHEMATIC DESIGN**
CLIENT: NSW DEPARTMENT OF EDUCATION (SCHOOLS INFRASTRUCTURE)
PROJECT: CRONULLA HIGH SCHOOL
ADDRESS: Captain Cook Dr Cronulla, NSW

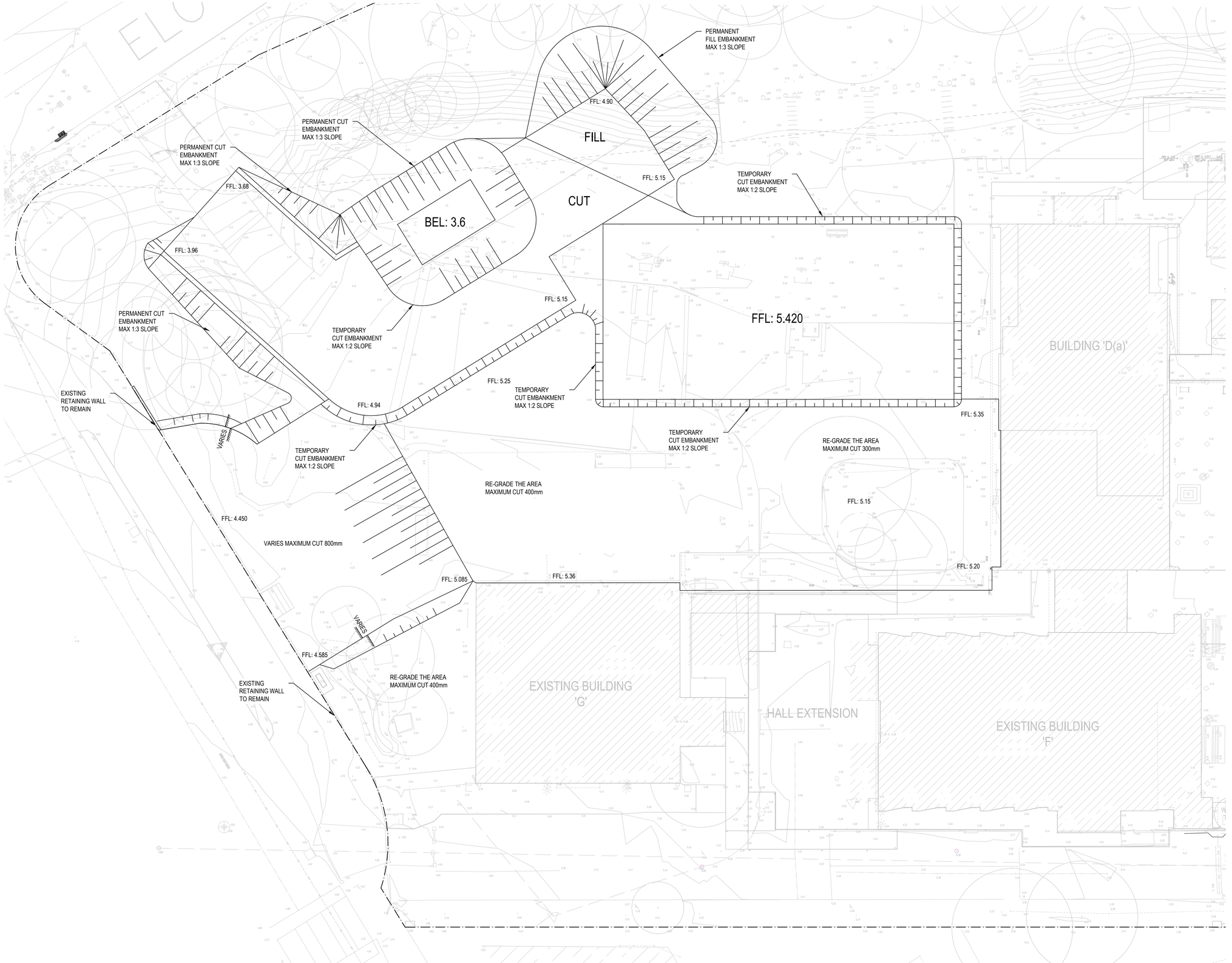
DRAWING: **PROPOSED SITE PLAN**

Figured dimensions take precedence over scale dimensions. Contractors must verify all dimensions on site before commencing any work or making shop drawings.

PROJECT NUMBER: 7068CR04
DIRECTOR: JW
CHECKED:
DRAWING NUMBER: SD-1003
REVISION: 07

50 100 150mm @ A1

plot date: Friday, 24 June 2022 file location: BIMcloud: SYDBIM23 - BIMcloud Basic for ARCHICAD 23/7068CR01 - Cronulla HS - CONCEPT DESIGN



FOR CONTINUATION REFER TO DRAWING CI-0108

Rev.	Date	Description	Des.	Verif.	Appd.
1	05/07/2022	INDICATIVE EXTENT OF EARTHWORKS	VJ	VJ	PP

Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
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Web: www.cardno.com.au

Drawn	GM	Date MAY 2022
Checked	MR	Date MAY 2022
Designed	VJ	Date MAY 2022
Verified	PP	Date MAY 2022
Approved		

Client: NSW DEPARTMENT OF EDUCATION

Project: CRONULLA HIGH SCHOOL
CAPTAIN COOK DRIVE, CRONULLA NSW

Title: CIVIL
BULK EXCAVATION PLAN
SHEET 1

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum		Scale	Size
AHD		1:200	A1

Drawing Number: 80821341-CI-0107

Revision: 1

Attachment C: Borehole Logs

CLIENT	SINSW C/- Fulton Trotter Architects		COMMENCED	06/07/2022	COMPLETED	06/07/2022	**REF BH201**
PROJECT	Contamination and Waste classification Assessment		LOGGED	MZ	CHECKED	JF / BM	Sheet 1 OF 1
SITE	Cronulla High School		GEOLOGY	Quaternary	VEGETATION	Nil	PROJECT NO. P2108205
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE	151.157684	RL SURFACE	5.26 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 1.50 m depth	LATITUDE	-34.039483	ASPECT	North	SLOPE <2%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	H		0	5.26	0.0-0.08/S/1 D 0.00-0.08 m				ASHPHALT PAVEMENT.			PAVEMENT
				0.08								
				5.18				SP	ROADBASE: FILL: Gravelly SAND; fine grain; grey and dark grey.			FILL
			0.2		0.2-0.3/S/1 D 0.20-0.30 m							
				0.30								
				4.96				SP	SAND; fine grain; grey to light brown.			MARINE DEPOSITS / AEOLIAN DEPOSITS
			0.4									
			0.6		0.6-0.8/S/1 D 0.60-0.80 m							
	L		0.8							M		
			1.0									
				1.20								
			1.2	4.06					Orange brown.			
			1.4									
				1.50								
									Hole Terminated at 1.50 m			
			1.6									
			1.8									

EXCAVATION LOG TO BE READ IN CONJUCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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Engineering Log - BOREHOLE

CLIENT	SINSW C/- Fulton Trotter Architects		COMMENCED	06/07/2022	COMPLETED	06/07/2022	**REF BH202**
PROJECT	Contamination and Waste classification Assessment		LOGGED	MZ	CHECKED	JF / BM	Sheet 1 OF 1
SITE	Cronulla High School		GEOLOGY	Quaternary	VEGETATION	Nil	PROJECT NO. P2108205
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE	151.157627	RL SURFACE	5.44 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 1.50 m depth	LATITUDE	-34.039332	ASPECT	West	SLOPE <2-5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	*DEPTH* RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	H			5.44	0.0-0.08/S/1 D 0.00-0.08 m				ASHPHALT PAVEMENT.			PAVEMENT
				0.08								
				5.36				SP	SAND; fine grain; light brown.			MARINE DEPOSITS / AEOLIAN DEPOSITS
			0.2		0.2-0.3/S/1 D 0.20-0.30 m							
			0.4									
			0.6									
	L		0.8							M		
					0.9-1.1/S/1 D 0.90-1.10 m							
			1.0	*1.00*								
				4.44					Orange brown.			
			1.2									
			1.4									
				1.50								
			1.6						Hole Terminated at 1.50 m			
			1.8									

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Engineering Log - BOREHOLE

CLIENT	SINSW C/- Fulton Trotter Architects		COMMENCED	06/07/2022	COMPLETED	06/07/2022	**REF BH203**
PROJECT	Contamination and Waste classification Assessment		LOGGED	MZ	CHECKED	JF / BM	Sheet 1 OF 1
SITE	Cronulla High School		GEOLOGY	Quaternary	VEGETATION	Nil	PROJECT NO. P2108205
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE	151.157264	RL SURFACE	5.58 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 1.50 m depth	LATITUDE	-34.039554	ASPECT	West	SLOPE <2-5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	H		0.2	5.58 *0.05* 5.53 *0.20* 5.38 *0.30* 5.28	0.0-0.05/S/1 D 0.00-0.05 m 0.2-0.3/S/1 D 0.20-0.30 m			SP SP	ASHPHALT PAVEMENT. ROADBASE: FILL: Gravelly SAND; fine grain; grey and dark grey. FILL: SAND; fine grain; dark grey; with gravels. SAND; fine grain; pale grey to light brown.			PAVEMENT FILL MARINE DEPOSITS / AEOLIAN DEPOSITS
	L		0.4 0.6 0.8 1.0 1.2		0.8-1.0/S/1 D 0.80-1.00 m					M		
			1.4	*1.20* 4.38 *1.50*					Orange brown.			
			1.6 1.8						Hole Terminated at 1.50 m			

EXCAVATION LOG TO BE READ IN CONJUCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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Engineering Log - BOREHOLE

CLIENT	SINSW C/- Fulton Trotter Architects		COMMENCED	06/07/2022	COMPLETED	06/07/2022	**REF BH204**
PROJECT	Contamination and Waste classification Assessment		LOGGED	MZ	CHECKED	JF / BM	Sheet 1 OF 1
SITE	Cronulla High School		GEOLOGY	Quaternary	VEGETATION	Nil	PROJECT NO. P2108205
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE	151.157026	RL SURFACE	4.49 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 1.50 m depth	LATITUDE	-34.034723	ASPECT	South	SLOPE <2-5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T				4.49	0.0-0.5/S/1 D 0.00-0.05 m				ASHPHALT PAVEMENT.			PAVEMENT
				0.05 4.44					ROADBASE: FILL: Gravelly SAND; fine grain; grey and dark grey.			FILL
	H			*0.20*								
			0.2	4.29	0.2-0.3/S/1 D 0.20-0.30 m			SP	FILL: SAND; fine grain; dark grey; with gravels.			
				0.30 4.19				SP	SAND; fine grain; pale grey to light brown.			MARINE DEPOSITS / AEOLIAN DEPOSITS
			0.4									
			0.6		0.6-0.8/S/1 D 0.60-0.80 m							
			0.8							M		
	L											
			1.0	*1.00* 3.49					Orange brown.			
			1.2									
			1.4									
				1.50					Hole Terminated at 1.50 m			
			1.6									
			1.8									

EXCAVATION LOG TO BE READ IN CONJUCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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Engineering Log - BOREHOLE

CLIENT	SINSW C/- Fulton Trotter Architects		COMMENCED	06/07/2022	COMPLETED	06/07/2022	**REF BH205**
PROJECT	Contamination and Waste classification Assessment		LOGGED	MZ	CHECKED	JF / BM	Sheet 1 OF 1
SITE	Cronulla High School		GEOLOGY	Quaternary	VEGETATION	Grass	PROJECT NO. P2108205
EQUIPMENT		Hand Auger	LONGITUDE	151.157289	RL SURFACE	5.65 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 1.50 m depth	LATITUDE	-34.039779	ASPECT	South	SLOPE <2-5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
				5.65				SP	FILL: SAND; fine grain; dark grey to dark brown; trace rootlets and gravels.			FILL
			0.2									
					0.3-0.5/S/1 D 0.30-0.50 m							
			0.4									
				0.60								
HA	L		0.6	5.05				SP	SAND; fine grain; pale grey to light brown.	M		MARINE DEPOSITS / AEOLIAN DEPOSITS
			0.8		0.8-1.0/S/1 D 0.80-1.00 m							
			1.0									
			1.2									
			1.4									
				1.50					Hole Terminated at 1.50 m			
			1.6									
			1.8									

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Engineering Log - BOREHOLE

CLIENT	SINSW C/- Fulton Trotter Architects		COMMENCED	06/07/2022	COMPLETED	06/07/2022	**REF BH206**
PROJECT	Contamination and Waste classification Assessment		LOGGED	MZ	CHECKED	JF / BM	Sheet 1 OF 1
SITE	Cronulla High School		GEOLOGY	Quaternary	VEGETATION	Grass	PROJECT NO. P2108205
EQUIPMENT		Hand Auger	LONGITUDE	151.157185	RL SURFACE	5.05 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 1.50 m depth	LATITUDE	-34.034934	ASPECT	South	SLOPE <2-5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
				5.05				SP	FILL: SAND; fine grain; dark grey to dark brown; trace rootlets and gravels.			FILL
			0.2		0.2-0.5/S/1 D 0.20-0.50 m							
			0.4									
				0.60								
HA	L		0.6	4.45				SP	SAND; fine grain; pale grey to light brown.	M		MARINE DEPOSITS / AEOLIAN DEPOSITS
			0.8									
			1.0		1.0-1.2/S/1 D 1.00-1.20 m							
			1.2									
			1.4									
				1.50					Hole Terminated at 1.50 m			
			1.6									
			1.8									

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Engineering Log - BOREHOLE

CLIENT	NSW Department of Education c/- SINSW		COMMENCED	22/05/2021	COMPLETED	22/05/2021	**REF BH101**
PROJECT	Geotechnical and Contamination Assessment		LOGGED	AG	CHECKED	KB	Sheet 1 OF 1
SITE	Cronulla High School		GEOLOGY	Quaternary Deposits	VEGETATION	None	PROJECT NO. 2108205
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE	151.15831	RL SURFACE	5.32 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 10.00 m depth	LATITUDE	-34.0392	ASPECT	Southeast	SLOPE < 5 %

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	H			5.22	0.1-0.2/S/1 D 0.10 m			SP	ASPHALT PAVEMENT			PAVEMENT
					0.5-0.6/S/1 D 0.50 m				SAND; fine to medium grained; brown, pale brown; trace silt; trace gravel.	M		MARINE DEPOSITS / AEOLIAN DEPOSITS
			1		1.0-1.1/S/1 D 1.00 m							
				1.20 4.12	1.3-1.4/S/1 D 1.30 m				becoming brown at 1.2 m.			
					1.5-1.6/S/1 D 1.50 m							
			2		2.0-2.1/S/ D 2.00 m					D		
					2.5-2.6/S/1 D 2.50 m						L	
			3									
			4		4.0-4.1/S/1 D 4.00 m					M		
AD/V	L	22/05/21	5								MD	
					5.5-5.6/S/1 D 5.50 m							
			6									6.55: DCP Terminated
			7		7.0-7.1/S/1 D 7.00 m					W		
			8									
			9									
			10	10.00					Hole Terminated at 10.00 m (Target depth reached)			

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Engineering Log - BOREHOLE

CLIENT	NSW Department of Education c/- SINSW	COMMENCED	22/05/2021	COMPLETED	22/05/2021	**REF BH102**
PROJECT	Geotechnical and Contamination Assessment	LOGGED	AG	CHECKED	KB	Sheet 1 OF 1
SITE	Cronulla High School	GEOLOGY	Quaternary Deposits	VEGETATION	None	PROJECT NO. 2108205
EQUIPMENT	4WD truck-mounted hydraulic drill rig	LONGITUDE	151.1574	RL SURFACE	5.4 m	DATUM AHD
EXCAVATION DIMENSIONS	Ø100 mm x 10.00 m depth	LATITUDE	-34.03946	ASPECT	North	SLOPE < 5 %

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	H			5.30	0.1-0.2/S/1 D 0.10 m			SP	CONCRETE PAVEMENT			PAVEMENT
	M			***0.40***					Gravelly SAND; fine to medium grained; grey, dark grey			FILL
				5.00	0.5-0.6/S/1 D 0.50 m			SP	SAND; fine to medium grained; pale grey, pale brown			MARINE DEPOSITS / AEOLIAN DEPOSITS
			1		1.0-1.1/S/1 D 1.00 m					D	D	
				1.40								
				4.00	1.4-1.5/S/1 D 1.40 m				becoming brown, pale brown at 1.4 m.			
					1.5-1.6/S/1 D 1.50 m						MD	
			2		2.0-2.1/S/ D 2.00 m							
					2.3-2.4/S/1 D 2.30 m							
					2.5-2.6/S/1 D 2.50 m						L	
			3							M		
			4		4.0-4.1/S/2 D 4.00 m							
AD/V	L	22/05/21	5								MD	
					5.5-5.6/S/2 D 5.50 m							
			6									6.20: DCP Terminated
			7							W		
			8									
			9									
			10	*10.00*					Hole Terminated at 10.00 m (Target depth reached)			

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CLIENT	NSW Department of Education c/- SINSW	COMMENCED	22/05/2021	COMPLETED	22/05/2021	**REF BH103**
PROJECT	Geotechnical and Contamination Assessment	LOGGED	AG	CHECKED	KB	Sheet 1 OF 1
SITE	Cronulla High School	GEOLOGY	Quaternary Deposits	VEGETATION	None	PROJECT NO. 2108205
EQUIPMENT	4WD truck-mounted hydraulic drill rig	LONGITUDE	151.15748	RL SURFACE	5.12 m	DATUM AHD
EXCAVATION DIMENSIONS	Ø100 mm x 10.00 m depth	LATITUDE	-34.03918	ASPECT	West	SLOPE < 5 %

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
				5.12	0.1-0.2/S/1 D 0.10 m			SM	FILL: Silty SAND; fine to medium grained; dark grey, dark brown; trace gravels.			FILL
					0.5-0.6/S/1 D 0.50 m							
			1		1.0-1.1/S/1 D 1.00 m							
				1.20								
				3.92				SP	SAND; fine to medium grained; pale grey, grey, brown.		L	MARINE DEPOSITS / AEOLIAN DEPOSITS
					1.5-1.6/S/1 D 1.50 m							
				1.90								
			2	3.22	2.0-2.1/S/ D 2.00 m				becoming predominantly brown, pale brown at 1.9 m.			
					2.4-2.5/S/1 D 2.40 m					M		
					2.5-2.6/S/1 D 2.50 m							
			3								MD	
		22/05/21	4		4.0-4.1/S/2 D 4.00 m							
AD/V	L											
			5									5.30: DCP Terminated
					5.5-5.6/S/2 D 5.50 m							
			6									
					6.5-6.6/S/1 D 6.50 m							
			7							W		
			8		8.1-8.2/S/1 D 8.00 m							
			9									
			10	*10.00*					Hole Terminated at 10.00 m (Target depth reached)			

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CLIENT	NSW Department of Education c/- SINSW	COMMENCED	22/05/2021	COMPLETED	22/05/2021	**REF BH104**
PROJECT	Geotechnical and Contamination Assessment	LOGGED	AG	CHECKED	KB	Sheet 1 OF 1
SITE	Cronulla High School	GEOLOGY	Quaternary Deposits	VEGETATION	None	PROJECT NO. 2108205
EQUIPMENT	4WD truck-mounted hydraulic drill rig	LONGITUDE	151.15745	RL SURFACE	5.43 m	DATUM AHD
EXCAVATION DIMENSIONS	Ø100 mm x 7.00 m depth	LATITUDE	-34.0392	ASPECT	Northwest	SLOPE < 5 %

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/V	L	22/05/21	0	5.43	0.1-0.2/S/2 D 0.10 m			SM	FILL: Silty SAND; fine to medium grained; dark grey, black, grey; trace brick and gravel pieces.			FILL
			1		1.0-1.1/S/2 D 1.00 m							
				1.20 4.23				SP	SAND; medium grained; brown, pale brown.		L	MARINE DEPOSITS / AEOLIAN DEPOSITS
					1.5-1.6/S/2 D 1.50 m							
			2		2.0-2.1/S/2 D 2.00 m					M	L - MD	
					2.5-2.6/S/2 D 2.50 m							
			3									
					3.5-3.7/S/2 D 3.50 m						L	
			4		4.0-4.1/S/2 D 4.00 m							
			5								MD	
					5.5-5.6/S/2 D 5.50 m					W		5.50: DCP Terminated
			6									
			7	*7.00*					Hole Terminated at 7.00 m (Target depth reached)			

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CLIENT	NSW Department of Education c/- SINSW	COMMENCED	23/05/2021	COMPLETED	23/05/2021	**REF BH105**
PROJECT	Geotechnical and Contamination Assessment	LOGGED	AG	CHECKED	KB	Sheet 1 OF 1
SITE	Cronulla High School	GEOLOGY	Quaternary Deposits	VEGETATION	None	PROJECT NO. 2108205
EQUIPMENT	4WD truck-mounted hydraulic drill rig	LONGITUDE	151.1573	RL SURFACE	5.2 m	DATUM AHD
EXCAVATION DIMENSIONS	Ø100 mm x 7.00 m depth	LATITUDE	-34.03931	ASPECT	Southwest	SLOPE < 5 %

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/V	L	23/05/21	0	5.20	0.1-0.2/S/2 D 0.10 m			SP	FILL; SAND; fine to medium grained; dark grey, black; trace gravel; trace silt.			FILL
					0.5-0.6/S/2 D 0.50 m							
			1		1.0-1.1/S/2 D 1.00 m							
				1.30								
				3.90				SP	SAND; fine to medium grained; pale grey.			MARINE DEPOSITS / AEOLIAN DEPOSITS
					1.5-1.6/S/2 D 1.50 m							
			2	*2.00*								
				3.20	2.0-2.1/S/2 D 2.00 m				becoming brown at 2.0 m.	M	L - MD	
					2.5-2.6/S/2 D 2.50 m							
			3									
			4		4.0-4.1/S/2 D 4.00 m							
			5								MD	
					5.5-5.6/S/2 D 5.50 m					W		
			6	*6.00*								
				-0.80					becoming grey, pale grey at 6.0 m.			
					6.5-6.7/S/1 D 6.50 m							
			7	*7.00*								
									Hole Terminated at 7.00 m (Target depth reached)			

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CLIENT	NSW Department of Education c/- SINSW		COMMENCED	23/05/2021	COMPLETED	23/05/2021	**REF BH106**
PROJECT	Geotechnical and Contamination Assessment		LOGGED	AG	CHECKED	KB	Sheet 1 OF 1
SITE	Cronulla High School		GEOLOGY	Quaternary Deposits	VEGETATION	None	PROJECT NO. 2108205
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE	151.1584	RL SURFACE	5.29 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 7.00 m depth	LATITUDE	-34.0388	ASPECT	South	SLOPE < 5 %

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
				0.10 5.19	0.1-0.2/S/2 D 0.10 m			SP	CONCRETE PAVEMENT SAND; fine to medium grained; dark grey.			PAVEMENT MARINE DEPOSITS / AEOLIAN DEPOSITS
				0.50 4.79	0.5-0.6/S/2 D 0.50 m				becoming pale grey at 0.5 m		L MD - D	
			1	1.00 4.29	1.0-1.1/S/2 D 1.00 m				becoming brown, dark brown at 1.0 m	M	MD	
		23/05/21			1.5-1.6/S/2 D 1.50 m						L	
			2		2.0-2.1/S/2 D 2.00 m							
				2.40 2.89	2.5-2.6/S/2 D 2.50 m				becoming brown, pale brown at 2.4 m			
AD/V	L		3								MD	
			4		4.0-4.1/S/2 D 4.00 m					W		4.50: DCP Terminated
			5		5.5-5.6/S/2 D 5.50 m							
			6									
			7	7.00					Hole Terminated at 7.00 m (Target depth reached)			

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CLIENT	NSW Department of Education c/- SINSW	COMMENCED	23/05/2021	COMPLETED	23/05/2021	**REF BH107**
PROJECT	Geotechnical and Contamination Assessment	LOGGED	AG	CHECKED	KB	Sheet 1 OF 1
SITE	Cronulla High School	GEOLOGY	Quaternary Deposits	VEGETATION	None	PROJECT NO. 2108205
EQUIPMENT	4WD truck-mounted hydraulic drill rig	LONGITUDE	151.15818	RL SURFACE	5.29 m	DATUM AHD
EXCAVATION DIMENSIONS	Ø100 mm x 7.00 m depth	LATITUDE	-34.03905	ASPECT	North	SLOPE < 5 %

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	H			*0.10*					CONCRETE PAVEMENT			PAVEMENT
				5.19	0.1-0.2/S/2 D 0.10 m			SP	SAND; fine to medium grained; pale grey.		L	MARINE DEPOSITS / AEOLIAN DEPOSITS
					0.5-0.6/S/2 D 0.50 m						MD - D	
			1	*1.10*	1.0-1.1/S/2 D 1.00 m							
				4.19					becoming pale brown at 1.1 m.			
				1.40								
				3.89					becoming brown, dark brown at 1.4 m.			
					1.5-1.6/S/2 D 1.50 m					M		
			2		2.0-2.1/S/2 D 2.00 m						L - MD	
					2.5-2.6/S/2 D 2.50 m							
AD/V	L	23/05/21	3									
			4		4.0-4.1/S/2 D 4.00 m						MD	
					4.7-4.9/S/2 D 4.70 m							
			5							W		5.15: DCP Terminated
					5.5-5.6/S/2 D 5.50 m							
			6									
			7	*7.00*					Hole Terminated at 7.00 m (Target depth reached)			

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CLIENT	NSW Department of Education c/- SINSW	COMMENCED	23/05/2021	COMPLETED	23/05/2021	**REF BH108**
PROJECT	Geotechnical and Contamination Assessment	LOGGED	AG	CHECKED	KB	Sheet 1 OF 1
SITE	Cronulla High School	GEOLOGY	Quaternary Deposits	VEGETATION	Grass	PROJECT NO. 2108205
EQUIPMENT	4WD truck-mounted hydraulic drill rig	LONGITUDE	151.1573	RL SURFACE	2.41 m	DATUM AHD
EXCAVATION DIMENSIONS	Ø100 mm x 4.20 m depth	LATITUDE	-34.0392	ASPECT	Southwest	SLOPE < 5 %

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
				2.41								
HA	M				0.1-0.2/S/2 D 0.10 m			SM	Silty SAND; fine to medium grained; dark grey.		L	TOPSOIL
				0.30								
				2.11				SP	SAND; fine to medium grained; grey, pale grey; trace silt.			MARINE DEPOSITS / AEOLIAN DEPOSITS
					0.5-0.6/S/2 D 0.50 m					M		
			1		1.0-1.1/S/2 D 1.00 m							
AD/V	L	23/05/21			1.5-1.6/S/2 D 1.50 m						MD	
				1.80								
				0.61					becoming dark brown, dark grey with silt at 1.8 m.			
			2		2.0-2.1/S/2 D 2.00 m							
					2.5-2.6/S/2 D 2.50 m					W		
			3									3.05: DCP Terminated
			4		4.0-4.1/S/2 D 4.00 m							
				4.20								
									Hole Terminated at 4.20 m (Target depth reached)			
			5									

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CLIENT	NSW Department of Education c/- SINSW		COMMENCED	23/05/2021	COMPLETED	23/05/2021	**REF BH109**
PROJECT	Geotechnical and Contamination Assessment		LOGGED	AG	CHECKED	KB	Sheet 1 OF 1
SITE	Cronulla High School		GEOLOGY	Quaternary Deposits	VEGETATION	Grass	PROJECT NO. 2108205
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE	151.1571	RL SURFACE	2.83 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 2.60 m depth	LATITUDE	-34.03943	ASPECT	North	SLOPE < 5 %

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
				2.83				SM	FILL; Silty SAND; fine to medium grained; dark grey, brown; trace roots, trace iron nails, trace concrete boulders; trace gravel.			FILL
HA	M				0.1-0.2/S/2 D 0.10 m 0.2-0.7/CBR/1 D 0.20 m							
			0.5		0.5-0.6/S/2 D 0.50 m					M		
			1.0		1.0-1.1/S/2 D 1.00 m							
				1.10								
				1.73				SP	SAND; fine to medium grained; brown; pale brown.			MARINE DEPOSITS / AEOLIAN DEPOSITS
			1.5		1.5-1.6/S/2 D 1.50 m						MD	
AD/V	L											
		23/05/21	2.0		2.0-2.1/S/2 D 2.00 m					W	L	
			2.5		2.5-2.6/S/2 D 2.50 m						MD	
				2.60					Hole Terminated at 2.60 m (Target depth reached)			
			3.0									
			3.5									
			4.0									
			4.5									

EXCAVATION LOG TO BE READ IN CONJUCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

martens

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Engineering Log - BOREHOLE

CLIENT	NSW Department of Education c/- SINSW	COMMENCED	23/05/2021	COMPLETED	23/05/2021	**REF BH110**	
PROJECT	Geotechnical and Contamination Assessment	LOGGED	AG	CHECKED	KB	Sheet 1 OF 1	
SITE	Cronulla High School	GEOLOGY	Quaternary Deposits	VEGETATION	Grass	PROJECT NO. 2108205	
EQUIPMENT	4WD truck-mounted hydraulic drill rig	LONGITUDE	151.15702	RL SURFACE	5.2 m	DATUM	AHD
EXCAVATION DIMENSIONS	Ø100 mm x 4.20 m depth	LATITUDE	-34.03955	ASPECT	West	SLOPE	< 5 %

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	*DEPTH* RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/V	L	Not Encountered	1	5.20	0.1-0.2/S/2 D 0.10 m				FILL; SAND; fine to medium grained; dark grey, dark brown; trace metal wire; trace gravel; trace glass pieces; with roots.	M		FILL
					0.5-0.6/S/2 D 0.50 m							
					1.0-1.1/S/2 D 1.00 m 1.0-1.5/CBR/1 D 1.00 m							
					1.5-1.6/S/2 D 1.50 m							
			2		2.0-2.1/S/2 D 2.00 m							
					2.5-2.6/S/2 D 2.50 m							
			3		3.0-3.2/S/2 D 3.00 m							
				3.70								
				1.50				SP	SAND; fine to medium grained; pale brown; inferred low to medium dense.	W	L - MD	MARINE DEPOSITS / AEOLIAN DEPOSITS
			4		4.0-4.1/S/1 D 4.00 m							
				4.20					Hole Terminated at 4.20 m (Target depth reached)			
			5									

EXCAVATION LOG TO BE READ IN CONJUCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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Engineering Log - BOREHOLE

Attachment D: Laboratory Summary Tables

martens

Site Contamination Assessment - Soil Results
Cronulla High School, Captain Cook Drive, Cronulla, NSW

P2108205
NSW Department of Education

	BTEX						TRH							Halogenated Benzenes	Metals								PAH																PCBs								
	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Hexachlorobenzene	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g, h, i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1, 2, 3-c, d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.2	0.5	1	2	1	3	25	25	50	50	100	100	50	0.1	4	0.4	1	1	1	0.1	1	1	0.2	0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil							700		1,000		2,500	10,000																																				
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																																																
0-1m	0.5	160	55			40		45		110																									3													
2-4m	0.5	310				95		110		440																																						
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space															100		410	160	1100		90	400													170													
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																																																
0-2m	50	85	70			105		180	120	120	300	2,800																0.7																				
NEPM 2013 Table 1A(1) HILs Rec C Soil														10	300	90		17,000	600	80	1200	30000																3	3	3								1
Field ID																																																
8205/BH102/0.1-0.2m	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	5	41	1	<0.1	40	23	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH103/0.5-0.6m	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	1	6	7	<0.1	2	15	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH104/0.1-0.2m	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	3	6	7	<0.1	3	15	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH105/0.1-0.2m	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	4	7	11	<0.1	3	29	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH106/0.1-0.2m	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	2	10	2	<0.1	1	8	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH107/0.1-0.2m	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	<1	<1	<1	<0.1	<1	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH108/0.1-0.2m	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	2	4	16	<0.1	2	33	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH109/0.5-0.6m	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	2	2	5	<0.1	2	15	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH110/0.1-0.2m	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	3	15	12	<0.1	16	22	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH110/2.0-2.1m	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	2	3	8	<0.1	2	13	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Statistics																																																
Number of Results	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	10	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	1	<1	1	<0.1	1	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	2	1	ND	1	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.2	<0.5	<1	<2	<1	<3	<25	<25	<50	<50	<100	<100	<50	<0.1	<4	<0.4	5	41	16	<0.1	40	33	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	41	16	ND	40	33	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.1	0.25	0.5	1	0.5	1.5	12	12	25	25	50	50	25	0.05	2	0.2	2.4	8.9	7	0.05	6.6	17	0.1	0.05	0.05	0.05	0.05	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.091	0.05	0.05	0.25	0.25	0.25	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Median Concentration *	0.1	0.25	0.5	1	0.5	1.5	12.5	12.5	25	25	50	50	25	0.05	2	0.2	2	6	7	0.05	2	15	0.1	0.05	0.05	0.05	0.05	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.25	0.25	0.25	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3	11	4.8	0	12	9.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0.14	0	0	0	0	0	0	0	0	0	0	0	0	0
95% UCL (Student's-t) *	0.1	0.25	0.5	1	0.5	1.5	12.5	12.5	25	25	50	50	25	0.05	2	0.2	3.109	15.1	9.673	0.05	13.09	22.42	0.1	0.05	0.05	0.05	0.05	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.165	0.05	0.05	0.25	0.25	0.25	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91	91	91	0	91	91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	9	9	9	100	9	9	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

	Organochlorine Pesticides														Organophosphorous Pesticides																																	
	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Ronnel																
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg																
EQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1																
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space									180																																						
NEPM 2013 Table 1A(1) HILs Res A Soil										400					20			10		400			250																										
Field ID																																															
8205/BH102/0.1-0.2m	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
8205/BH103/0.5-0.6m	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
8205/BH104/0.1-0.2m	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
8205/BH105/0.1-0.2m	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
8205/BH106/0.1-0.2m	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
8205/BH107/0.1-0.2m	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
8205/BH108/0.1-0.2m	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
8205/BH109/0.5-0.6m	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
8205/BH110/0.1-0.2m	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
8205/BH110/2.0-2.1m	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
Statistics																																															
Number of Results	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10																
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
Minimum Concentration	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND																
Maximum Concentration	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1																
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND																
Average Concentration *	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05																
Median Concentration *	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05																
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
95% UCL (Student's-t) *	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05																
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100																

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res A Soil

	Asbestos	NA	Metals								Organochlorine Pesticides																		Organophosphorous Pesticides									
	Asbestos fibres	Coal Tar	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Azinophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Bromel
	Detect	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			4	0.4	1	1	1	0.1	1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																																										
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																																										
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space			100																180																								
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																																										
NEPM 2013 Table 1A(1) HILs Rec C Soil			300	90		17,000	600	80	1,200	30,000										400					20			10		400			250									
Field ID	**Date**																																										
B205/BH201/0-0.05	**6/07/2022**	0	0																																								
B205/BH201/0.2-0.3	**6/07/2022**	0		<4	<0.4	7	64	2	<0.1	52	27	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B205/BH202/0-0.05	**6/07/2022**	0	0																																								
B205/BH202/0.2-0.3	**6/07/2022**	0		<4	<0.4	<1	<1	<1	<0.1	<1	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B205/BH203/0-0.05	**6/07/2022**	0	0																																								
B205/BH203/0.2-0.3	**6/07/2022**	0		<4	<0.4	8	24	26	<0.1	32	52	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B205/BH204/0-0.05	**6/07/2022**	0	0																																								
B205/BH204/0.2-0.3	**6/07/2022**	0		<4	<0.4	80	30	5	<0.1	75	40	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B205/BH205/0.3-0.5	**6/07/2022**	0		<4	<0.4	7	28	25	<0.1	3	260	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B205/BH205/0.8-1.0	**6/07/2022**	0		<4	<0.4	<1	1	1	<0.1	<1	7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
B205/BH206/0.2-0.5	**6/07/2022**	0		<4	<0.4	6	17	19	<0.1	5	66	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Statistics																																										
Number of Results		**11**	**4**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
Number of Detects		**11**	**4**	**0**	**0**	**5**	**6**	**6**	**0**	**5**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration		**0**	**0**	**<4**	**<0.4**	**<1**	**1**	**1**	**<0.1**	**<1**	**1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
Minimum Detect		**0**	**0**	**ND**	**ND**	**6**	**1**	**1**	**ND**	**3**	**1**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Maximum Concentration		**0**	**0**	**<4**	**<0.4**	**80**	**64**	**26**	**<0.1**	**75**	**260**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
Maximum Detect		**0**	**0**	**ND**	**ND**	**80**	**64**	**26**	**ND**	**75**	**260**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Average Concentration *		**0**	**0**	**2**	**0.2**	**16**	**24**	**11**	**0.05**	**24**	**65**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**
Median Concentration *		**0**	**0**	**2**	**0.2**	**7**	**24**	**5**	**0.05**	**5**	**40**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**
Standard Deviation *		**0**	**0**	**0**	**0**	**29**	**22**	**12**	**0**	**30**	**89**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
95% UCL (Student's-t) *		**0**	**0**	**2**	**0.2**	**36.56**	**39.31**	**19.76**	**0.05**	**45.94**	**130.2**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**
% of Detects		**100**	**100**	**0**	**0**	**71**	**86**	**86**	**0**	**71**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Non-Detects		**0**	**0**	**100**	**100**	**29**	**14**	**14**	**100**	**29**	**0**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Rec C Soil

	BTEX							TRH							PAH																				
	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	>C6-C10 Fraction (F1)	>C6-C10 Fraction minus (BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	1	0.2	0.5	1	2	1	1	25	25	50	50	100	100	50	0.2	0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.05
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil								700		1,000		2,500	10,000																					
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour In	3	0.5 | 0.5 | 0.5	160 | 220 | 310 | 540	55			40 | 60 | 95 | 170		45 | 70 | 110 | 200		110 | 240 | 440														3						
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Pub	170																										170						
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil		50	85	70			105		180	120	120	300	2,800							0.7													
NEPM 2013 Table 1A(1) HILs Rec C Soil																														3	3	3	
Field ID	**Date**																																	
8205/BH201/0.2-0.3	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05
8205/BH202/0.2-0.3	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05
8205/BH203/0.2-0.3	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<25	<25	<50	<50	<100	140	140	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05
8205/BH204/0.2-0.3	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.5	<0.5	<0.5	0.4
8205/BH205/0.3-0.5	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05
8205/BH205/0.8-1.0	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05
8205/BH206/0.2-0.5	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05
Statistics																																		
Number of Results		**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
Number of Detects		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**
Minimum Concentration		**<1**	**<0.2**	**<0.5**	**<1**	**<2**	**<1**	**<1**	**<25**	**<25**	**<50**	**<50**	**<100**	**<100**	**<50**	**<0.2**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.05**	**0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**0.1**	**<0.1**	**<0.1**	**<0.5**	**<0.5**	**<0.5**	**<0.05**
Minimum Detect		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**140**	**140**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.1**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.1**	**0.2**	**ND**	**ND**	**ND**	**ND**	**0.4**
Maximum Concentration		**<1**	**<0.2**	**<0.5**	**<1**	**<2**	**<1**	**<1**	**<25**	**<25**	**<50**	**<50**	**<100**	**140**	**140**	**<0.2**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.05**	**0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**0.1**	**0.2**	**<0.1**	**<0.5**	**<0.5**	**<0.5**	**0.4**
Maximum Detect		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**140**	**140**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.1**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.1**	**0.2**	**ND**	**ND**	**ND**	**ND**	**0.4**
Average Concentration *		**0.5**	**0.1**	**0.25**	**0.5**	**1**	**0.5**	**0.5**	**12**	**12**	**25**	**25**	**50**	**63**	**41**	**0.1**	**0.05**	**0.05**	**0.05**	**0.05**	**0.025**	**0.057**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.057**	**0.071**	**0.05**	**0.25**	**0.25**	**0.25**	**0.079**
Median Concentration *		**0.5**	**0.1**	**0.25**	**0.5**	**1**	**0.5**	**0.5**	**12.5**	**12.5**	**25**	**25**	**50**	**50**	**25**	**0.1**	**0.05**	**0.05**	**0.05**	**0.05**	**0.025**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.25**	**0.25**	**0.25**	**0.025**
Standard Deviation *		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**34**	**43**	**0**	**0**	**0**	**0**	**0**	**0**	**0.019**	**0**	**0**	**0**	**0**	**0**	**0.019**	**0.057**	**0**	**0**	**0**	**0**	**0.14**
95% UCL (Student's-t) *		**0.5**	**0.1**	**0.25**	**0.5**	**1**	**0.5**	**0.5**	**12.5**	**12.5**	**25**	**25**	**50**	**87.84**	**73.35**	**0.1**	**0.05**	**0.05**	**0.05**	**0.05**	**0.025**	**0.071**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.071**	**0.113**	**0.05**	**0.25**	**0.25**	**0.25**	**0.183**
% of Detects		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**14**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**14**	**14**	**0**	**0**	**0**	**0**	**14**
% of Non-Detects		**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**86**	**86**	**100**	**100**	**100**	**100**	**100**	**100**	**86**	**100**	**100**	**100**	**100**	**100**	**86**	**86**	**100**	**100**	**100**	**100**	**86**

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Rec C Soil

Metals

Field ID	Date	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		4	0.4	1	1	1	0.1	1	1
NSW 2014 General Solid Waste CT1 (No Leaching)		100	20			100	4	40	
NSW 2014 General Solid Waste SCC1 (with leached)		500	100			1,500	50	1,050	
NSW 2014 Restricted Solid Waste CT2 (No Leaching)		400	80			400	16	160	
NSW 2014 Restricted Solid Waste SCC2 (with leached)		2,000	400			6,000	200	4,200	
8205/BH102/0.1-0.2m	22/05/2021	<4	<0.4	5	41	1	<0.1	40	23
8205/BH103/0.5-0.6m	22/05/2021	<4	<0.4	1	6	7	<0.1	2	15
8205/BH104/0.1-0.2m	22/05/2021	<4	<0.4	3	6	7	<0.1	3	15
8205/BH105/0.1-0.2m	22/05/2021	<4	<0.4	4	7	11	<0.1	3	29
8205/BH106/0.1-0.2m	22/05/2021	<4	<0.4	2	10	2	<0.1	1	8
8205/BH107/0.1-0.2m	22/05/2021	<4	<0.4	<1	<1	<1	<0.1	<1	<1
8205/BH108/0.1-0.2m	22/05/2021	<4	<0.4	2	4	16	<0.1	2	33
8205/BH109/0.5-0.6m	22/05/2021	<4	<0.4	2	2	5	<0.1	2	15
8205/BH110/0.1-0.2m	22/05/2021	<4	<0.4	3	15	12	<0.1	16	22
8205/BH110/2.0-2.1m	22/05/2021	<4	<0.4	2	3	8	<0.1	2	13
8205/BH201/0.2-0.3	6/07/2022	<4	<0.4	7	64	2	<0.1	52	27
8205/BH202/0.2-0.3	6/07/2022	<4	<0.4	<1	<1	<1	<0.1	<1	1
8205/BH203/0.2-0.3	6/07/2022	<4	<0.4	8	24	26	<0.1	32	52
8205/BH204/0.2-0.3	6/07/2022	<4	<0.4	80	30	5	<0.1	75	40
8205/BH205/0.3-0.5	6/07/2022	<4	<0.4	7	28	25	<0.1	3	260
8205/BH205/0.8-1.0	6/07/2022	<4	<0.4	<1	1	1	<0.1	<1	7
8205/BH206/0.2-0.5	6/07/2022	<4	<0.4	6	17	19	<0.1	5	66
Statistics									
Number of Results		17	17	17	17	17	17	17	17
Number of Detects		0	0	14	15	15	0	14	16
Minimum Concentration		<4	<0.4	1	1	1	<0.1	1	1
Minimum Detect		ND	ND	1	1	1	ND	1	1
Maximum Concentration		<4	<0.4	80	64	26	<0.1	75	260
Maximum Detect		ND	ND	80	64	26	ND	75	260
Average Concentration *		2	0.2	7.9	15	8.7	0.05	14	37
Median Concentration *		2	0.2	3	7	7	0.05	3	22
Standard Deviation *		0	0	19	17	8.4	0	22	60
95% UCL (Student's-t) *		2	0.2	15.79	22.61	12.24	0.05	23.5	62.3
% of Detects		0	0	82	88	88	0	82	94
% of Non-Detects		100	100	18	12	12	100	18	6

Organochlorine Pesticides

Field ID	Date	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NSW 2014 General Solid Waste CT1 (No Leaching)																					
NSW 2014 General Solid Waste SCC1 (with leached)																					
NSW 2014 Restricted Solid Waste CT2 (No Leaching)																					
NSW 2014 Restricted Solid Waste SCC2 (with leached)																					
8205/BH102/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH103/0.5-0.6m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH104/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH105/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH106/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH107/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH108/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH109/0.5-0.6m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH110/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH110/2.0-2.1m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH201/0.2-0.3	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH202/0.2-0.3	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH203/0.2-0.3	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH204/0.2-0.3	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH205/0.3-0.5	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH205/0.8-1.0	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH206/0.2-0.5	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Statistics																					
Number of Results		17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Number of Detects		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Minimum Detect		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Maximum Detect		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Median Concentration *		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Standard Deviation *		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95% UCL (Student's-t) *		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
% of Detects		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Organophosphorous Pesticides

Field ID	Date	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Ronnel
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NSW 2014 General Solid Waste CT1 (No Leaching)				4								
NSW 2014 General Solid Waste SCC1 (with leached)				7.5								
NSW 2014 Restricted Solid Waste CT2 (No Leaching)				16								
NSW 2014 Restricted Solid Waste SCC2 (with leached)				30								
8205/BH102/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH103/0.5-0.6m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH104/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH105/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH106/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH107/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH108/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH109/0.5-0.6m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH110/0.1-0.2m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH110/2.0-2.1m	22/05/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH201/0.2-0.3	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH202/0.2-0.3	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH203/0.2-0.3	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH204/0.2-0.3	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH205/0.3-0.5	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH205/0.8-1.0	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8205/BH206/0.2-0.5	6/07/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Statistics												
Number of Results		17	17	17	17	17	17	17	17	17	17	17
Number of Detects		0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Minimum Detect		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Maximum Detect		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Median Concentration *		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Standard Deviation *		0	0	0	0	0	0	0	0	0	0	0
95% UCL (Student's-t) *		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
% of Detects		0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects		100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NSW EPA, November 2014, NSW 2014 General Solid Waste CT1 (No Leaching)
NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste CT2 (No Leaching)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste SCC2 (with leached)

		BTEX							PAH																	TPH				
		Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		1	0.2	0.5	1	2	1	1	0.2	0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.05	25	50	100	100	50
NSW 2014 General Solid Waste CT1 (No Leaching)			10	288	600			1,000						0.8														650				10,000
NSW 2014 General Solid Waste SCC1 (with leached)			18	518	1,080			1,800						10														650				10,000
NSW 2014 Restricted Solid Waste CT2 (No Leaching)			40	1,152	2,400			4,000						3.2														2,600				40,000
NSW 2014 Restricted Solid Waste SCC2 (with leached)			72	2,073	4,320			7,200						23														2,600				40,000
Field ID	**Date**																															
8205/BH102/0.1-0.2m	**22/05/2021**	<1	<0.2	<0.5	<1	<2	<1	<3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	
8205/BH103/0.5-0.6m	**22/05/2021**	<1	<0.2	<0.5	<1	<2	<1	<3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	
8205/BH104/0.1-0.2m	**22/05/2021**	<1	<0.2	<0.5	<1	<2	<1	<3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	
8205/BH105/0.1-0.2m	**22/05/2021**	<1	<0.2	<0.5	<1	<2	<1	<3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	
8205/BH106/0.1-0.2m	**22/05/2021**	<1	<0.2	<0.5	<1	<2	<1	<3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	
8205/BH107/0.1-0.2m	**22/05/2021**	<1	<0.2	<0.5	<1	<2	<1	<3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	
8205/BH108/0.1-0.2m	**22/05/2021**	<1	<0.2	<0.5	<1	<2	<1	<3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	
8205/BH109/0.5-0.6m	**22/05/2021**	<1	<0.2	<0.5	<1	<2	<1	<3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	
8205/BH110/0.1-0.2m	**22/05/2021**	<1	<0.2	<0.5	<1	<2	<1	<3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	
8205/BH110/2.0-2.1m	**22/05/2021**	<1	<0.2	<0.5	<1	<2	<1	<3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	
8205/BH201/0.2-0.3	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	<50
8205/BH202/0.2-0.3	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	<50
8205/BH203/0.2-0.3	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	<50
8205/BH204/0.2-0.3	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.5	<0.5	<0.5	0.4	<25	<50	<100	<100	<50
8205/BH205/0.3-0.5	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	<50
8205/BH205/0.8-1.0	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	<50
8205/BH206/0.2-0.5	**6/07/2022**	<1	<0.2	<0.5	<1	<2	<1	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<25	<50	<100	<100	<50
Statistics																																
Number of Results		**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**7**
Number of Detects		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration		**<1**	**<0.2**	**<0.5**	**<1**	**<2**	**<1**	**<1**	**<0.2**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.05**	**0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**0.1**	**<0.1**	**<0.1**	**<0.5**	**<0.5**	**<0.5**	**<0.05**	**<25**	**<50**	**<100**	**<100**	**<50**
Minimum Detect		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.1**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.1**	**0.2**	**ND**	**ND**	**ND**	**ND**	**0.4**	**ND**	**ND**	**ND**	**ND**	**ND**
Maximum Concentration		**<1**	**<0.2**	**<0.5**	**<1**	**<2**	**<1**	**<3**	**<0.2**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.05**	**0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**0.1**	**0.2**	**<0.1**	**<0.5**	**<0.5**	**<0.5**	**0.4**	**<25**	**<50**	**<100**	**<100**	**<50**
Maximum Detect		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.1**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.1**	**0.2**	**ND**	**ND**	**ND**	**ND**	**0.4**	**ND**	**ND**	**ND**	**ND**	**ND**
Average Concentration *		**0.5**	**0.1**	**0.25**	**0.5**	**1**	**0.5**	**1.1**	**0.1**	**0.05**	**0.05**	**0.05**	**0.05**	**0.025**	**0.053**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.053**	**0.059**	**0.05**	**0.25**	**0.25**	**0.25**	**0.047**	**12**	**25**	**50**	**50**	**25**
Median Concentration *		**0.5**	**0.1**	**0.25**	**0.5**	**1**	**0.5**	**1.5**	**0.1**	**0.05**	**0.05**	**0.05**	**0.05**	**0.025**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.25**	**0.25**	**0.25**	**0.025**	**12.5**	**25**	**50**	**50**	**25**
Standard Deviation *		**0**	**0**	**0**	**0**	**0**	**0**	**0.51**	**0**	**0**	**0**	**0**	**0**	**0**	**0.012**	**0**	**0**	**0**	**0**	**0**	**0.012**	**0.036**	**0**	**0**	**0**	**0**	**0.091**	**0**	**0**	**0**	**0**	**0**
95% UCL (Student's-t) *		**0.5**	**0.1**	**0.25**	**0.5**	**1**	**0.5**	**1.303**	**0.1**	**0.05**	**0.05**	**0.05**	**0.05**	**0.025**	**0.0581**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.0581**	**0.0742**	**0.05**	**0.25**	**0.25**	**0.25**	**0.0856**	**12.5**	**25**	**50**	**50**	**25**
% of Detects		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**6**	**6**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**
% of Non-Detects		**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**94**	**100**	**100**	**100**	**100**	**100**	**94**	**94**	**100**	**100**	**100**	**100**	**94**	**100**	**100**	**100**	**100**	**100**

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NSW EPA, November 2014, NSW 2014 General Solid Waste CT1 (No Leaching)
NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste CT2 (No Leaching)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste SCC2 (with leached)

	Metals
	Nickel (filtered)
	mg/L
EQL	0.02
NSW 2014 General Solid Waste TCLP1 (leached)	2
NSW 2014 Restricted Solid Waste TCLP2 (leached)	8

Field ID	Date	
8205/BH201/0.2-0.3	**6/07/2022**	0.06
8205/BH204/0.2-0.3	**6/07/2022**	0.05

Statistics

Number of Results	**2**
Number of Detects	**2**
Minimum Concentration	**0.05**
Minimum Detect	**0.05**
Maximum Concentration	**0.06**
Maximum Detect	**0.06**
Average Concentration *	**0.055**
Median Concentration *	**0.055**
Standard Deviation *	**0.0071**
95% UCL (Student's-t) *	**0.0866**
% of Detects	**100**
% of Non-Detects	**0**

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste TCLP2 (leached)

Attachment E: Data Validation Report

Sample Handling

Lab Report	Sample Chain of Custody (COC) Procedures	Sample Preservation	Sample Receipt Notification Matches COC	Samples Analysed Within Holding Time
269822 - S	Pass	Pass	Pass	Pass
299900 - S	Pass	Pass	Pass	Pass

Precision / Accuracy

Lab Report	Analysed by NATA Laboratory	Trip Spike and Blank Used	Adequate Duplicates Analysed	Field Rinsate Analysed
269822 - S	Pass	Pass	Pass	NA
299900 - S	Pass	Pass	Pass	Pass

Trip spike and blank were reported within the acceptable recovery range.

Trip blank reported less than LOR for volatile analysis.

As dedicated sampling equipment were used during the investigation, no rinsate was required.

Duplicates/ laboratory QA / QC

Lab Report	Field RPD	Laboratory Surrogate Recovery	Laboratory Duplicate RPD	Lab Blank and Matrix Spike Recovery	Laboratory Control Sample
269822 - S	**Fail**	Pass	Pass	Pass	Pass
299900 - S	**Fail**	Pass	Pass	Pass	Pass

RPD control limits were exceeded for nickel between primary sample BH105/0.1-0.2, and duplicate sample DUP101 (100% RPD) and BH201/0.2-0.3 and DUP01 (51%), and copper for BH201/0.2-0.3 and DUP01 (61%). Chemical concentrations in these samples were well below adopted SAC, and RPD exceedances were likely attributed to natural heterogeneity of encountered fill material. As such, the exceeding RPD values are not considered grounds for rejecting the data set.

Sample Handling

Lab Report	Sample Chain of Custody (COC) Procedures	Sample Preservation	Sample Receipt Notification Matches COC	Samples Analysed Within Holding Time
269822 - S	Pass	Pass	Pass	Pass
299900 - S	Pass	Pass	Pass	Pass

Precision / Accuracy

Lab Report	Analysed by NATA Laboratory	Trip Spike and Blank Used	Adequate Duplicates Analysed	Field Rinsate Analysed
269822 - S	Pass	Pass	Pass	NA
299900 - S	Pass	Pass	Pass	Pass

Trip spike and blank were reported within the acceptable recovery range.

Trip blank reported less than LOR for volatile analysis.

As dedicated sampling equipment were used during the investigation, no rinsate was required.

Duplicates/ laboratory QA / QC

Lab Report	Field RPD	Laboratory Surrogate Recovery	Laboratory Duplicate RPD	Lab Blank and Matrix Spike Recovery	Laboratory Control Sample
269822 - S	**Fail**	Pass	Pass	Pass	Pass
299900 - S	**Fail**	Pass	Pass	Pass	Pass

RPD control limits were exceeded for nickel between primary sample BH105/0.1-0.2, and duplicate sample DUP101 (100% RPD) and BH201/0.2-0.3 and DUP01 (51%), and copper for BH201/0.2-0.3 and DUP01 (61%). Chemical concentrations in these samples were well below adopted SAC, and RPD exceedances were likely attributed to natural heterogeneity of encountered fill material. As such, the exceeding RPD values are not considered grounds for rejecting the data set.

		Field ID	8205/BH105/0.1-0.2m	8205/DUP01	
		Matrix Type	soil	soil	RPD
	Unit	EQL			
Metals					
Arsenic	mg/kg	4	<4	<4	0
Cadmium	mg/kg	0.4	<0.4	<0.4	0
Chromium (III+VI)	mg/kg	1	4	2	67
Copper	mg/kg	1	7	3	80
Lead	mg/kg	1	11	8	32
Mercury	mg/kg	0.1	<0.1	<0.1	0
Nickel	mg/kg	1	3	1	100
Zinc	mg/kg	1	29	18	47

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

		Lab Report Number	299900	299900	
		Field ID	8205/BH201/0.2-0.3	8205/Dup01	
		Date	6/07/2022	6/07/2022	
		Matrix Type	Soil	Soil	RPD
	Unit	EQL			
Metals					
Arsenic	mg/kg	4	<4	<4	0
Cadmium	mg/kg	0.4	<0.4	<0.4	0
Chromium (III+VI)	mg/kg	1	7	4	55
Copper	mg/kg	1	64	34	61
Lead	mg/kg	1	2	2	0
Mercury	mg/kg	0.1	<0.1	<0.1	0
Nickel	mg/kg	1	52	31	51
Zinc	mg/kg	1	27	18	40

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Attachment F: Laboratory Certificates

CHAIN OF CUSTODY FORM

martens consulting engineers since 1989

Suite 201, 20 George Street, Hornsby, NSW 2077 Ph: (02) 9476 9999 Fax: (02) 9476 8767, mail@martens.com.au, www.martens.com.au

Laboratory Testing

Project	Geotechncial and Contamination Assessment, Cronulla High School, NSW									
Martens Contact Officer	Akshaya Ghimire			**Contact Email**	aghimire@martens.com.au					
Sampling and Shipping	**Sample Date**	22 & 23/05/2021	**Dispatch Date**	24/05/2021	**Due Date**			Standard		
	Our Reference	P2108205COC01V01		**Shipping Method (x)**	**Hand**		**Post**		**Courier**	X
	On Ice (X)	X	**No Ice (X)**		**Other (X)**		**Page No.:**	Page 1 of 1		

Laboratory

Name	Envirolab Services Pty Ltd							
Sample Delivery Address	12 Ashley St, Chatswood NSW 2067							
Delivery Contact	**Name**	Simon Song	**Phone**	02 99106200	**Fax**		**Email**	Samplereceipt@envirolabservices.com.au
Please Send Report BY (X)	**Post**		**Fax**		**Email**	X	**Reporting Email Address**	aghimire@martens.com.au jfulton@martens.com.au

Item	Sample ID	Combo 6a	8 Heavy Metals	BTEX	TRH				Notes
1	8205/BH102/0.1-0.2 m	X							
2	8205/BH103/0.5-0.6 m	X							
3	8205/BH104/0.1-0.2 m	X							
4	8205/BH105/0.1-0.2 m	X							
5	8205/BH106/0.1-0.2 m	X							
6	8205/BH107/0.1-0.2 m	X							
7	8205/BH108/0.1-0.2 m	X							
8	8205/BH109/0.5-0.6 m	X							
9	8205/BH110/0.1-0.2 m	X							
10	8205/BH110/2.0-2.1 m	X							
11	8205/DUP01		X						
12	SPIKE			X					
13	BLANK				X				

ENVIROLAB GROUP

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 269822

Date Received: 25/05/21

Time Received: 9:35

Received By: CH

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 269822

Client Details

Client	Martens & Associates Pty Ltd
Attention	Akshaya Ghimire
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**Cronulla High School**
Number of Samples	13 Soil
Date samples received	25/05/2021
Date completed instructions received	25/05/2021

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	01/06/2021
Date of Issue	01/06/2021

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Asbestos Approved By
Analysed by Asbestos Approved Identifier: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Lucy Zhu, Asbestos Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		269822-1	269822-2	269822-3	269822-4	269822-5
Your Reference	UNITS	8205/BH102/0.1-0.2m	8205/BH103/0.5-0.6m	8205/BH104/0.1-0.2m	8205/BH105/0.1-0.2m	8205/BH106/0.1-0.2m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	94	99	91	107	105

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		269822-6	269822-7	269822-8	269822-9	269822-10
Your Reference	UNITS	8205/BH107/0.1-0.2m	8205/BH108/0.1-0.2m	8205/BH109/0.5-0.6m	8205/BH110/0.1-0.2m	8205/BH110/2.0-2.1m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	93	129	125	107	129

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		269822-12	269822-13
Your Reference	UNITS	Spike	Blank
Date Sampled		22/05/2021	22/05/2021
Type of sample		Soil	Soil
Date extracted	-	28/05/2021	27/05/2021
Date analysed	-	28/05/2021	28/05/2021
TRH C_6 - C_9	mg/kg	[NA]	<25
TRH C_6 - C_{10}	mg/kg	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	<25
Benzene	mg/kg	78%	<0.2
Toluene	mg/kg	81%	<0.5
Ethylbenzene	mg/kg	83%	<1
m+p-xylene	mg/kg	80%	<2
o-Xylene	mg/kg	85%	<1
naphthalene	mg/kg	[NA]	<1
Total +ve Xylenes	mg/kg	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	106	131

svTRH (C10-C40) in Soil						
Our Reference		269822-1	269822-2	269822-3	269822-4	269822-5
Your Reference	UNITS	8205/BH102/0.1-0.2m	8205/BH103/0.5-0.6m	8205/BH104/0.1-0.2m	8205/BH105/0.1-0.2m	8205/BH106/0.1-0.2m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	85	75	90	85	90

svTRH (C10-C40) in Soil						
Our Reference		269822-6	269822-7	269822-8	269822-9	269822-10
Your Reference	UNITS	8205/BH107/0.1-0.2m	8205/BH108/0.1-0.2m	8205/BH109/0.5-0.6m	8205/BH110/0.1-0.2m	8205/BH110/2.0-2.1m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	94	81	89	88	80

PAHs in Soil						
Our Reference		269822-1	269822-2	269822-3	269822-4	269822-5
Your Reference	UNITS	8205/BH102/0.1-0.2m	8205/BH103/0.5-0.6m	8205/BH104/0.1-0.2m	8205/BH105/0.1-0.2m	8205/BH106/0.1-0.2m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	120	115	121	117	115

PAHs in Soil						
Our Reference		269822-6	269822-7	269822-8	269822-9	269822-10
Your Reference	UNITS	8205/BH107/0.1-0.2m	8205/BH108/0.1-0.2m	8205/BH109/0.5-0.6m	8205/BH110/0.1-0.2m	8205/BH110/2.0-2.1m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	111	116	117	112	116

Organochlorine Pesticides in soil						
Our Reference		269822-1	269822-2	269822-3	269822-4	269822-5
Your Reference	UNITS	8205/BH102/0.1-0.2m	8205/BH103/0.5-0.6m	8205/BH104/0.1-0.2m	8205/BH105/0.1-0.2m	8205/BH106/0.1-0.2m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	86	90	86	85

Organochlorine Pesticides in soil						
Our Reference		269822-6	269822-7	269822-8	269822-9	269822-10
Your Reference	UNITS	8205/BH107/0.1-0.2m	8205/BH108/0.1-0.2m	8205/BH109/0.5-0.6m	8205/BH110/0.1-0.2m	8205/BH110/2.0-2.1m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	88	86	86	85

Organophosphorus Pesticides in Soil						
Our Reference		269822-1	269822-2	269822-3	269822-4	269822-5
Your Reference	UNITS	8205/BH102/0.1-0.2m	8205/BH103/0.5-0.6m	8205/BH104/0.1-0.2m	8205/BH105/0.1-0.2m	8205/BH106/0.1-0.2m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	86	90	86	85

Organophosphorus Pesticides in Soil						
Our Reference		269822-6	269822-7	269822-8	269822-9	269822-10
Your Reference	UNITS	8205/BH107/0.1-0.2m	8205/BH108/0.1-0.2m	8205/BH109/0.5-0.6m	8205/BH110/0.1-0.2m	8205/BH110/2.0-2.1m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	88	86	86	85

PCBs in Soil						
Our Reference		269822-1	269822-2	269822-3	269822-4	269822-5
Your Reference	UNITS	8205/BH102/0.1-0.2m	8205/BH103/0.5-0.6m	8205/BH104/0.1-0.2m	8205/BH105/0.1-0.2m	8205/BH106/0.1-0.2m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	86	90	86	85

PCBs in Soil						
Our Reference		269822-6	269822-7	269822-8	269822-9	269822-10
Your Reference	UNITS	8205/BH107/0.1-0.2m	8205/BH108/0.1-0.2m	8205/BH109/0.5-0.6m	8205/BH110/0.1-0.2m	8205/BH110/2.0-2.1m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	88	86	86	85

Acid Extractable metals in soil						
Our Reference		269822-1	269822-2	269822-3	269822-4	269822-5
Your Reference	UNITS	8205/BH102/0.1-0.2m	8205/BH103/0.5-0.6m	8205/BH104/0.1-0.2m	8205/BH105/0.1-0.2m	8205/BH106/0.1-0.2m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	5	1	3	4	2
Copper	mg/kg	41	6	6	7	10
Lead	mg/kg	1	7	7	11	2
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	40	2	3	3	1
Zinc	mg/kg	23	15	15	29	8

Acid Extractable metals in soil						
Our Reference		269822-6	269822-7	269822-8	269822-9	269822-10
Your Reference	UNITS	8205/BH107/0.1-0.2m	8205/BH108/0.1-0.2m	8205/BH109/0.5-0.6m	8205/BH110/0.1-0.2m	8205/BH110/2.0-2.1m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	<1	2	2	3	2
Copper	mg/kg	<1	4	2	15	3
Lead	mg/kg	<1	16	5	12	8
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	2	2	16	2
Zinc	mg/kg	<1	33	15	22	13

Acid Extractable metals in soil		
Our Reference		269822-11
Your Reference	UNITS	8205/DUP01
Date Sampled		22/05/2021
Type of sample		Soil
Date prepared	-	31/05/2021
Date analysed	-	31/05/2021
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	2
Copper	mg/kg	3
Lead	mg/kg	8
Mercury	mg/kg	<0.1
Nickel	mg/kg	1
Zinc	mg/kg	18

Moisture						
Our Reference		269822-1	269822-2	269822-3	269822-4	269822-5
Your Reference	UNITS	8205/BH102/0.1-0.2m	8205/BH103/0.5-0.6m	8205/BH104/0.1-0.2m	8205/BH105/0.1-0.2m	8205/BH106/0.1-0.2m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
Moisture	%	3.5	10	8.3	8.5	7.7

Moisture						
Our Reference		269822-6	269822-7	269822-8	269822-9	269822-10
Your Reference	UNITS	8205/BH107/0.1-0.2m	8205/BH108/0.1-0.2m	8205/BH109/0.5-0.6m	8205/BH110/0.1-0.2m	8205/BH110/2.0-2.1m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/05/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Date analysed	-	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
Moisture	%	2.7	6.9	4.6	3.8	5.1

Moisture		
Our Reference		269822-11
Your Reference	UNITS	8205/DUP01
Date Sampled		22/05/2021
Type of sample		Soil
Date prepared	-	27/05/2021
Date analysed	-	28/05/2021
Moisture	%	5.2

Asbestos ID - soils						
Our Reference		269822-1	269822-2	269822-3	269822-4	269822-5
Your Reference	UNITS	8205/BH102/0.1-0.2m	8205/BH103/0.5-0.6m	8205/BH104/0.1-0.2m	8205/BH105/0.1-0.2m	8205/BH106/0.1-0.2m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Sample mass tested	g	Approx. 35g	Approx. 30g	Approx. 35g	Approx. 30g	Approx. 25g
Sample Description	-	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		269822-6	269822-7	269822-8	269822-9	269822-10
Your Reference	UNITS	8205/BH107/0.1-0.2m	8205/BH108/0.1-0.2m	8205/BH109/0.5-0.6m	8205/BH110/0.1-0.2m	8205/BH110/2.0-2.1m
Date Sampled		22/05/2021	22/05/2021	22/05/2021	22/05/2021	22/05/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Sample mass tested	g	Approx. 40g	Approx. 25g	Approx. 30g	Approx. 35g	Approx. 25g
Sample Description	-	Brown sandy soil	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			27/05/2021	1	27/05/2021	27/05/2021		27/05/2021	[NT]
Date analysed	-			28/05/2021	1	28/05/2021	28/05/2021		28/05/2021	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	102	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	102	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	127	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	115	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	109	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	79	[NT]
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	81	[NT]
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	101	1	94	118	23	124	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	27/05/2021	27/05/2021		[NT]	[NT]
Date analysed	-			[NT]	10	28/05/2021	28/05/2021		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	10	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	10	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	10	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	10	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	10	129	106	20	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			27/05/2021	1	27/05/2021	27/05/2021		27/05/2021	[NT]
Date analysed	-			28/05/2021	1	28/05/2021	28/05/2021		28/05/2021	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	107	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	88	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	69	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	107	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	88	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	69	[NT]
Surrogate o-Terphenyl	%		Org-020	82	1	85	95	11	91	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	27/05/2021	27/05/2021		[NT]	[NT]
Date analysed	-			[NT]	10	28/05/2021	28/05/2021		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	10	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	10	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	10	80	91	13	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			27/05/2021	1	27/05/2021	27/05/2021		27/05/2021	[NT]
Date analysed	-			31/05/2021	1	31/05/2021	31/05/2021		31/05/2021	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	87	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	137	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	121	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	93	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	123	1	120	122	2	114	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	27/05/2021	27/05/2021		[NT]	[NT]
Date analysed	-			[NT]	10	31/05/2021	31/05/2021		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	10	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	10	116	115	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			27/05/2021	1	27/05/2021	27/05/2021		27/05/2021	[NT]
Date analysed	-			31/05/2021	1	31/05/2021	31/05/2021		31/05/2021	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	121	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	105	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	110	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	117	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	113	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	110	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	103	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	88	1	86	88	2	92	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	27/05/2021	27/05/2021		[NT]	[NT]
Date analysed	-			[NT]	10	31/05/2021	31/05/2021		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	10	85	86	1	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			27/05/2021	1	27/05/2021	27/05/2021		27/05/2021	[NT]
Date analysed	-			31/05/2021	1	31/05/2021	31/05/2021		31/05/2021	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	75	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	73	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	109	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	78	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	79	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	88	1	86	88	2	92	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	27/05/2021	27/05/2021		[NT]	[NT]
Date analysed	-			[NT]	10	31/05/2021	31/05/2021		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	10	85	86	1	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			27/05/2021	1	27/05/2021	27/05/2021		27/05/2021	[NT]
Date analysed	-			31/05/2021	1	31/05/2021	31/05/2021		31/05/2021	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	130	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	88	1	86	88	2	92	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	27/05/2021	27/05/2021		[NT]	[NT]
Date analysed	-			[NT]	10	31/05/2021	31/05/2021		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	10	85	86	1	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			31/05/2021	1	31/05/2021	31/05/2021		31/05/2021	[NT]
Date analysed	-			31/05/2021	1	31/05/2021	31/05/2021		31/05/2021	[NT]
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	98	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	101	[NT]
Chromium	mg/kg	1	Metals-020	<1	1	5	5	0	100	[NT]
Copper	mg/kg	1	Metals-020	<1	1	41	49	18	95	[NT]
Lead	mg/kg	1	Metals-020	<1	1	1	1	0	96	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	109	[NT]
Nickel	mg/kg	1	Metals-020	<1	1	40	46	14	98	[NT]
Zinc	mg/kg	1	Metals-020	<1	1	23	26	12	100	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	10	31/05/2021	31/05/2021		[NT]	[NT]
Date analysed	-			[NT]	10	31/05/2021	31/05/2021		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	10	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	10	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	10	2	5	86	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	10	3	5	50	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	10	8	6	29	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	10	2	6	100	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	10	13	12	8	[NT]	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

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The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples 269822-1 to 10 were sub-sampled from jars provided by the client.

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ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 299900-A

Client Details

Client	Martens & Associates Pty Ltd
Attention	William Xu
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**P2108205 - Cronulla High School**
Number of Samples	additional analysis
Date samples received	07/07/2022
Date completed instructions received	15/07/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	20/07/2022
Date of Issue	20/07/2022

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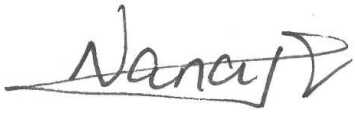
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Giovanni Agosti, Group Technical Manager

Authorised By



Nancy Zhang, Laboratory Manager

Metals from Leaching Fluid pH 2.9 or 5			
Our Reference		299900-A-1	299900-A-4
Your Reference	UNITS	8205/BH201/0.2-0.3	8205/BH204/0.2-0.3
Date Sampled		06/07/2022	06/07/2022
Type of sample		Soil	Soil
Date extracted	-	20/07/2022	20/07/2022
Date analysed	-	20/07/2022	20/07/2022
pH of soil for fluid# determ.	pH units	8.5	10.2
pH of soil TCLP (after HCl)	pH units	1.6	1.6
Extraction fluid used		1	1
pH of final Leachate	pH units	5.0	5.4
Nickel	mg/L	0.06	0.05

Method ID	Methodology Summary
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439 and USEPA 1311. Please note that the mass used may be scaled down from default based on sample mass available. Samples are stored at 2-6oC before and after leachate preparation.
Metals-020	Determination of various metals by ICP-AES following buffer determination as per USEPA 1311 and hence AS 4439.3. Extraction Fluid 1 refers to the pH 5.0 buffer and Extraction Fluid 2 is the pH 2.9 buffer.

QUALITY CONTROL: Metals from Leaching Fluid pH 2.9 or 5					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			20/07/2022	[NT]	[NT]	[NT]	[NT]	20/07/2022	[NT]
Date analysed	-			20/07/2022	[NT]	[NT]	[NT]	[NT]	20/07/2022	[NT]
Nickel	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	93	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

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Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

COC 15/7 14:50.

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SOIL ANALYSIS CHAIN OF CUSTODY FORM

Project											
Name	P2108205 – Cronulla High School										
Martens Contact Officer	William Xu				Contact Email	wxu@martens.com.au					
Sampling and Shipping	Sample Date	6/07/2022	Dispatch Date	15/07/2022	Turnaround Time	3 DAYS ✓					
	Our Reference	P2108205COC06V02			Shipping Method (X)	Hand	X	Post		Courier	
	On Ice (X)	X	No Ice (X)		Other (X)						
Laboratory											
Name	Envirolab Pty Ltd										
Sample Delivery Address	12 Ashley St, Chatswood, NSW										
Instructions											
Delivery Contact	Name	Sample Receipt	Phone	08 99106200	Fax		Email	samplereceipt@ausset.com.au			
Please Send Report By (X)	Post		Fax		Email	X	Reporting Email Address	wxu@martens.com.au; jfulton@martens.com.au			

Sample ID	TCLP Nickel	8HM		
8205/BH201/0.2-0.3	X			
(1) 8205/BH201/0.6-0.8		X		
8205/BH204/0.2-0.3	X			
(2) 8205/BH204/0.6-0.8		X		

[illegible] Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

No: 300606
Date Received: 15/7/2022
Time Received: 1450
Received By: JC
Temp: Cool/Ambient
Cooling: Ice/Gel
11° C

Head Office [illegible]
Suite 201, 20 George St
Hornsby NSW 2077, Australia
Ph 02 9476 9999 Fax 02 9476 8767

> mail@martens.com.au
> www.martens.com.au
MARTENS & ASSOCIATES P/L
ABN 85 070 240 890 ACN 070 240 890

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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 300606

Client Details

Client	Martens & Associates Pty Ltd
Attention	Jeff Fulton, William Xu
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**P2108205 - Cronulla High School**
Number of Samples	2 Soil
Date samples received	15/07/2022
Date completed instructions received	15/07/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	20/07/2022
Date of Issue	20/07/2022

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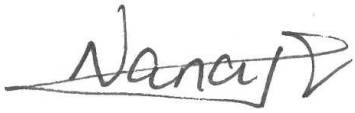
Results Approved By
Giovanni Agosti, Group Technical Manager
Josh Williams, Organics and LC Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

Acid Extractable metals in soil			
Our Reference		300606-1	300606-2
Your Reference	UNITS	8205/BH201/0.6-0.8	8205/BH204/0.6-0.8
Date Sampled		06/07/2022	06/07/2022
Type of sample		Soil	Soil
Date prepared	-	19/07/2022	19/07/2022
Date analysed	-	20/07/2022	20/07/2022
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	<1	4
Copper	mg/kg	<1	6
Lead	mg/kg	<1	<1
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	<1	9
Zinc	mg/kg	1	6

Moisture			
Our Reference		300606-1	300606-2
Your Reference	UNITS	8205/BH201/0.6-0.8	8205/BH204/0.6-0.8
Date Sampled		06/07/2022	06/07/2022
Type of sample		Soil	Soil
Date prepared	-	19/07/2022	19/07/2022
Date analysed	-	20/07/2022	20/07/2022
Moisture	%	3.3	0.9

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	300606-2
Date prepared	-			19/07/2022	1	19/07/2022	19/07/2022		19/07/2022	19/07/2022
Date analysed	-			20/07/2022	1	20/07/2022	20/07/2022		20/07/2022	20/07/2022
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	103	104
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	100	93
Chromium	mg/kg	1	Metals-020	<1	1	<1	<1	0	108	99
Copper	mg/kg	1	Metals-020	<1	1	<1	1	0	100	99
Lead	mg/kg	1	Metals-020	<1	1	<1	<1	0	103	97
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	72	78
Nickel	mg/kg	1	Metals-020	<1	1	<1	1	0	103	92
Zinc	mg/kg	1	Metals-020	<1	1	1	1	0	107	92

Result Definitions

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NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
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CERTIFICATE OF ANALYSIS 299900

Client Details

Client	Martens & Associates Pty Ltd
Attention	William Xu
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**P2108205 - Cronulla High School**
Number of Samples	12 Soil
Date samples received	07/07/2022
Date completed instructions received	07/07/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	14/07/2022
Date of Issue	14/07/2022

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Diego Bigolin, Inorganics Supervisor
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organic Instruments Team Leader
Loren Bardwell, Development Chemist
Lucy Zhu, Asbestos Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		299900-1	299900-2	299900-3	299900-4	299900-5
Your Reference	UNITS	8205/BH201/0.2-0.3	8205/BH202/0.2-0.3	8205/BH203/0.2-0.3	8205/BH204/0.2-0.3	8205/BH205/0.3-0.5
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	11/07/2022	11/07/2022	11/07/2022	11/07/2022	11/07/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	83	82	104	81	86

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		299900-6	299900-7
Your Reference	UNITS	8205/BH205/0.8-1.0	8205/BH206/0.2-0.5
Date Sampled		06/07/2022	06/07/2022
Type of sample		Soil	Soil
Date extracted	-	08/07/2022	08/07/2022
Date analysed	-	11/07/2022	11/07/2022
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
Naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	94	98

svTRH (C10-C40) in Soil						
Our Reference		299900-1	299900-2	299900-3	299900-4	299900-5
Your Reference	UNITS	8205/BH201/0.2-0.3	8205/BH202/0.2-0.3	8205/BH203/0.2-0.3	8205/BH204/0.2-0.3	8205/BH205/0.3-0.5
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	08/07/2022	09/07/2022	09/07/2022	09/07/2022	09/07/2022
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	140	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	140	<50	<50
Surrogate o-Terphenyl	%	97	102	104	105	100

svTRH (C10-C40) in Soil			
Our Reference		299900-6	299900-7
Your Reference	UNITS	8205/BH205/0.8-1.0	8205/BH206/0.2-0.5
Date Sampled		06/07/2022	06/07/2022
Type of sample		Soil	Soil
Date extracted	-	08/07/2022	08/07/2022
Date analysed	-	09/07/2022	09/07/2022
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50
Surrogate o-Terphenyl	%	102	101

PAHs in Soil						
Our Reference		299900-1	299900-2	299900-3	299900-4	299900-5
Your Reference	UNITS	8205/BH201/0.2-0.3	8205/BH202/0.2-0.3	8205/BH203/0.2-0.3	8205/BH204/0.2-0.3	8205/BH205/0.3-0.5
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Naphthalene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	0.4	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	107	105	100	97	96

PAHs in Soil			
Our Reference		299900-6	299900-7
Your Reference	UNITS	8205/BH205/0.8-1.0	8205/BH206/0.2-0.5
Date Sampled		06/07/2022	06/07/2022
Type of sample		Soil	Soil
Date extracted	-	08/07/2022	08/07/2022
Date analysed	-	08/07/2022	08/07/2022
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	90	96

Organochlorine Pesticides in soil						
Our Reference		299900-1	299900-2	299900-3	299900-4	299900-5
Your Reference	UNITS	8205/BH201/0.2-0.3	8205/BH202/0.2-0.3	8205/BH203/0.2-0.3	8205/BH204/0.2-0.3	8205/BH205/0.3-0.5
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	99	95	94	93	87

Organochlorine Pesticides in soil			
Our Reference		299900-6	299900-7
Your Reference	UNITS	8205/BH205/0.8-1.0	8205/BH206/0.2-0.5
Date Sampled		06/07/2022	06/07/2022
Type of sample		Soil	Soil
Date extracted	-	08/07/2022	08/07/2022
Date analysed	-	08/07/2022	08/07/2022
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	92	86

Organophosphorus Pesticides in Soil						
Our Reference		299900-1	299900-2	299900-3	299900-4	299900-5
Your Reference	UNITS	8205/BH201/0.2-0.3	8205/BH202/0.2-0.3	8205/BH203/0.2-0.3	8205/BH204/0.2-0.3	8205/BH205/0.3-0.5
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	99	95	94	93	87

Organophosphorus Pesticides in Soil			
Our Reference		299900-6	299900-7
Your Reference	UNITS	8205/BH205/0.8-1.0	8205/BH206/0.2-0.5
Date Sampled		06/07/2022	06/07/2022
Type of sample		Soil	Soil
Date extracted	-	08/07/2022	08/07/2022
Date analysed	-	08/07/2022	08/07/2022
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	92	86

PCBs in Soil						
Our Reference		299900-1	299900-2	299900-3	299900-4	299900-5
Your Reference	UNITS	8205/BH201/0.2-0.3	8205/BH202/0.2-0.3	8205/BH203/0.2-0.3	8205/BH204/0.2-0.3	8205/BH205/0.3-0.5
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	99	95	94	93	87

PCBs in Soil			
Our Reference		299900-6	299900-7
Your Reference	UNITS	8205/BH205/0.8-1.0	8205/BH206/0.2-0.5
Date Sampled		06/07/2022	06/07/2022
Type of sample		Soil	Soil
Date extracted	-	08/07/2022	08/07/2022
Date analysed	-	08/07/2022	08/07/2022
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	92	86

Acid Extractable metals in soil						
Our Reference		299900-1	299900-2	299900-3	299900-4	299900-5
Your Reference	UNITS	8205/BH201/0.2-0.3	8205/BH202/0.2-0.3	8205/BH203/0.2-0.3	8205/BH204/0.2-0.3	8205/BH205/0.3-0.5
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	12/07/2022	12/07/2022	12/07/2022	12/07/2022	12/07/2022
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	<1	8	80	7
Copper	mg/kg	64	<1	24	30	28
Lead	mg/kg	2	<1	26	5	25
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	52	<1	32	75	3
Zinc	mg/kg	27	1	52	40	260

Acid Extractable metals in soil				
Our Reference		299900-6	299900-7	299900-12
Your Reference	UNITS	8205/BH205/0.8-1.0	8205/BH206/0.2-0.5	8205/Dup01
Date Sampled		06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	12/07/2022	12/07/2022	12/07/2022
Arsenic	mg/kg	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	<1	6	4
Copper	mg/kg	1	17	34
Lead	mg/kg	1	19	2
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	5	31
Zinc	mg/kg	7	66	18

Moisture						
Our Reference		299900-1	299900-2	299900-3	299900-4	299900-5
Your Reference	UNITS	8205/BH201/0.2-0.3	8205/BH202/0.2-0.3	8205/BH203/0.2-0.3	8205/BH204/0.2-0.3	8205/BH205/0.3-0.5
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	11/07/2022	11/07/2022	11/07/2022	11/07/2022	11/07/2022
Moisture	%	4.7	4.4	4.3	4.7	9.4

Moisture				
Our Reference		299900-6	299900-7	299900-12
Your Reference	UNITS	8205/BH205/0.8-1.0	8205/BH206/0.2-0.5	8205/Dup01
Date Sampled		06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	11/07/2022	11/07/2022	11/07/2022
Moisture	%	5.0	12	3.8

Asbestos ID - soils						
Our Reference		299900-1	299900-2	299900-3	299900-4	299900-5
Your Reference	UNITS	8205/BH201/0.2-0.3	8205/BH202/0.2-0.3	8205/BH203/0.2-0.3	8205/BH204/0.2-0.3	8205/BH205/0.3-0.5
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/07/2022	12/07/2022	12/07/2022	12/07/2022	12/07/2022
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 30g	Approx. 35g	Approx. 30g
Sample Description	-	Brown sandy soil	Brown sandy soil	Brown sandy soil	Brown sandy soil & rocks	Brown sandy soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		299900-6	299900-7	299900-8	299900-9	299900-10
Your Reference	UNITS	8205/BH205/0.8-1.0	8205/BH206/0.2-0.5	8205/BH201/0-0.05	8205/BH202/0-0.05	8205/BH203/0-0.05
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	12/07/2022	12/07/2022	14/07/2022	14/07/2022	14/07/2022
Sample mass tested	g	Approx. 30g	Approx. 25g	Approx. 75g	Approx. 65g	Approx. 85g
Sample Description	-	Brown sandy soil	Brown sandy soil	Black bitumen	Black bitumen	Black bitumen
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils		
Our Reference		299900-11
Your Reference	UNITS	8205/BH204/0-0.05
Date Sampled		06/07/2022
Type of sample		Soil
Date analysed	-	14/07/2022
Sample mass tested	g	Approx. 85g
Sample Description	-	Black bitumen
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No asbestos detected

Coal Tar					
Our Reference		299900-8	299900-9	299900-10	299900-11
Your Reference	UNITS	8205/BH201/0-0.05	8205/BH202/0-0.05	8205/BH203/0-0.05	8205/BH204/0-0.05
Date Sampled		06/07/2022	06/07/2022	06/07/2022	06/07/2022
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Date analysed	-	08/07/2022	08/07/2022	08/07/2022	08/07/2022
Presence of Coal Tar*	-	Absent	Absent	Absent	Absent

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
RTA T542	Determination of Phenol in core samples as per RTA test method T542. This procedure gives and indication of whether a sample of asphalt has been made with coal tar. The coal tar method gives an approximate result with a high degree of uncertainty.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	299900-2
Date extracted	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
Date analysed	-			11/07/2022	1	11/07/2022	11/07/2022		11/07/2022	11/07/2022
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	83	86
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	83	86
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	78	79
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	87	91
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	80	83
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	86	88
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	84	88
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	101	1	83	81	2	89	91

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	299900-2
Date extracted	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
Date analysed	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	09/07/2022
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	96	109
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	102	125
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	100	92
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	96	109
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	100	0	102	125
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	130	26	100	92
Surrogate o-Terphenyl	%		Org-020	97	1	97	93	4	97	103

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	299900-2
Date extracted	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
Date analysed	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	88
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	93
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	90
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	102
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	100
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	101	105
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	95
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	92	102
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	102	1	107	103	4	98	98

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	299900-2
Date extracted	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
Date analysed	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	94
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	92
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	97
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	81	83
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	94
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	98
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	90
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	100
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	94
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	96
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	92	1	99	97	2	91	94

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	299900-2
Date extracted	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
Date analysed	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	107	107
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	87	91
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	85
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	110	112
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	100
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	76	82
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	78	84
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	92	1	99	97	2	91	94

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	299900-2
Date extracted	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
Date analysed	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	117	120
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	92	1	99	97	2	91	94

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	299900-2
Date prepared	-			08/07/2022	1	08/07/2022	08/07/2022		08/07/2022	08/07/2022
Date analysed	-			12/07/2022	1	12/07/2022	12/07/2022		12/07/2022	12/07/2022
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	95	103
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	95	95
Chromium	mg/kg	1	Metals-020	<1	1	7	6	15	99	96
Copper	mg/kg	1	Metals-020	<1	1	64	52	21	100	103
Lead	mg/kg	1	Metals-020	<1	1	2	2	0	98	96
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	103	107
Nickel	mg/kg	1	Metals-020	<1	1	52	40	26	99	99
Zinc	mg/kg	1	Metals-020	<1	1	27	25	8	107	97

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to ASB-001 asbestos subsampling procedure. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab/MPL recommends supplying 40-60g or 500ml of sample in its own container.

Note: Samples 299900-1 to 7 were sub-sampled from jars provided by the client.

Note: Samples 299900-8 to 11 were sub-sampled from bags provided by the client.

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SOIL ANALYSIS CHAIN OF CUSTODY FORM

Project												
Name	P2108205 – Cronulla High School											
Martens Contact Officer	William Xu					**Contact Email**	wxu@martens.com.au					
Sampling and Shipping	**Sample Date**	6/07/2022		**Dispatch Date**	7/07/2022		**Turnaround Time**	Standard				
	Our Reference	P2108205COC05V01				**Shipping Method (X)**	**Hand**		**Post**		**Courier**	X
	On Ice (X)	X	**No Ice (X)**		**Other (X)**							
Laboratory												
Name	Envirolab Pty Ltd											
Sample Delivery Address	12 Ashley St, Chatswood, NSW											
Instructions												
Delivery Contact	**Name**	Sample Receipt		**Phone**	08 99106200	**Fax**		**Email**	samplereceipt@ausset.com.au			
Please Send Report By (X)	**Post**		**Fax**		**Email**	X	**Reporting Email Address**	wxu@martens.com.au; jfulton@martens.com.au				

	Sample ID	Combo 6a	Coal Tar[NN] (Present or Absent?)	HM
1	8205/BH201/0.2-0.3	X		
2	8205/BH202/0.2-0.3	X		
3	8205/BH203/0.2-0.3	X		
4	8205/BH204/0.2-0.3	X		
5	8205/BH205/0.3-0.5	X		
6	8205/BH205/0.8-1.0	X		
7	8205/BH206/0.2-0.5	X		
8	8205/BH201/0-0.05		X	
9	8205/BH202/0-0.05		X	
10	8205/BH203/0-0.05		X	
11	8205/BH204/0-0.05		X	
12	8205/Dup01			X

ENVIROLAB GROUP
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 299900

Date Received: 07/07/22
Time Received: 16 45
Received By: VC
Temp: Cool/Ambient
Cooling: Ice/Icepack 9°C
Security: Intact/Broken/None

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Attachment G: AMP (WSP, 2020)

NSW DEPARTMENT OF EDUCATION
C/O - PUBLIC WORKS ADVISORY

CRONULLA HIGH SCHOOL

ASBESTOS IN GROUNDS MANAGEMENT PLAN

JUNE 2020

CONFIDENTIAL

Cronulla High School
Asbestos in Grounds Management Plan

NSW Department of Education
C/o - Public Works Advisory

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	NAME	DATE	SIGNATURE
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DEFINITIONS

ACM	Asbestos containing material
Air Monitoring	Air monitoring involved sampling airborne asbestos fibres to assist in assessing exposure to asbestos and the effectiveness of implemented control measures. It must be conducted in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Dust, 2nd Edition [NOHSC: 3003 (2005)]. It is a DoE requirement that air monitoring is a requirement when any form of asbestos disturbance works is undertaken.
AMD	Asset Management Directorate (DoE state office)
AMP	Asbestos Management Plan
AMU	Asset Management Unit (DoE regional office)
Asbestos	Defined as the fibrous form of mineral silicates; belonging to the serpentine and amphibole groups of rock-forming minerals, including actinolite, amosite, crocidolite, chrysotile, anthophyllite, tremolite, or any mixture containing one or more of these.
Asbestos Assessor	A person who is SafeWork NSW licensed in accordance with the regulations for air monitoring, clearance inspections or the issuing of clearance certificates for class A asbestos removal work.
Class A Licensed Asbestos Removalist	As per Part 8.10 of the WHS Regulations, a contractor, SafeWork NSW licensed to remove all types and quantities of asbestos.
Contaminated Land Management Act	Contaminated Land Management Act 1997 Contaminated Land Management Regulation 2013
Contaminated	
Class B Licensed Asbestos Removalist	As per Part 8.10 of the WHS Regulations, a contractor, SafeWork NSW licensed to remove any amount of non-friable asbestos or ACM.
Competent person	For a clearance inspection under clause 473 – *A person who has acquired through training or experience, the knowledge and skills and is able to carry out a clearance inspection*: a. a certification in relation to the specified VET course for asbestos assessor work, or b. b. a tertiary qualification in work health and safety, occupational hygiene, science, building, construction or environmental health.
DoE	Department of Education
Facility manager	Person with responsibility for the DoE Facility or a suitably appointed delegate
Fibrous cement	Cement based building material containing reinforcement of either asbestos or non-asbestos fibres. Trade names include but are not limited to Super Six, Hardiflex, Hardiplank and Villaboard.

Friable asbestos	Any material that contains asbestos and is in a powder form or can be crumbled, pulverised or reduced to powder by hand pressure when dry.
Hygienist	Note: for the purpose of this plan, the hygienist will also be a competent person / asbestos assessor / SafeWork NSW accredited licensed asbestos assessor as defined by regulations and selected from DoE hygienist panel.
Hygienist panel (contract)	A Public Works contract that provides a panel of three contractors for the supply of occupational hygienist services to DoE for the management of assets to ensure compliance with the relevant legislation, including the NSW Work Health and Safety (WHS) Regulation 2017, particularly as this related to asbestos.
Licensed asbestos removalist	Means a person conducting a business or undertaking who is SafeWork NSW licensed under the WHS Regulations to carry out class A or class B asbestos removal work.
Non-friable asbestos	Means material containing asbestos that is not friable asbestos, including material containing asbestos fibres reinforced with a bonding compound.
NSW EPA	New South Wales Environment Protection Authority
Permit to work	A Permit to work authority will need to be issued to and signed by the contractor, acknowledging presence of asbestos containing materials in the work area/s identified in the register prior to commencing work. The contractor is to indicate the control measures to be used. Permit to work authorities will only be issued by the DoE Facility Manager.
PCBU	Person conducting a business or undertaking
POEO	Protection of the Environment Operations (POEO) Act
PWA	Public Works Advisory, a division of Department of Finance, Services and Innovation
SSAMP	Site specific Asbestos Management Plan; also known as Asbestos in Grounds Management Plan
WHS Act	NSW Work Health and Safety Act 2011
WHS Regulation	NSW Work Health and Safety Regulation 2017

1 INTRODUCTION

1.1 BACKGROUND

Since 2003 NSW Department of Education (DoE) has had a separate Fibro in Grounds program to address school sites that have grounds asbestos related issues, these are typically fragments of non-friable AC (asbestos containing), FC (fibre cement) fragments.

1.2 SCOPE

WSP Australia Pty Limited (WSP) was engaged by NSW Department of Education (DoE) C/o - Public Works Advisory (the Client) to produce this Site Specific Asbestos Management Plan (SSAMP) for Cronulla High School (the site).

The SSAMP has been developed to address DoE's obligations under the *NSW Work Health and Safety Regulation 2017* and *NSW Work Health and Safety Act 2011* as it relates to the presence of asbestos in grounds, by managing and minimising asbestos related health risks to personnel working on or visiting the site.

This SSAMP is to be read in conjunction with any existing asbestos register for the site and the overarching Asbestos Management Plan (AMP) for NSW Government Schools.

1.3 OBJECTIVES

The SSAMP details the approach to be taken by the DoE in managing asbestos in grounds by documenting procedures designed to minimise the risk of exposure to asbestos of all personnel on the site, including all DoE and Public Works Advisory personnel, teaching staff, maintenance staff, students, maintenance contractors and other visitors.

The SSAMP contains the following information:

- scope and limitations of the SSAMP
- asbestos related regulatory requirements
- organisational responsibilities
- details of in-ground asbestos containing materials (ACM) when previous ACM ground works have been undertaken
- an asbestos in grounds register for already known asbestos issued detected on the site
- overview of the risk assessment process
- management of in-situ asbestos containing materials in grounds
- emergency response procedures
- safe working practices
- training, and
- requirements for asbestos removal.

The SSAMP should be updated where there is a reoccurrence of asbestos in grounds, when an asbestos Clearance Certificate is produced or remediation works completed.

2 REGULATORY FRAMEWORK

This SSAMP has been developed in accordance with the following applicable legislation and codes of practice:

- *Contaminated Land Management Act 2008*
- Contaminated Land Management Regulation 2013
- *NSW Work Health and Safety Act 2011*
- NSW Work Health and Safety Regulation 2017
- How to Manage and Control Asbestos in the Workplace: Code of Practice 2016
- How to Safely Remove Asbestos: Code of Practice 2016
- NSW EPA Waste Classification Guidelines – Part 1: Classification of waste 2014
- *Protection of the Environment Operations Act 1997*

3 RESPONSIBILITIES

The DoE, as a person with management or control of a workplace (PCBU) has an obligation under Part 8.3 of the NSW Work Health and Safety Regulation 2017 to assess the risk of harm to the health and safety of any person arising from asbestos hazards.

Those responsible for the management of DoE facilities and Contractors are duty holders who have a duty of care. Each duty holder is required to comply with all relevant NSW legislation.

This SSAMP is designed for all duty holders where asbestos and asbestos containing materials may be present in grounds. Duty holders include those responsible for the management of DoE facilities, such as:

- school principal
- AMU managers
- asset management directorate
- workers including voluntary staff, and
- contractors.

4 ASBESTOS IN GROUNDS

4.1 ASBESTOS IN GROUNDS OCCURRENCES

A summary of asbestos in grounds occurrences and remediation works completed is provided in Table 4.1.

Table 4.1 Asbestos in Grounds Occurrences at Cronulla High School

DATE	AREA	LOCATION	INCIDENT	REMEDIAL MEASURE / TREATMENT	COMMENT
January 2014 & October 2017	A	Grassy area to building E, to be dug up and concreted for water tank.	Non-friable fibre cement fragments were observed on the ground surface.	A sparrow pick was performed on the visibly accessible ground surface portion. An asbestos clearance certificate was provided following the successful remediation works.	Topsoil has become exposed in an area where asbestos containing materials may be present below clean soils/clean fill.
February 2014 & October 2017	B	Entry way to grassy field between buildings A and C.	Non-friable fibre cement fragments were observed on the ground surface.	A sparrow pick was performed on the visibly accessible ground surface portion. An asbestos clearance certificate was provided following the successful remediation works.	Topsoil has become exposed in an area where asbestos containing materials may be present below clean soils/clean fill.
January 2015	C	Grassy area between building H and the western boundary fence of School.	Non-friable fibre cement fragments were observed on the ground surface.	A sparrow pick was performed on the visibly accessible ground surface portion. An asbestos clearance certificate was provided following the successful remediation works.	Topsoil has become exposed in an area where asbestos containing materials may be present below clean soils/clean fill.

DATE	AREA	LOCATION	INCIDENT	REMEDIAL MEASURE / TREATMENT	COMMENT
February 2016	D	Ground surface south of Block C.	Non-friable fibre cement fragments were observed on the ground surface.	A sparrow pick was performed on the visibly accessible ground surface portion. An asbestos clearance certificate was provided following the successful remediation works.	Topsoil has become exposed in an area where asbestos containing materials may be present below clean soils/clean fill.
July 2017	E	Area between and surrounding the 5 new demountables, south-west of the school and adjacent to Block I.	Non-friable fibre cement fragments were observed on the ground surface.	A sparrow pick was performed on the visibly accessible ground surface portion. An asbestos clearance certificate was provided following the successful remediation works.	Topsoil has become exposed in an area where asbestos containing materials may be present below clean soils/clean fill.

The approximate location of each area is detailed on the Site Plan in Appendix A.

4.2 ASBESTOS IN GROUNDS REGISTER

The location, type and condition of asbestos identified in grounds at the school is recorded in the asbestos in grounds register detailed in Table 4.2. The accompanying risk assessment has been performed following remediation works in accordance with the DoE AMP.

Table 4.2 Asbestos in Grounds Register for Cronulla High School

AREA	LOCATION*	MATERIAL DESCRIPTION	EXTENT	MATERIAL CONDITION	RISK STATUS^	CONTROL PRIORITY	MAINTENANCE REQUIREMENTS
A	Grassy area to building E, to be dug up and concreted for water tank.	Non-friable fibre cement fragments were observed on the ground surface.	Throughout – potential below ground surface.	Unknown	Low	Low	Any further excavation works should be done with the understanding that the soil may contain asbestos, and with the appropriate utilization of PPE. Work in the area should not be undertaken during school hours. Any fragments removed from the area should be disposed of as asbestos waste. Upon completion of concreting work, the remaining grassy area within the vicinity of Area A should be maintained. Any future finds of asbestos fragments should be disposed of in an appropriate manner.

AREA	LOCATION*	MATERIAL DESCRIPTION	EXTENT	MATERIAL CONDITION	RISK STATUS^	CONTROL PRIORITY	MAINTENANCE REQUIREMENTS
B	Entry way to grassy field between buildings A and C.	Non-friable fibre cement fragments were observed on the ground surface	Throughout – potential below ground surface	Unknown	Low	Low	The area should be regularly monitored for any fragments and a record kept of how many are found and at what frequency. Fragments should be collected and disposed of as asbestos waste. Consideration should be given to restricting access to the area and the repair of surface coverage using appropriate cover such as artificial turf which will prevent heavy foot traffic damage and reduce erosion caused by water runoff.
C	Grassy area between building H and the western boundary fence of School.	Non-friable fibre cement fragments were observed on the ground surface	Throughout – potential below ground surface	Unknown	Low	Low	The area should be regularly monitored for any fragments and a record kept of how many are found and at what frequency. Fragments should be collected and disposed of as asbestos waste. Consideration should be given to restricting access to the area and the repair of surface coverage using appropriate cover such as artificial turf which will prevent heavy foot traffic damage and reduce erosion caused by water runoff.
D	Ground surface south of Block C.	Non-friable fibre cement fragments were observed on the ground surface.	Throughout – potential below ground surface	Unknown	Low	Low	The area should be regularly monitored for any fragments and a record kept of how many are found and at what frequency. Fragments should be collected and disposed of as asbestos waste.

AREA	LOCATION*	MATERIAL DESCRIPTION	EXTENT	MATERIAL CONDITION	RISK STATUS^	CONTROL PRIORITY	MAINTENANCE REQUIREMENTS
E	Area between and surrounding the 5 new demountables, south-west of the school and adjacent to Block I.	Non-friable fibre cement fragments were observed on the ground surface.	Throughout – potential below ground surface	Unknown	Low	Low	it's recommended that the following be done within this area: Wherever possible, limit or eliminate the need for soil to be moved off site. It's preferable that soil excavated during construction works is utilised as backfill and capped or spread out beneath a demountable. If removal of soil out of the area must occur, ensure that soil classification is undertaken on the material beforehand so that it is disposed of correctly. Once construction works are completed, contractors should conduct a final walkover of areas around and between the demountables to ensure that no fragments are visible. Any fragments found must be disposed of as asbestos waste. It's WSP's understanding that the school intends on constructing garden beds around the demountables. As this area is considered an 'asbestos zone', any work that will disturb grass cover or soil must be undertaken by a licenced asbestos removalist. It's recommended that raised garden beds over a layer of geo-fabric be constructed which will limit disturbance. If this is not possible, and soil requires excavation, ensure that a DoE panel contractor is engaged to

AREA	LOCATION*	MATERIAL DESCRIPTION	EXTENT	MATERIAL CONDITION	RISK STATUS^	CONTROL PRIORITY	MAINTENANCE REQUIREMENTS
* Refer to Appendix A – Site Plan for details of area locations ^ Risk assessment conducted following remediation works **RISK ASSESSMENT FACTORS** **Low Risk:** Asbestos containing materials that pose a low health risk to personnel, employees and the general public providing they remain undisturbed. **Medium Risk:** Asbestos containing materials that pose a moderate risk to people in the area – there is a medium potential for the material to release asbestos fibres if disturbed. **High Risk:** Asbestos containing materials that pose a high health risk to personnel of the public in area of the material. There is a high potential for the material to release asbestos fibres if disturbed, or a potential for the materials to release fibres even if undisturbed.							

5 SITE MANAGEMENT REQUIREMENTS

5.1 RE-INSPECTIONS

In order to monitor the effectiveness of onsite management it is essential that the affected areas are regularly inspected. Visual inspections of the asbestos remedial measures should be carried out to ensure that they are maintained adequately. Reinspections will be the responsibility of the Principal or site manager. Such inspections should occur on the following occasions:

- at three monthly intervals (e.g. a walkover of remediated areas to ensure that applications of mulch, turf, etc. have been maintained)
- as part of routine building inspections
- after a period of prolonged heavy rain (e.g. a walkover of remediated areas to ensure that applications of mulch, turf, etc. have not been disturbed by heavy rain)
- whenever damage or disturbance has been reported (e.g. a walkover of remediated areas to ensure that applications of mulch, turf, etc. have not been disturbed by events such as vehicle trafficking).

Should areas of exposed soil or geo-fabric be identified where previous containment has occurred or where encapsulating encapsulating measures appear to be damaged or are no longer effective, then these areas should be re-covered immediately. Some remedial measures, such as added surface layers of mulch and topsoils, will require ongoing maintenance to ensure that a sufficient barrier layer is in place.

Some sites, for example those with no new occurrence of asbestos in the past 5 years, are inspected at 12-monthly intervals and/or as points indicated above.

Records of these inspections should be kept using the Site Management Requirements checklists provided in Appendix B.

5.2 ASBESTOS INCIDENT PROCEDURE

This asbestos incident procedure aims to set out the steps to be taken for asbestos management when suspected ACMs have been found in DoE Facility grounds. Scenarios where suspected ACMs may be found in DoE Facility grounds include:

- Illegal dumping of suspected asbestos waste - dumped asbestos waste can be mixed with general builders' waste, which may include rubble and spoil.
- Single source at surface such as fibrous cement sheeting – this is usually due to demolition of a structure containing asbestos such as a building or fence where waste has been left at the surface or buried instead of being properly disposed of.
- Extensive surface contamination – this can be as a result of imported waste materials (schools may also be situated on old landfill sites) used for landscaping or from demolition of domestic dwellings previously found on the site, with fibrous cement fragments becoming exposed over time due to surface erosion and soil dynamics, or due to demolition of structures containing ACM.
- Fill materials – fill materials have been widely used in DoE Facilities, typically for landscaping / levelling purposes. Fill may also be present in building footprints. Fill generally comprises builders' rubble, typically bricks, although older fill often contains waste fibrous cement materials in addition to other building materials. Fill may also be generated on-site to build up depressions or level grounds.

- In-ground asbestos cement pipes – it is possible that asbestos cement drainage pipes may be present in-situ within the ground at DoE facilities. While such materials remain buried and in operation they represent a low risk.

The following procedure is set out as a guide to follow where suspected ACMs have been found at the surface of DoE Facility grounds:

- Restrict access immediately.
- Do not attempt to dispose of / move material.
- Check asbestos in grounds asbestos register.
- Contact DoE AMU on 132 779 as soon as practicable and Incident Report and Support Hotline on 1800 811 523.
- DoE or their representatives will arrange inspections and testing if necessary by consultant from DoE hygienist panel.
- DoE or their representatives to arrange removal of ACMs / remediation of site.
- Once asbestos removal or remediation works have been completed, an asbestos clearance certificate will be issued to return area to normal use.
- Site specific AMP is updated to enter area into asbestos in grounds register.

6 SAFE WORKING PRACTICES

6.1 GENERAL

Prior to commencing any works to grounds on any DoE facility, the asbestos in grounds register on-site must be consulted to determine if any known asbestos containing materials are present that are at risk of being disturbed (https://education.nsw.gov.au/about-us/strategies-and-reports/our-reports-and-reviews/schools-asbestos-register).

If documented asbestos containing materials are present in the area and may be impacted upon by the proposed works, the asbestos must be removed/encapsulated under controlled conditions prior to the commencement of any works.

If unknown materials or undocumented materials suspected of containing asbestos are encountered during works, such materials are to be treated as if they contain asbestos and any work that may impact on that material must immediately cease, pending sampling and analysis by a qualified person selected from the DoE hygienist panel. This will allow the DoE to determine what control methods are required.

6.2 PERMIT TO WORK

If it is determined, after consulting the asbestos in grounds register, that asbestos containing materials are present in the vicinity of the planned works, a permit to work authority will need to be issued to, and signed by, the contractor. Permit to work authorities will only be issued by the DoE Facility Manager. All asbestos works must be managed by an agent of DoE, such as Department of Public Works, following approval from the directorate. All asbestos works are to be undertaken outside of school hours.

Before being issued with a permit to work, individuals will be required to read and understand this SSAMP as well as copies of asbestos removal control plans or risk assessments prepared by DoE hygienist panel members. Individuals must be aware of their legal obligations in relation to health and safety specified in the NSW Work Health and Safety Act 2011 and the NSW Work Health and Safety Regulation 2017.

Workers engaged in the removal of asbestos and asbestos containing materials will not be issued with a permit to work unless they are employed by a company holding an asbestos removal licence issued by SafeWork NSW appropriate for the type of asbestos containing materials concerned.

The permit to work formally places a responsibility for compliance with this SSAMP and the NSW Work Health and Safety Regulation 2017 on the signatories.

The permit to work is designed to ensure appropriate work practices are employed in the vicinity of asbestos containing materials. The permit to work will document what asbestos is to be removed, encapsulated or otherwise protected, prior to the contracted maintenance or building works proceeding. The permit to work will also indicate whether other requirements such as use of personal protective equipment (PPE), the installation of barricading and airborne fibre monitoring are necessary and may provide recommendation for further consultation, sampling or investigation by a member of the DoE hygienist panel prior to permit and contract finalisation.

When a project involves a team of more than one worker, the person in charge of the team will be issued with the permit to work. That person will be responsible to ensure their workers are aware of their responsibilities. That person will also be responsible to ensure that each worker's signature appears on the appropriate section of the permit.

When work is completed, or the permit to work expires (whichever occurs first), the permit shall be signed by the contractor and returned to the DoE Facility Manager to cancel it after ensuring that a safe situation exists. The DoE Facility Manager shall review any documentation provided by the DoE hygienist panel member, such as asbestos air monitoring and asbestos clearance inspection certificate/s, and inspect the work area to ensure that it is fit for purpose prior to returning it to normal use. The AMU can provide assistance if required.

The DoE Asset Management Directorate shall be advised immediately by any site personnel of any incidents of non-compliance with the SSAMP that have occurred.

The DoE Facility Manager will maintain a register of all permits to work that have been issued and cancelled.

It will be a condition of engagement of contractors who are required to work on-site that a permit to work be issued and cancelled as required.

6.3 CONTRACTOR HEALTH AND SAFETY

Prior to undertaking any work that involves the removal, repair or disturbance of asbestos containing materials, a Safe Work Method Statement (SWMS) will be prepared that defines safe procedures to protect the health and safety of personnel. This statement should include the following measures, as a minimum:

- confirmation of their review of the relevant asbestos register, asbestos removal control plan and other relevant documentation, prior to preparation of the SWMS.
- review of risks associated with their possible exposure to asbestos or ACMs.
- all workers shall wear appropriate Personal Protective Equipment (PPE) for the work undertaken. This may include protective coveralls, gloves and safety boots.
- all workers shall wear appropriate Respiratory Protective Equipment (RPE)for the work undertaken.
- decontamination procedures and measures (if applicable).
- asbestos removal areas and buffer zones.
- asbestos air monitoring samples (number and frequency).

In addition,

- a reference to all appropriate licences and insurances held by the contractor should be included.
- a reference as an additional safety measure, that all works are to be undertaken outside school hours, should be included. Appropriate measures are to be included regarding this requirement.

The Safe Work Method Statement (SWMS) should be reviewed by the Agent of DoE that engages the contractor as per the requirements of the permit to work.

6.4 AWARENESS TRAINING

It is best practice that DoE Asset Management personnel and Facilities Maintenance Contractors who are not likely to be exposed to asbestos but work in areas where asbestos is, or may be present, in grounds be provided with an asbestos awareness training. It is recommended that such training shall include the following:

- overview of asbestos related legislation (State), standards and codes of practice.
- information on the presence of asbestos in DoE Facility grounds, including the types of asbestos and typical locations where asbestos may be encountered
- information should be provided on the differences between friable and non-friable products
- highlighting the need to avoid disturbing in-situ asbestos containing materials
- procedures to be followed in the event disturbed asbestos containing materials are identified, or unknown materials / products suspected of containing asbestos are encountered, including the relevant point of contact within the DoE
- information about general methods of asbestos management and removal

- information about airborne asbestos air monitoring.

Asbestos awareness training is to be provided by a consultant selected from the DoE hygienist panel.

7 ASBESTOS REMOVAL

A detailed and site specific work scope and technical specification will be developed by an agent of DoE or their representative, such as PWA, prior to the removal of ACMs from any DoE facility grounds. The removal of ACMs shall be performed by a licensed asbestos removal contractor selected from the DoE hygienist panel (i.e. the appropriate licence for the removal of asbestos issued by SafeWork NSW).

Please note, any work that involves disturbing asbestos must be administered by DoE or their representative.

It is DoE policy to engage a Class A licensed contractor as best practice for all occurrences of asbestos contaminated soil. The contractor will be engaged by an agent of DoE from a panel approved by DoE and all engagements will be according to SafeWork NSW guidelines and follow the advice of the hygienist / competent (asbestos assessor) person engaged from the DoE hygienist panel.

7.1 ASBESTOS IN GROUNDS GENERAL REMOVAL PROCEDURES

All works carried out that involves disturbance of ACMs (including removal) must be administered by DoE or their representative.

All removals are to be undertaken according to:

- *Contaminated Land Management Act 2008*
- Contaminated Land Management Regulation 2013
- NSW Work Health and Safety Act 2011
- NSW Work Health and Safety Regulation 2017
- How to Manage and Control Asbestos in the Workplace: Code of Practice 2016
- How to Safely Remove Asbestos: Code of Practice 2016
- NSW EPA Waste Classification Guidelines – Part 1: Classification of waste 2014
- Other relevant documentation issued from time-to-time by SafeWork NSW or NSW EPA.

Follow the advice of the hygienist / competent (asbestos assessor) person engaged from the DoE hygienist panel to conduct a risk assessment and determine the most appropriate control measures and remediation strategies prior to asbestos removal works getting underway.

Several examples of common circumstances involving soil and ACM have been determined. For each of those circumstances, the following procedures should be followed.

7.1.1 SPARROW-PICKING OF ACM FRAGMENTS

- Following determination of the area affected by fragments of ACMs by a competent person / asbestos assessor (hygienist) selected from the DoE hygienist panel and approval to commence works from DoE, a permit will be issued to engage a friable licensed asbestos contractor.
- It is likely that fragments of ACM are in the form of asbestos cement sheeting (ACS), bituminous membrane or vinyl tile.
- The asbestos removal contractor approved by DoE is engaged to sequentially and systematically travel across each area and remove all instances of fragments of potential ACM from exposed ground surfaces.
- All works are to require asbestos air monitoring provided by a hygienist selected from the DoE hygienist panel.

- All works to require an asbestos clearance inspection undertaken by a hygienist selected from the DoE hygienist panel following the completion of the asbestos removal works.
- All documents, including licenses, airborne asbestos monitoring, asbestos clearance inspections and tipping dockets, is to be provided to DoE.
- All records are to be updated.

7.1.2 ENCAPSULATION OF SOIL CONTAINING ACM ON-SITE

- Ensure that the area is isolated in the interim and any potential dust is managed.
- Ensure that a document such as a remedial action plan (RAP), including a site specific asbestos management plan (SSAMP) is prepared or updated by a competent person / asbestos assessor (hygienist) selected from the DoE hygienist panel, detailing the encapsulation method (including comments on suitability for intended land use, e.g. car park) and environmental management requirements during implementation (e.g. dust and noise management). If the selected hygienist requires additional soil expertise, then engage a suitably experienced contaminated land management consultant, preferably from within their own company and known to DoE, with experience gained from DoE sites.
- Ensure that a permit is received from DoE to commence works.
- The AMP will determine if the asbestos is friable / non-friable and the extent of impact (lateral and vertical) through selected sampling and analysis.
- That document is to be submitted to SafeWork NSW, along with a permit application to SafeWork NSW by the selected asbestos removal contractor.
- DoE to obtain written approval from EPA before work permit is granted by DoE.
- DoE to verify compliance under WH&S Act and POEO Act.
- Notification by DoE is to be made to the respective council to allow inclusion on the site s149 certificate (under the NSW EPA Act 1997).
- In addition, the area to be encapsulated is to be documented / surveyed in such a manner to accurately determine location and depth at a later date.
- Upon receipt of both above mentioned permits from DoE and SafeWork NSW, works are to commence, along with asbestos air monitoring by a hygienist selected from the DoE hygienist panel during the encapsulation process.
- Upon completion an inspection is undertaken by the hygienist consultant to confirm activities as detailed within the RAP/AMP have been implemented and providing comment that the land has been remediated / encapsulated to allow for intended use and a site management plan is prepared to manage any future subsurface activities that may be required for the site (e.g. excavation of a trench to install new electricity cables or stormwater).

7.1.3 EXCAVATION OF SOIL CONTAINING ACM FROM SITE

The preferred method is encapsulation of soils on-site, however if excavation and removal of soils from site becomes necessary, then the following is to be implemented as a general guide:

- Ensure that the area is isolated in the interim and any potential dust is managed.
- Ensure that a document such as a remedial action plan (RAP) including an asbestos removal control plan (ARCP) is prepared by a competent person / asbestos assessor (hygienist) selected from the DoE hygienist panel providing recommendations for the excavation of soil so as to provide for environmental management requirements during implementation (e.g. dust and noise management). If the selected hygienist requires additional soil expertise, then they are to involve a suitably experienced contaminated land management consultant, preferably from within their own company and known to DoE, with experience gained from DoE sites.

- Ensure that a permit is received from DoE to commence works.
- The ARCP will determine if the asbestos is friable / non-friable.
- That document is to be submitted to SafeWork NSW, along with notification to SafeWork NSW by the selected asbestos removal contractor.
- Upon receipt of both above mentioned permits from DoE and SafeWork NSW, works are to commence, along with asbestos air monitoring by a hygienist selected from the DoE hygienist panel during the removal process.
- Upon completion of soil removal (that portion contaminated with ACM), an inspection is undertaken by the hygienist consultant to confirm activities as detailed within the RAP/ARCP have been implemented and providing comment that those works have been completed in respect to asbestos contamination to a satisfactory level to allow for the next stage of works to commence. The site management plan (inclusive of a possible unexpected finds protocol) continues to be followed to manage any future occurrence of subsurface ACM that may be exposed during the excavation of soils on-site.

Following the investigation, the material should be classified in accordance with NSW EPA Waste Classification Guidelines – Part 1: Classification of waste 2014, and taken to an approved landfill site that is licensed to receive waste relevant to its classification.

8 LIMITATIONS

This Report is provided by WSP Australia Pty Limited (*WSP*) for NSW Department of Education (*Client*) in response to specific instructions from the Client and in accordance with WSP's proposal dated 21/07/2016 and agreement with the Client dated 12/10/2016 (*Agreement*).

PERMITTED PURPOSE

This Report is provided by WSP for the purpose described in the Agreement and no responsibility is accepted by WSP for the use of the Report in whole or in part, for any other purpose (*Permitted Purpose*).

QUALIFICATIONS AND ASSUMPTIONS

The services undertaken by WSP in preparing this Report were limited to those specifically detailed in the Report and are subject to the scope, qualifications, assumptions and limitations set out in the Report or otherwise communicated to the Client.

Except as otherwise stated in the Report and to the extent that statements, opinions, facts, conclusion and / or recommendations in the Report (*Conclusions)* are based in whole or in part on information provided by the Client and other parties identified in the report (*Information*), those Conclusions are based on assumptions by WSP of the reliability, adequacy, accuracy and completeness of the Information and have not been verified. WSP accepts no responsibility for the Information.

Where the survey identifies that hazardous materials are on site, the Conclusions are indicative of the presence of hazardous materials and cannot be regarded as absolute without further extensive sampling, outside the scope of the services set out in the Agreement. Site conditions, including the extent and visibility of hazardous materials, can change with time. On all sites, varying degrees of non-uniformity of conditions are encountered and the presence of hazardous materials which are not visually apparent at the time of inspection, are not likely to be detected. No monitoring, common testing or sampling technique provides results that are totally representative of the presence or non-presence of hazardous materials at the Site.

Hazardous materials that could be routinely encountered in the normal day-to-day activities occurring on the Site, have been identified and assessed, however there is no guarantee that the Site is free of hazardous materials, since future activities may reveal hazardous materials in areas inaccessible or unknown to WSP.

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WSP has prepared the Report without regard to any special interest of any person other than the Client when undertaking the services described in the Agreement or in preparing the report.

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APPENDIX A

SITE PLAN

8261 - Cronulla High School

Site Plan (12046)

1:2,036

Printed: 17-Mar-2016

APPENDIX B

SITE MANAGEMENT REQUIREMENTS - CHECKLISTS

B1 SITE MANAGEMENT REQUIREMENTS - CHECKLISTS

Table B.1 Three-Monthly Interval Checklist

AREA	LOCATION	INSPECTION DETAILS	INITIAL INSPECTION	SUBSEQUENT THREE-MONTYLY INSPECTIONS			
			DATE	DATE	DATE	DATE	DATE
A	Grassy area to building E, to be dug up and concreted for water tank	Surface cover adequate? (Y/N)					
		Suspected asbestos materials visible? (Y/N)					
B	Entry way to grassy field between buildings A and C	Surface cover adequate? (Y/N)					
		Suspected asbestos materials visible? (Y/N)					
C	Grassy area between building H and the western boundary fence of the school	Surface cover adequate? (Y/N)					
		Suspected asbestos materials visible? (Y/N)					
D	Ground surface south of Block C	Surface cover adequate? (Y/N)					
		Suspected asbestos materials visible? (Y/N)					

AREA	LOCATION	INSPECTION DETAILS	INITIAL INSPECTION	SUBSEQUENT THREE-MONTYLY INSPECTIONS			
			DATE	DATE	DATE	DATE	DATE
E	Area between and surrounding the 5 new demountables, south-west of the school and adjacent to Block I	Surface cover adequate? (Y/N)					
		Suspected asbestos materials visible? (Y/N)					

Table B.2 Incident Inspection Checklist (e.g following heavy rain or disturbance)

AREA	LOCATION	INSPECTION DETAILS	INITIAL INSPECTION	SUBSEQUENT INCIDENT INSPECTIONS			
			DATE	DATE	DATE	DATE	DATE
A	Grassy area to building E, to be dug up and concreted for water tank	Surface cover adequate? (Y/N)					
		Suspected asbestos materials visible? (Y/N)					
B	Entry way to grassy field between buildings A and C	Surface cover adequate? (Y/N)					
		Suspected asbestos materials visible? (Y/N)					
C	Grassy area between building H and the western boundary fence of the school	Surface cover adequate? (Y/N)					
		Suspected asbestos materials visible? (Y/N)					
D	Ground surface south of Block C	Surface cover adequate? (Y/N)					
		Suspected asbestos materials visible? (Y/N)					
E	Area between and surrounding the 5 new demountables, south-west of the school and adjacent to Block I	Surface cover adequate? (Y/N)					
		Suspected asbestos materials visible? (Y/N)					

Attachment H: Unexpected Finds Protocol

It is considered possible that unexpected situations may occur during stripping or bulk earthworks, including the possibility to uncover unidentified environmental concerns. A site contingency plan for managing unexpected situations is to be prepared by the Contractor to address unexpected finds. All site personnel are to be aware of their responsibilities under the unexpected finds protocol and are to report any potential signs of contamination to the site manager immediately. Potential signs of contamination may include (but are not limited to):

- Any potential asbestos containing material (PACM) observed within soil, e.g. fibrous cement sheeting or piping (intact or fragmented);
- Any unnatural material or fill material not previously identified;
- Any uncovered anthropogenic material within soil not previously identified;
- Any fuel or oil spills;
- Any unnatural soil staining or odours within excavated soil.

In the event the contractor uncovers unexpected finds during remedial works, the following steps are to be undertaken:

1. Cease all work in the area and notify site foreman / manager and environmental consultant.
2. Notify any relevant authorities (e.g. fire brigade) if an emergency response is required.
3. Construct temporary barricading to prevent worker / public access to any unexpected and / or unknown substances.
4. Install appropriate stormwater diversion and sediment controls as required.
5. Notify relevant authorities that the contractor is legally required to notify (e.g. EPA and / or Council).
6. Site foreman / manager is to arrange site inspection by the environmental consultant to assess the unexpected find and determine if any sampling or remedial action is required in the area.

The environmental consultant shall prepare an assessment outlining the nature and extent of contamination, and remediation or management

procedures required to address the unexpected find. If remedial action is required, written validation of each unexpected find is to be prepared by MA and provided to the contractor prior to the recommencing of works ceased as a result of the unexpected find.