

Sutherland & Associates Planning



# Detailed Site Investigation: 21 Vincents Road, Kurrajong, NSW

ENVIRONMENTAL



WATER



WASTEWATER



GEOTECHNICAL



CIVIL



PROJECT  
MANAGEMENT



P2007700JR10V01  
October 2021

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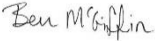
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**Head Office**  
Suite 201, 20 George St  
Hornsby, NSW 2077, Australia  
ACN 070 240 890 ABN 85 070 240 890  
**Phone: +61-2-9476-9999**  
Fax: +61-2-9476-8767  
Email: mail@martens.com.au  
Web: www.martens.com.au

Document and Distribution Status							
Author(s)		Reviewer(s)		Project Manager		Signature	
William Xu		Ben McGiffin		Terry Harvey			
Revision No.	Description	Status	Release Date	Document Location			
				File Copy	Sutherland & Associates Planning		
1	Final for DA submission	Final	29.10.2021	1E,1P,1H	1P		

Distribution Types: F = Fax, H = hard copy, P = PDF document, E = Other electronic format. Digits indicate number of document copies.

**All enquiries regarding this project are to be directed to the Project Manager.**

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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) on behalf of Sutherland & Associates Planning (the Client) to support a development application (DA) to Hawkesbury City Council (Council) for a residential development at 21 Vincents Road, Kurrajong, NSW (Lot 6 DP 270827) ('the site').

The investigation area (IA) for this DSI is the entire site as shown in Attachment A.

A Preliminary Site Investigation (PSI) was been previously prepared by MA (MA 2021) which recommended a programme of soil investigation to assess the contamination status of the site.

## **1.2 Proposed Development**

The proposed site development of 'Tallowood – Stage 2' (Envirowood, 2021) involves the construction of multiple seniors living residential developments and parklands.

The proposed development plans are shown in Attachment C.

## **1.3 Objectives**

The objectives for this DSI are:

- Identification of historical and current potentially contaminating site activities.
- Evaluation of areas of environmental concern (AEC) and associated contaminants of potential concern (COPC) within the IA.
- Provide comment on the suitability of the IA for the proposed Stage 2 development, and where required, provide recommendations for additional investigations and / or remediation.

## **1.4 Scope of Works**

The scope of works includes:

- Review of previous site documentation (MA, 2021).
- Intrusive subsurface investigation and sampling.
- Laboratory analysis of samples for COPC.
- Preparation of a 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 general accordance with the following guidelines:

- NEPC (1999, amended 2013) National Environmental Protection (Assessment of Site Contamination) Measure. Referred to as ASC NEPM (2013).
- NSW EPA (2017) 3<sup>rd</sup> Ed. Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme.
- NSW EPA (1995) Sampling Design Guidelines.
- 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 Attachment A

**Table 1:** Site information.

Item	Description / Detail
Site address	21 Vincents Road, Kurrajong, NSW
Legal Identifier	Lot 6 DP 270827
Approximate area	5.4 ha (SIX Maps, 2020)
Local Government Area	Hawkesbury City Council
Current zoning and land use	Zoned RU1 – Primary Production (Hawkesbury LEP, 2012). Site is currently used for rural purposes.
Proposed land use	Residential seniors living development.
Surrounding land uses	The site is bounded by: <ul style="list-style-type: none"><li>o Vincents Road to the southwest.</li><li>o Old Bells Line of Road to the west.</li><li>o Low-density residential properties and pasture land to the north, east and south.</li></ul>
Topography	The site contains slopes 50% in the western part of the site and 15% to 20% in the central and eastern part. The site aspect is generally east and southeast. Site elevation ranges between 171 mAHD in the northwest and 120 mAHD in the southeast (Environs Studio, 2020).
Expected geology	The <i>Penrith 1:100,000 Geological Sheet 9030</i> describes site geology as Bringelly Shale, Ashfield Shale and Minchinbury Sandstone Formation within the Wianamatta Group. The NSW Environment and Heritage eSPADE website identifies the site as having soils of the Luddenham landscape consisting of shallow dark podzolic soils on upper slopes.

### 2.2 Hydrogeology

Review of WaterNSW Real-time Water Database, indicated one groundwater bore within 500 m of the site, with the groundwater bore summarised in Table 2.

**Table 2:** Available hydrogeological information.

Bore Identification	Record Date	Intended Use	Standing Water Level (mbgl)	First Water Bearing Zone (mbgl) and Substrate	Distance and Direction from IA
GW104396	1982	Stock, domestic	Not available	Not available	On site
GW100708	1996	Stock, industrial, domestic, irrigation	38	3 – 55 Shale	98 m north
GW107452	2005	Household	2	0 - 6 Clay, brown shale	126 m south west
GW111034	2010	Household	30	15 - 84 Clay	267 m south west

Groundwater inflow was not encountered during the drilling of boreholes for this DSI.

Ephemeral perched groundwater may be encountered within the soil profile at times of, and following heavy or extended rainfall.

Should further information on permanent site groundwater conditions be required, an additional assessment would need to be carried out (i.e., installation of groundwater monitoring bores / ongoing groundwater monitoring).

## 3 Previous Site Investigations

### 3.1 Preliminary Site Investigation

A PSI (MA, 2021) was completed for the site, which identified potential sources of contamination. Key findings are summarised in Table 3.

**Table 3:** PSI (MA, 2021) summary.

Investigation Details	Investigation Task and Finding
Scope of works	<p>Desktop review of previous reports, aerial photographs, online databases and land title information.</p> <p>Review of local geology, hydrogeology and topography maps.</p> <p>Site walkover to review existing site conditions.</p>
Key findings of historical site review and walkover	<p>Aerials indicate that the site primarily consisted of rural land use with a sustained period of agricultural use (orchards) in the northern and western portions of the site. Generally, the site has remained largely undeveloped. The current site structures have been present from at least 2010 (based on aerial photographs) and no evidence of additional significant development occurring during this time.</p> <p>The site walkover identified that for the western portion:</p> <ul style="list-style-type: none"> <li>Thickly vegetated along boundary.</li> <li>Concrete water tanks.</li> </ul> <p>Norther portion:</p> <ul style="list-style-type: none"> <li>Rows of trees and a formal memorial garden.</li> <li>Cut and fill activities (small pad) south of the formal memorial garden.</li> <li>Natural drainage depression close to the northern boundary.</li> </ul> <p>Southern Portion:</p> <ul style="list-style-type: none"> <li>Large wooden shed with upper floor maybe a small residence.</li> <li>Small metal shed (access was not possible) which may contain oils and fuels.</li> <li>A wooden chicken coop which was empty at the time of inspection.</li> <li>Cut and fill retaining walls to the west of the chicken coop.</li> <li>An animal pen with fill pad from levelling. Minor building waste (fragments of tile, glass and pipe) was observed next to the pen on the surface.</li> </ul> <p>Central and Eastern portion:</p> <ul style="list-style-type: none"> <li>An area of burnt rubbish.</li> <li>Three dams and a galvanised steel pump house.</li> <li>Potential filling on the dam walls.</li> </ul>
Identified AEC and COPC	<p>Identified AEC and COPC were:</p> <ul style="list-style-type: none"> <li>Sheds with COPC consisting of asbestos, heavy metals, hydrocarbons and pesticides.</li> <li>Former and existing orchard use with COPC consisting of heavy metals and pesticides.</li> <li>Potential filling from unknown sources with COPC consisting of asbestos, heavy metals, hydrocarbons and pesticides.</li> <li>Burnt areas with COPC consisting of heavy metals and hydrocarbons.</li> </ul>
Recommendations	<p>DSI incorporating soil sampling and analysis for COPC within the AEC at the site.</p>

## 4 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 PSI (MA, 2021).

**Table 4:** AEC and COPC.

AEC	Description	COPC
AEC A Sheds including 1 m curtilage	Pesticides and heavy metals may have been used underneath existing sheds for pest control. Building construction may include PACM, zinc treated (galvanised) metals, and lead based paints. Sheds may have previously stored fuels, oils and chemicals.	HM, TRH, BTEXN, PAH, OCP / OPP and asbestos
AEC B Former and existing orchard use	Application of agricultural chemicals, use of pesticides and heavy metals for pest control during site use as rural uses.	HM and OCP / OPP
AEC C Potential filling	Site walkover observations have identified areas where cut and fill activities may have occurred. This process may have introduced fill from unknown origins.	HM, TRH, BTEXN, PAH, OCP / OPP and asbestos
AEC D Burnt areas	Areas where timber, rubbish and other materials may have been burnt may have introduced contamination to the soil.	HM, TRH, BTEXN and PAH

A conceptual site model (CSM), based on the AEC and COPC identified in Table 4, and the associated exposure pathways to potential receptors are summarised in Table 5.

**Table 5:** Conceptual site model.

<b>Affected Media</b>	Soil has been identified as the primary source of contamination for the site. Groundwater underlying the site is not expected to be a contaminant source based on the PSI.
<b>Potential Receptors</b>	Potential on site human receptors include future residents and staff, as well as construction and maintenance workers. Potential off site human receptors include 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.
<b>Potential Exposure Pathways</b>	At the time of this DSI, the site was grassed with scattered trees. Potential exposure pathways include ingestion, dermal absorption, and inhalation of dust (for all contaminants) and vapours (for volatile hydrocarbons). Given the proposed development will include minor earthworks, a pathway between contaminants and potential site receptors may become complete.

## 5 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.

Field screening methods:

- Sample handling, preservation and storage procedures.
- Analytical QA / QC.

The following sections summarise the DQO, DQI and QA / QC.

### 5.1 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), EPA (2014) and NEPM (2013) guidelines, and are presented in Table 6.

**Table 6:** Data quality objectives.

<b>Step 1 Stating the Problem</b>	Review of previous site documentation identified potential contaminants that might be accessible to human and environment receptors during construction of the proposed residential development. This DSI is required to assess risk posed by COPC in the identified AEC to receptors.
<b>Step 2 Identifying the Decision(s)</b>	To assess the suitability of the site for future land use, decisions are to be made based on the following questions: <ul style="list-style-type: none"> <li>o What is the contaminant exposure pathway?</li> <li>o Has previous or current site use impacted the IA that may pose a risk to humans or the environment for future land use?</li> <li>o Does the IA require remediation or management prior to constructing the proposed development?</li> </ul>
<b>Step 3 Identification of Inputs to the Decision</b>	The inputs to the assessment include: <ul style="list-style-type: none"> <li>o Field observations made during intrusive investigation works.</li> <li>o Soil sampling at nominated locations across the IA.</li> <li>o Laboratory analytical results for relevant COPC.</li> <li>o Assessment of analytical results against site suitable guidelines.</li> </ul>
<b>Step 4 Study Boundary Definitions</b>	Study boundaries are as follows: <ul style="list-style-type: none"> <li>o Lateral – Lateral boundary of the assessment is defined by the IA boundary.</li> <li>o Vertical – Vertical boundary is governed by the maximum depth reached during subsurface investigations.</li> <li>o Temporal – One round of soil sampling has been undertaken at this stage.</li> </ul>
<b>Step 5 Development of Decision Rules</b>	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, further investigations to remediate and / or manage the onsite impacts, in relation to the proposed development, will be undertaken.
<b>Step 6 Specification of Limits on Decision Errors</b>	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.
<b>Step 7 Optimisation of Sampling Design</b>	Proposed sampling locations shall provide even coverage across the IA in the identified AEC. 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. Based on the area of the site, the sample density meets the minimum number of sampling points (including boreholes from MA, 2021b) required for site characterisation outlined in Table A of NSW EPA (1995) <i>Sample Design Guidelines</i> .

## 5.2 Data Quality Indicators

In accordance with NSW EPA (2017), the investigation data set has been compared with DQI outlined in Table 7 to ensure that collected data meets the project needs and that DQO has been met.

**Table 7:** Data quality indicators.

Assessment Measure (DQI)	Comment
<b>Precision</b> – A measure of the variability (or reproducibility) of data.	<p>Precision is assessed by calculating the relative percent difference (RPD) between blind field duplicates and primary samples.</p> <p>Data precision is deemed acceptable where results are 0 - 10 x EQL or where RPDs &lt;50% (10 - 30 x EQL) or &lt;30% (&gt;30 x EQL).</p> <p>Exceedance of this range may still be considered acceptable where heterogeneous materials such as fill are sampled.</p>
<b>Accuracy</b> – A measure of the closeness of reported data to the “true value”.	<p>Data accuracy is assessed by:</p> <ul style="list-style-type: none"> <li>Field spikes and blanks.</li> <li>Laboratory control samples.</li> </ul>
<b>Representativeness</b> – The confidence that data are representative of each media present on the site.	<p>To ensure data representativeness the following field and laboratory procedures are followed:</p> <ul style="list-style-type: none"> <li>Ensure that the design and implementation of the sampling program have been completed in accordance with MA standard operating procedures (SOP).</li> <li>Trip blank and trip spike samples shall be used for volatiles during field sampling to ensure no cross contamination or laboratory artefacts.</li> <li>Ensure that all laboratory hold times are met and that sample handling and transport are completed in accordance with the MA SOP.</li> </ul>
<b>Completeness</b> – A measure of the amount of usable data from a data collection activity.	<p>To ensure data set completeness, the following is required:</p> <ul style="list-style-type: none"> <li>Confirmation that all sampling methodology was completed in general accordance with the MA SOP.</li> <li>COC and receipt forms.</li> <li>Results from all laboratory QA / QC samples (lab blanks, trip blank, trip spike, lab duplicates).</li> <li>NATA accreditation stamp on all laboratory reports.</li> </ul>
<b>Comparability</b> - The confidence that data may be considered to be equivalent for each sampling and analytical event.	<p>Data comparability is maintained by ensuring that:</p> <ul style="list-style-type: none"> <li>All site sampling events are undertaken following methodologies outlined in MA SOP and published guidelines.</li> <li>NATA accredited laboratory methodologies shall be followed on all laboratory analysis.</li> </ul>

### 5.3 Methodology and Quality Assurance / Quality Control

Site investigation and soil sampling methodology as shown in Table 8, was completed to meet the project DQO.

**Table 8:** Investigation and sampling methodology.

Activity	Detail / Comments
Fieldworks	<p>Subsurface soil investigations were completed on 15 October 2021 and involved:</p> <ul style="list-style-type: none"><li>Excavation of 8 boreholes (BH301 – 306) at the crest of dam walls using a hydraulic hand push tube up to a maximum investigation depth of 1.7 mbgl.</li><li>Excavation of 41 surface samples across the site using a mattock up to 0.2 mbgl.</li><li>Collection of 2 dam silt samples using a shovel within site dams.</li><li>Collection and analysis of representative soil samples, with 33 of the 41 samples being laboratory analysed as triple composites.</li><li>Collection of number QA / QC samples for laboratory analysis.</li></ul> <p>Soil sampling locations are shown in Attachment A and borehole logs are provided in Attachment C.</p>
Soil sampling	<p>Soil sampling was completed by the MA environmental consultant using a clean pair of nitrile gloves for each sample.</p> <p>Each 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.</p>
QA / QC sampling	<p>QA samples were collected for the initial investigation as follows:</p> <ul style="list-style-type: none"><li>Three soil duplicate sample was collected for intra laboratory analysis during investigations.</li><li>One soil trip blank and one trip spike sample were used during soil sampling.</li></ul>
Sample handling and transport	<p>Sample collection, storage and transport were conducted according to MA SOP.</p> <p>Collected soil samples were placed immediately into an ice chilled cooler box.</p> <p>Samples were dispatched to NATA accredited laboratories under chain of custody documentation within holding times.</p>

### 5.4 Laboratory Analytical Suite

Laboratory analysis was carried out by Envirolab Pty Ltd a NATA accredited laboratory. 33 of the 41 surface samples were analysed by the laboratory as triple composite samples (C01 to C11). Summary of laboratory analyses is provided in Table 9. Laboratory chain of custody documentation are provided in Attachment F.



**Table 9:** Summary of soil laboratory analyses.

COPC	Primary Samples Analysed	Composite Samples Analysed	QA / QC Samples Analysed
BTEXN	8	-	1 trip spike
TRH	8	-	1 trip blank
PAH	8	-	-
Heavy metals <sup>1</sup>	18	11	1 duplicate
OCP / OPP	18	11	-
Asbestos in soil	8	-	-

**Notes**

<sup>1</sup>Heavy metals – arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc.

## 6 Site Assessment Criteria

The site assessment criteria (SAC) adopted for this DSI, are listed in Table 10 and derived from the ASC NEPM (2013).

**Table 10:** Site assessment criteria.

Media	Adopted Guidelines	Applicability
Soil	ASC NEPM (2013)	<p><u>Health investigation levels (HIL)</u> HIL A – Residential was adopted based on the proposed land use as a residential development.</p> <p><u>Health screening levels (HSL)</u> HSL A – Residential land use for sand was adopted based on granular natural and fill material.</p> <p><u>Ecological Investigation Levels (EIL)</u> EILs were derived from methodology from ASC NEPM (2013) for the protection of terrestrial ecosystems for urban residential areas and public spaces.</p> <p><u>Ecological Screening Levels (ESL)</u> ESL – Urban Residential, coarse soil.</p> <p><u>Management Limits</u> Residential land use, coarse soil.</p> <p><u>Asbestos</u> Assessed on a detect / non detect basis.</p>

## **7 Results**

### **7.1 General Field Observations**

DSI field investigations and detailed site walkover were undertaken on 15 October 2021. All locations were examined for signs of contamination (odours, staining etc.). The following observations were made:

- Previously observed burnt area was vegetated with grass.
- No visual or olfactory forms of contamination.
- There were little to no changes to the site from the PSI (MA, 2021) walkover inspection.

### **7.2 Soil Conditions**

Intrusive investigations included 8 boreholes undertaken with a hydraulic hand push tube. Subsurface conditions generally consisted of brown silty clay fill up to 1.7 mbgl. Natural residual soil (yellow brown silty clay) was encountered beneath overlying fill to a maximum depth of 1.7 mbgl.

The encountered fill material displayed no visual indications of potential contamination such as building waste inclusions, soil staining or odours.

Borehole locations are shown on the sampling plan in Attachment A and borehole logs are provided in Attachment C.

### **7.3 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.

A figure showing identified areas of contamination is provided in Attachment A.

### 7.3.1 Soil Results

Laboratory analytical results are summarised in Table 11.

**Table 11:** Summary of soil analytical results.

Analyte	Results Compared to SAC
Heavy metals	<u>HIL</u> All results below the SAC. <u>EIL</u> All results below the SAC.
TRH/BTEXN	<u>HSL</u> All results below SAC. <u>ESL</u> All results below SAC.
OCP/OPP	<u>HIL</u> All results below SAC.
PAH	<u>HIL</u> All results below the SAC. <u>HSL</u> All results below SAC. <u>ESL</u> All results below SAC.
Asbestos in soil	No asbestos detected.

### 7.3.2 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.

## 8 Discussion

This DSI was undertaken by MA to assess the site to determine the suitability for the proposed senior living residential development. The PSI (MA, 2021) identified sheds, former and existing orchard use, burnt areas and potential presence of fill material from unknown origins as AECs, which may have introduced a wide range of COPCs including hydrocarbons, pesticides, heavy metals and asbestos.

Works for this DSI works consisted of 8 boreholes at the crest of dam walls and 41 surface samples completed across accessible locations areas of the site which exceeds the minimum sample density requirements for characterisation outlined in the NSW EPA (1995) guidelines. These locations were placed in a general grid pattern across the site to provide appropriate coverage.

Fill (up to 1.7 mbgl) was encountered across the site which did not consist of anthropogenic inclusions or any obvious visual or olfactory signs of contamination.

Samples collected during the investigation works from areas of site filling, former orchard areas and from dam sediments were analysed for COPC associated with potential site contamination sources as outlined in the CSM. Analytical results found no exceedances of the adopted assessment criteria for human health and ecological receptors.

Based on site observations and the results of both subsurface and analytical investigations, the potential risk to human and ecological receptors in the site is considered to be low and no further contamination investigation is required.

## Conclusions and Recommendations

The findings of subsurface investigation and laboratory assessment of collected soil samples show that all COPC reported concentrations below the adopted assessment criteria. Based on these results, the potential risk to receptors is considered to be low and no further contamination investigation is required. The site is considered to be suitable for the proposed senior living residential development.

It is noted that a site shed is currently located within the IA which was identified as a potential AEC (adjacent to sample SS03 shown in Attachment A). If the proposed works involve the demolition of this shed, it is recommended that further soil sampling is undertaken with the shed footprint to confirm no unexpected contamination is present.

If any unexpected finds (such as PACM, odours or soil staining) are encountered during site works or as part of post demolition inspections, the unexpected find will require assessment by MA to determine requirements for additional investigation and / or remedial action.

Where any soil material is to be removed from site, a 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 restrictions of sampling due 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.

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

Environa Studio (2021) Tallowood Stage 2 (Senior Living), Project No. 1036, Dwg No. 2.

Martens & Associates (2021) Preliminary Site Investigation, Job No. P2007700JR05V01.

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

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

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

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



## **Attachment A: Site Plans**



Legend

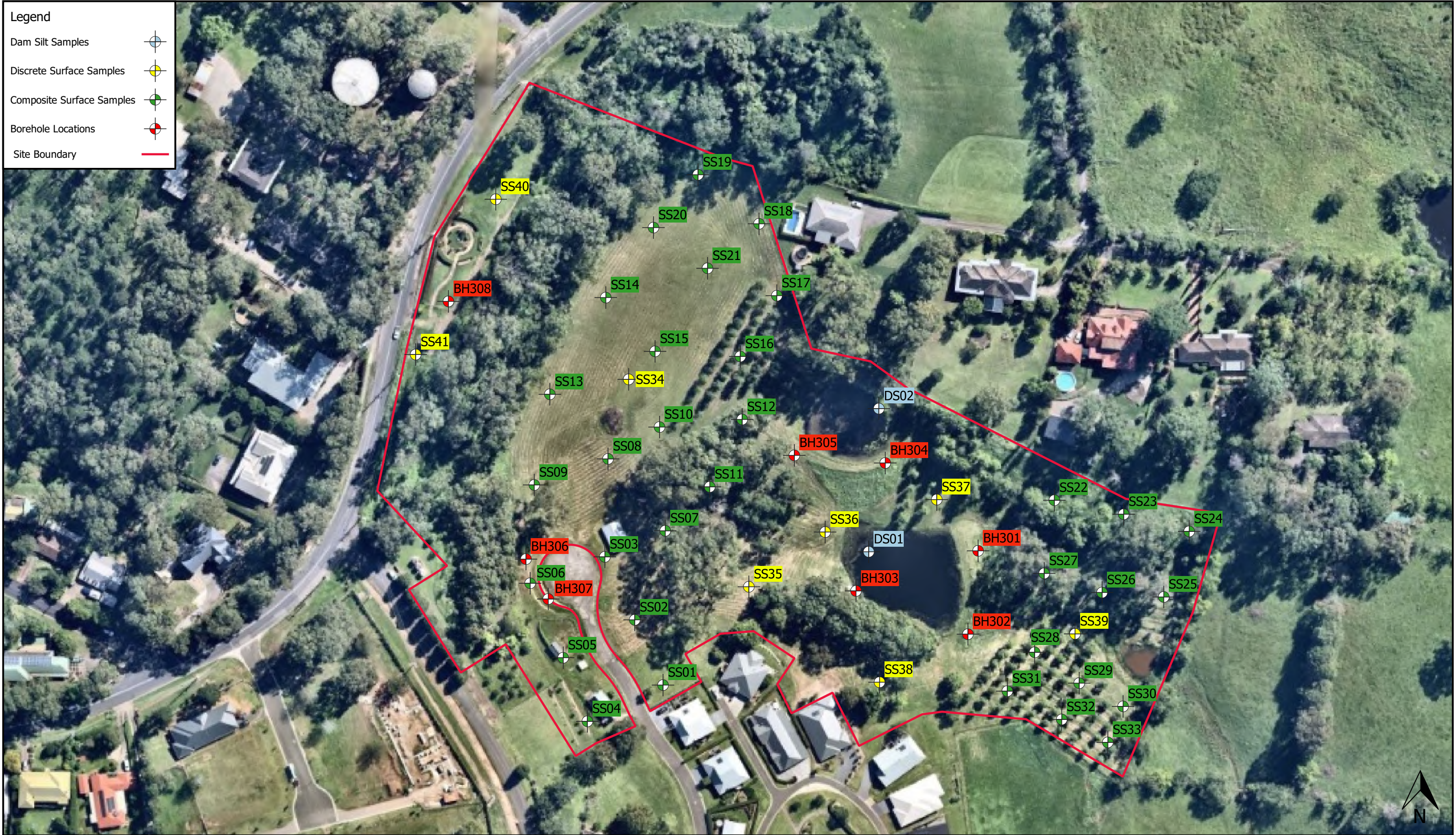
Dam Silt Samples

Discrete Surface Samples

Composite Surface Samples

Borehole Locations

Site Boundary



0 10 20 30 40 50 m

1:1500 @ A3

Map Title / Figure:  
Sampling Plan



## **Attachment B: Proposed Development Plans**





notes	rev	date	amendment	rev	date	amendment
all work to be carried out in accordance with bca, saa codes and conditions of council. measurements in mm's unless noted. use figured dimensions. do not scale drawings. site measure before starting work. refer all discrepancies to the architect.	J	21/7/20	issue to client	R	26/10/20	issue to client
	K	23/7/20	issue to consultants	S	13/11/20	issue to consultants
	L	27/7/20	issue to client	T	23/11/20	issue to client
	M	28/7/20	issue to client	U	30/11/20	issue to client
	N	3/9/20	issue to client	U	2/12/20	issue to client
	P	30/9/20	issue to client	V	17/12/20	issue to client
	Q	2/10/20	issue to client	W	22/12/20	issue to client
	R	12/10/20	issue to client	X	01/02/21	issue to client

environa studio

224 riley st surry hills 2010  
t: 02 9211 0000  
w: [www.environastudio.com.au](http://www.environastudio.com.au)  
architects registration number 6239

project TALLOWOOD STAGE 2 (SENIORS LIVING)	location 21 VINCENTS ROAD	drawing SITE PLAN 1:2000	stage DA	project no. 1036	dwg no. 002
for/client	at KURRAJONG	drawing LEVEL 1 PLAN	chkd TW drwn MA	date 1/2/21	revision X




## Attachment C: Borehole Logs



CLIENT	Sutherland & Associates Planning		COMMENCED	15/10/2021	COMPLETED	15/10/2021	REF BH302	
PROJECT	Detailed Site Investigation		LOGGED	DS	CHECKED		Sheet 1 OF 1	
SITE	21 Vincents Road, Kurrajong, NSW.		GEOLOGY	Ashfield Shale	VEGETATION	Grass	PROJECT NO. P2007700	
EQUIPMENT	Hydraulic		LONGITUDE		RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 0.80 m depth		LATITUDE		ASPECT		SLOPE	

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
L	Not Encountered		0.2		0.1/S/1 D 0.10 m			CI	FILL: Silty CLAY; medium plasticity; brown; trace gravels.				FILL
			0.30										
H			0.4						SHALE; pale brown; highly weathered; inferred extremely low strength.				RESIDUAL SOIL / WEATHERED ROCK
			0.6		0.6/S/1 D 0.60 m								
			0.8	0.80					Hole Terminated at 0.80 m Refusal				0.80: Push tube refusal.
			1.0										
			1.2										
			1.4										
			1.6										
			1.8										


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



MARTENS & ASSOCIATES PTY LTD  
Suite 201, 20 George St. Hornsby, NSW 2077 Australia  
Phone: (02) 9476 9999 Fax: (02) 9476 8767  
mail@martens.com.au WEB: http://www.martens.com.au


**Engineering Log -  
BOREHOLE**


MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P2007700BH301-308 21/10/16 GPJ <<DrawingFile>> 19/10/2021 16:23 10/02/00.04 Datalog Lab and In Situ Tool - DGD [Lib: Martens 2.00 2016-11-13 Proj: Martens 2.00 2016-11-13

CLIENT	Sutherland & Associates Planning		COMMENCED	15/10/2021	COMPLETED	15/10/2021	REF BH303							
PROJECT	Detailed Site Investigation		LOGGED	DS	CHECKED		Sheet 1 OF 1							
SITE	21 Vincents Road, Kurrajong, NSW.		GEOLOGY	Ashfield Shale	VEGETATION	Grass	PROJECT NO. P2007700							
EQUIPMENT	Hydraulic		LONGITUDE		RL SURFACE	m	DATUM	AHD						
EXCAVATION DIMENSIONS	ø100 mm x 1.00 m depth		LATITUDE		ASPECT		SLOPE							
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	
L	M	Not Encountered	0.15	0.10	0.1/S/1 D 0.10 m			CI	FILL: Silty CLAY; medium plasticity; brown; trace gravels.				FILL	
									CI				Silty CLAY; medium plasticity; pale brown, grey.	RESIDUAL SOIL
									SHALE: becoming weathered shale.				WEATHERED ROCK	
H			0.90	0.90										
			1.00	1.00					Hole Terminated at 1.00 m Refusal				1.00: Push tube refusal.	
			1.2											
			1.4											
			1.6											
			1.8											
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS														
 MARTENS & ASSOCIATES PTY LTD Suite 201, 20 George St. Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 mail@martens.com.au WEB: http://www.martens.com.au										<b>Engineering Log - BOREHOLE</b>				



MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P2007700BH301-308 211016.GPJ <<DrawingFile>> 19/10/2021 16:23 10.02.00.04 Datalog Lab and In Situ Tool - DGD [Lib: Martens 2.00 2016-11-13 Proj: Martens 2.00 2016-11-13

CLIENT	Sutherland & Associates Planning		COMMENCED	15/10/2021	COMPLETED	15/10/2021	REF BH304						
PROJECT	Detailed Site Investigation		LOGGED	DS	CHECKED		Sheet 1 OF 1						
SITE	21 Vincents Road, Kurrajong, NSW.		GEOLOGY	Ashfield Shale	VEGETATION	Grass	PROJECT NO. P2007700						
EQUIPMENT	Hydraulic		LONGITUDE		RL SURFACE	m	DATUM	AHD					
EXCAVATION DIMENSIONS	ø100 mm x 1.60 m depth		LATITUDE		ASPECT		SLOPE						
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
								CI	TOPSOIL: Silty CLAY; medium plasticity; dark brown; traces rootlets.				FILL
				0.15	0.1/S/1 D 0.10 m			CI	FILL: Silty CLAY; medium plasticity; grey, brown, orange; traces gravel.				
				0.2									
				0.4									
				0.6	0.5/S/1 D 0.50 m								
				0.8									
				1.0	1.0/S/1 D 1.00 m								
				1.2									
				1.4				CH	Silty CLAY; high plasticity; brown, reddish brown.				RESIDUAL SOIL
				1.40	1.5/S/1 D 1.50 m								
				1.60					Hole Terminated at 1.60 m Target depth				
				1.8									
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS													
 MARTENS & ASSOCIATES PTY LTD Suite 201, 20 George St. Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 mail@martens.com.au WEB: http://www.martens.com.au										<b>Engineering Log - BOREHOLE</b>			

CLIENT	Sutherland & Associates Planning		COMMENCED	15/10/2021	COMPLETED	15/10/2021	REF BH305	
PROJECT	Detailed Site Investigation		LOGGED	DS	CHECKED		Sheet 1 OF 1	
SITE	21 Vincents Road, Kurrajong, NSW.		GEOLOGY	Ashfield Shale	VEGETATION	Grass	PROJECT NO. P2007700	
EQUIPMENT	Hydraulic		LONGITUDE		RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 1.70 m depth		LATITUDE		ASPECT		SLOPE	
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					CI
			0.2	0.2/S/Dup04 D 0.20 m				CI
			0.4					
			0.6					
			0.7	0.7/S/1 D 0.70 m				
			0.8					
			1.0					
			1.2					
			1.4	1.4/S/1 D 1.40 m				
			1.6					
			1.70					
			1.8					
								Hole Terminated at 1.70 m Target depth
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS								
 <b>Martens</b> (C) Copyright Martens & Associates Pty. Ltd.					MARTENS & ASSOCIATES PTY LTD Suite 201, 20 George St. Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 mail@martens.com.au WEB: http://www.martens.com.au			
					<b>Engineering Log - BOREHOLE</b>			

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P2007700BH301-308.21 1016.GPJ <<DrawingFile>> 19/10/2021 16:23 10.02.00.04 D:\git\Tools\Tool - DGD [Lib: Martens 2.00 2016-11-13 Proj: Martens 2.00 2016-11-13]

CLIENT	Sutherland & Associates Planning	COMMENCED	15/10/2021	COMPLETED	15/10/2021	REF <b>BH306</b>  Sheet 1 OF 1 PROJECT NO. P2007700	
PROJECT	Detailed Site Investigation	LOGGED	DS	CHECKED			
SITE	21 Vincents Road, Kurrajong, NSW.	GEOLOGY	Ashfield Shale	VEGETATION	Grass		
EQUIPMENT	Hydraulic	LONGITUDE		RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 1.10 m depth	LATITUDE		ASPECT		SLOPE	

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
		Not Encountered			0.1/S/Dup05 D 0.10 m			CI	FILL: Silty CLAY; medium plasticity; brown, grey; trace shale.			FILL
			0.2									
			0.4									
			0.6									
			0.8		0.8/S/1 D 0.80 m							
			1.0									
			1.10									
			1.2						Hole Terminated at 1.10 m Target depth			
			1.4									
			1.6									
			1.8									

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





## Attachment D: Laboratory Summary Tables

[illegible]

\* 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 MEL for Vapour Intrusion, Sand  
2013, NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil  
2013, NEPM 2013 Table 1A(1) MELs Res A Soil

**Environmental Standards**  
NEPM, NEPM 2013 Table 18(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) CSIs for Urban Res, Coarse Soil  
2013, NEPM 2013 Table 1A(1) HSLs Res A Soil



**Environmental Standards**  
2013, NEPM 2013 Table 1A(1) HILs Res A Soil

## 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
280517 - S	Pass	Pass	Pass	Pass

Soil samples were delivered in chilled cooler boxes within holding times, with accompanying COC.

#### Precision / Accuracy

Lab Report	Analysed by NATA Laboratory	Trip Spike and Blank Used	Adequate Duplicates Analysed	Field Rinsate Analysed
280517 - S	Pass	Pass	Pass	NA

Soil trip spikes and blanks reported within the acceptable recovery range.

Soil trip blanks reported less than LOR for volatile analysis.

#### Duplicates/ laboratory QA / QC

Lab Report	Field RPD	Laboratory Surrogate Recovery	Laboratory Duplicate RPD	Lab Blank and Matrix Spike Recovery	Laboratory Control Sample
280517 - S	Pass	Pass	Pass	Pass	Pass

RPD control limits reported were acceptable apart from copper, nickel and zinc in BH305/0.2 and Dup04, which is likely attributed to the heterogeneous nature of fill. As the values are significantly less than the SAC, all data is usable for this report.

## Attachment F: Laboratory Certificates

## **CERTIFICATE OF ANALYSIS 280517**

### **Client Details**

<b>Client</b>	Martens & Associates Pty Ltd
<b>Attention</b>	Ben McGiffin
<b>Address</b>	Suite 201, 20 George St, Hornsby, NSW, 2077

### **Sample Details**

<b>Your Reference</b>	<b><u>P2007700: 21 Vincents Road, Kurrajong, NSW</u></b>
<b>Number of Samples</b>	82 Soil
<b>Date samples received</b>	15/10/2021
<b>Date completed instructions received</b>	15/10/2021

### **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**

<b>Date results requested by</b>	22/10/2021
<b>Date of Issue</b>	22/10/2021
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

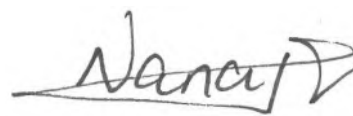
#### **Asbestos Approved By**

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

#### **Results Approved By**

Dragana Tomas, Senior Chemist  
 Lucy Zhu, Asbestos Supervisor  
 Steven Luong, Organics Supervisor  
 Thomas Lovatt, Chemist

#### **Authorised By**



Nancy Zhang, Laboratory Manager

## vTRH(C6-C10)/BTEXN in Soil

Our Reference		280517-1	280517-4	280517-6	280517-8	280517-12
Your Reference	UNITS	BH301/0.1	BH302/0.1	BH303/0.1	BH304/0.1	BH305/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	<25	<25	<25	<25	<25
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	<25	<25	<25	<25	<25
vTPH C <sub>6</sub> - C <sub>10</sub> 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	%	125	127	106	104	109

## vTRH(C6-C10)/BTEXN in Soil

Our Reference		280517-15	280517-17	280517-19	280517-69	280517-70
Your Reference	UNITS	BH306/0.1	BH307/0.2	BH308/0.2	Trip Spike	Trip Blank
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	<25	<25	<25	[NA]	<25
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	<25	<25	<25	[NA]	<25
vTPH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	mg/kg	<25	<25	<25	[NA]	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	108%	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	92%	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	101%	<1
m+p-xylene	mg/kg	<2	<2	<2	98%	<2
o-Xylene	mg/kg	<1	<1	<1	100%	<1
Naphthalene	mg/kg	<1	<1	<1	[NT]	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	[NT]	<3
Surrogate aaa-Trifluorotoluene	%	127	117	119	105	104

svTRH (C10-C40) in Soil						
Our Reference	UNITS	280517-1	280517-4	280517-6	280517-8	280517-12
Your Reference		BH301/0.1	BH302/0.1	BH303/0.1	BH304/0.1	BH305/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50	<50	<50
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	<100	<100	<100	<100	<100
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	<100	<100	<100	<100	<100
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	91	84	83	88	85

svTRH (C10-C40) in Soil				
Our Reference	UNITS	280517-15	280517-17	280517-19
Your Reference		BH306/0.1	BH307/0.2	BH308/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil
Composite Reference		.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	<100	<100	<100
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50	<50	<50
TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	<100	<100	<100
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	83	84	82

PAHs in Soil						
Our Reference		280517-1	280517-4	280517-6	280517-8	280517-12
Your Reference	UNITS	BH301/0.1	BH302/0.1	BH303/0.1	BH304/0.1	BH305/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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 <i>p</i> -Terphenyl-d14	%	118	122	122	127	110



PAHs in Soil				
Our Reference		280517-15	280517-17	280517-19
Your Reference	UNITS	BH306/0.1	BH307/0.2	BH308/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil
Composite Reference		.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	113	117	125

Organochlorine Pesticides in soil						
Our Reference	UNITS	280517-1	280517-4	280517-6	280517-8	280517-12
Your Reference		BH301/0.1	BH302/0.1	BH303/0.1	BH304/0.1	BH305/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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	%	102	92	98	104	103

Organochlorine Pesticides in soil						
Our Reference		280517-15	280517-17	280517-19	280517-54	280517-55
Your Reference	UNITS	BH306/0.1	BH307/0.2	BH308/0.2	SS34	SS35
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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	%	106	103	98	91	100

Organochlorine Pesticides in soil						
Our Reference		280517-56	280517-57	280517-58	280517-59	280517-60
Your Reference	UNITS	SS36	SS37	SS38	SS39	SS40
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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	%	101	103	97	94	100

Organochlorine Pesticides in soil						
Our Reference		280517-61	280517-62	280517-63	280517-66	280517-67
Your Reference	UNITS	SS41	DS01	DS02	DUP03	DUP04
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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	%	91	94	117	96	94

Organochlorine Pesticides in soil						
Our Reference		280517-68	280517-72	280517-73	280517-74	280517-75
Your Reference	UNITS	DUP05	C01	C02	C03	C04
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	21,22,23	24,25,26	27,28,29	30,31,32
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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	%	91	102	105	97	103

Organochlorine Pesticides in soil						
Our Reference		280517-76	280517-77	280517-78	280517-79	280517-80
Your Reference	UNITS	C05	C06	C07	C08	C09
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		33,34,35	36,37,38	39,40,41	42,43,44	45,46,47
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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	%	96	91	101	104	106

Organochlorine Pesticides in soil			
Our Reference		280517-81	280517-82
Your Reference	UNITS	C10	C11
Date Sampled		15/10/2021	15/10/2021
Type of sample		Soil	Soil
Composite Reference		48,49,50	51,52,53
Date extracted	-	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021
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	%	94	98



Organophosphorus Pesticides in Soil						
Our Reference		280517-1	280517-4	280517-6	280517-8	280517-12
Your Reference	UNITS	BH301/0.1	BH302/0.1	BH303/0.1	BH304/0.1	BH305/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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
Chlorpyrifos-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
Chlorpyrifos	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	%	102	92	98	104	103

Organophosphorus Pesticides in Soil						
Our Reference		280517-15	280517-17	280517-19	280517-54	280517-55
Your Reference	UNITS	BH306/0.1	BH307/0.2	BH308/0.2	SS34	SS35
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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
Chlorpyrifos-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
Chlorpyrifos	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	%	106	103	98	91	100

Organophosphorus Pesticides in Soil						
Our Reference		280517-56	280517-57	280517-58	280517-59	280517-60
Your Reference	UNITS	SS36	SS37	SS38	SS39	SS40
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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
Chlorpyrifos-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
Chlorpyrifos	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	%	101	103	97	94	100

Organophosphorus Pesticides in Soil						
Our Reference		280517-61	280517-62	280517-63	280517-66	280517-67
Your Reference	UNITS	SS41	DS01	DS02	DUP03	DUP04
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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
Chlorpyrifos-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
Chlorpyrifos	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	%	91	94	117	96	94

Organophosphorus Pesticides in Soil						
Our Reference		280517-68	280517-72	280517-73	280517-74	280517-75
Your Reference	UNITS	DUP05	C01	C02	C03	C04
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	21,22,23	24,25,26	27,28,29	30,31,32
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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
Chlorpyrifos-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
Chlorpyrifos	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	%	91	102	105	97	103

Organophosphorus Pesticides in Soil						
Our Reference	UNITS	280517-76	280517-77	280517-78	280517-79	280517-80
Your Reference		C05	C06	C07	C08	C09
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		33,34,35	36,37,38	39,40,41	42,43,44	45,46,47
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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
Chlorpyrifos-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
Chlorpyrifos	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	%	96	91	101	104	106

Organophosphorus Pesticides in Soil			
Our Reference		280517-81	280517-82
Your Reference	UNITS	C10	C11
Date Sampled		15/10/2021	15/10/2021
Type of sample		Soil	Soil
Composite Reference		48,49,50	51,52,53
Date extracted	-	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Chlorpyrifos-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
Chlorpyrifos	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	%	94	98

PCBs in Soil						
Our Reference	UNITS	280517-1	280517-4	280517-6	280517-8	280517-12
Your Reference		BH301/0.1	BH302/0.1	BH303/0.1	BH304/0.1	BH305/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
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	%	102	92	98	104	103

PCBs in Soil				
Our Reference	UNITS	280517-15	280517-17	280517-19
Your Reference		BH306/0.1	BH307/0.2	BH308/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil
Composite Reference		.	.	.
Date extracted	-	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	20/10/2021	20/10/2021	20/10/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	106	103	98



## Acid Extractable metals in soil

Our Reference		280517-1	280517-4	280517-6	280517-8	280517-12
Your Reference	UNITS	BH301/0.1	BH302/0.1	BH303/0.1	BH304/0.1	BH305/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Arsenic	mg/kg	6	5	<4	8	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	16	11	12	14
Copper	mg/kg	17	28	22	18	19
Lead	mg/kg	13	17	16	18	13
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	13	7	12	8
Zinc	mg/kg	44	49	33	58	25

## Acid Extractable metals in soil

Our Reference		280517-15	280517-17	280517-19	280517-54	280517-55
Your Reference	UNITS	BH306/0.1	BH307/0.2	BH308/0.2	SS34	SS35
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Arsenic	mg/kg	7	7	6	8	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	10	10	12	7	17
Copper	mg/kg	26	25	16	21	10
Lead	mg/kg	17	33	15	13	13
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	6	9	8	6
Zinc	mg/kg	52	33	42	41	20

## Acid Extractable metals in soil

Our Reference		280517-56	280517-57	280517-58	280517-59	280517-60
Your Reference	UNITS	SS36	SS37	SS38	SS39	SS40
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Arsenic	mg/kg	7	<4	<4	7	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	9	10	9	5
Copper	mg/kg	20	43	14	21	18
Lead	mg/kg	15	15	22	17	11
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	18	8	10	8
Zinc	mg/kg	50	43	49	97	43

## Acid Extractable metals in soil

Our Reference		280517-61	280517-62	280517-63	280517-66	280517-67
Your Reference	UNITS	SS41	DS01	DS02	DUP03	DUP04
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Arsenic	mg/kg	<4	<4	8	7	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	13	4	14	11	12
Copper	mg/kg	14	8	18	23	33
Lead	mg/kg	30	5	16	17	21
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	5	8	15	20
Zinc	mg/kg	59	26	36	57	69

## Acid Extractable metals in soil

Our Reference		280517-68	280517-72	280517-73	280517-74	280517-75
Your Reference	UNITS	DUP05	C01	C02	C03	C04
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	21,22,23	24,25,26	27,28,29	30,31,32
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Arsenic	mg/kg	8	5	8	7	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	12	11	12	13	14
Copper	mg/kg	28	18	27	18	17
Lead	mg/kg	19	14	19	16	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	10	4	12	7	8
Zinc	mg/kg	49	15	69	34	31

## Acid Extractable metals in soil

Our Reference		280517-76	280517-77	280517-78	280517-79	280517-80
Your Reference	UNITS	C05	C06	C07	C08	C09
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		33,34,35	36,37,38	39,40,41	42,43,44	45,46,47
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Arsenic	mg/kg	7	7	8	6	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	11	10	10	8	10
Copper	mg/kg	22	22	24	20	16
Lead	mg/kg	17	16	16	13	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	10	10	10	7	7
Zinc	mg/kg	52	52	49	53	33

Acid Extractable metals in soil			
Our Reference		280517-81	280517-82
Your Reference	UNITS	C10	C11
Date Sampled		15/10/2021	15/10/2021
Type of sample		Soil	Soil
Composite Reference		48,49,50	51,52,53
Date prepared	-	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021
Arsenic	mg/kg	5	5
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	13	12
Copper	mg/kg	14	16
Lead	mg/kg	17	18
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	8	8
Zinc	mg/kg	24	40

Moisture						
Our Reference	UNITS	280517-1	280517-4	280517-6	280517-8	280517-12
Your Reference		BH301/0.1	BH302/0.1	BH303/0.1	BH304/0.1	BH305/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Moisture	%	18	13	17	20	14

Moisture						
Our Reference	UNITS	280517-15	280517-17	280517-19	280517-54	280517-55
Your Reference		BH306/0.1	BH307/0.2	BH308/0.2	SS34	SS35
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Moisture	%	9.5	11	8.7	20	9.6

Moisture						
Our Reference	UNITS	280517-56	280517-57	280517-58	280517-59	280517-60
Your Reference		SS36	SS37	SS38	SS39	SS40
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Moisture	%	9.7	8.5	8.8	9.8	8.3

Moisture						
Our Reference	UNITS	280517-61	280517-62	280517-63	280517-66	280517-67
Your Reference		SS41	DS01	DS02	DUP03	DUP04
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Moisture	%	20	31	19	14	21

Moisture						
Our Reference	UNITS	280517-68	280517-72	280517-73	280517-74	280517-75
Your Reference		DUP05	C01	C02	C03	C04
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	21,22,23	24,25,26	27,28,29	30,31,32
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Moisture	%	17	13	22	15	11

Moisture						
Our Reference	UNITS	280517-76	280517-77	280517-78	280517-79	280517-80
Your Reference		C05	C06	C07	C08	C09
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		33,34,35	36,37,38	39,40,41	42,43,44	45,46,47
Date prepared	-	20/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Moisture	%	17	18	14	12	17

Moisture			
Our Reference	UNITS	280517-81	280517-82
Your Reference		C10	C11
Date Sampled		15/10/2021	15/10/2021
Type of sample		Soil	Soil
Composite Reference		48,49,50	51,52,53
Date prepared	-	20/10/2021	20/10/2021
Date analysed	-	21/10/2021	21/10/2021
Moisture	%	8.1	13

Asbestos ID - soils						
Our Reference	UNITS	280517-1	280517-4	280517-6	280517-8	280517-12
Your Reference		BH301/0.1	BH302/0.1	BH303/0.1	BH304/0.1	BH305/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Composite Reference		.	.	.	.	.
Date analysed	-	22/10/2021	22/10/2021	22/10/2021	22/10/2021	22/10/2021
Sample mass tested	g	Approx. 35g	Approx. 35g	Approx. 30g	Approx. 30g	Approx. 40g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	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	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
		Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected	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	UNITS	280517-15	280517-17	280517-19
Your Reference		BH306/0.1	BH307/0.2	BH308/0.2
Date Sampled		15/10/2021	15/10/2021	15/10/2021
Type of sample		Soil	Soil	Soil
Composite Reference		.	.	.
Date analysed	-	22/10/2021	22/10/2021	22/10/2021
Sample mass tested	g	Approx. 55g	Approx. 50g	Approx. 50g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	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
		Organic fibres detected	Organic fibres detected	Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected

Method ID	Methodology Summary
<b>ASB-001</b>	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
<b>Inorg-008</b>	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
<b>Metals-020</b>	Determination of various metals by ICP-AES.
<b>Metals-021</b>	Determination of Mercury by Cold Vapour AAS.
<b>Org-020</b>	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.
<b>Org-020</b>	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).
<b>Org-021</b>	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
<b>Org-021</b>	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.
<b>Org-022</b>	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
<b>Org-022/025</b>	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
<b>Org-022/025</b>	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
<b>Org-022/025</b>	<p>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.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> <li>1. 'EQ PQL' values are assuming all contributing PAHs reported as &lt;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.</li> <li>2. 'EQ zero' values are assuming all contributing PAHs reported as &lt;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.</li> <li>3. 'EQ half PQL' values are assuming all contributing PAHs reported as &lt;PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above.</li> </ol> <p>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.</p>
<b>Org-023</b>	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
<b>Org-023</b>	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
<b>Org-023</b>	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>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.</p>

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	280517-4
Date extracted	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
Date analysed	-			21/10/2021	1	21/10/2021	21/10/2021		21/10/2021	21/10/2021
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	25	Org-023	<25	1	<25	<25	0	87	77
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	25	Org-023	<25	1	<25	<25	0	87	77
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	104	90
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	81	74
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	78	69
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	85	75
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	82	73
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	126	1	125	117	7	120	110

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	280517-4
Date extracted	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
Date analysed	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	50	Org-020	<50	1	<50	<50	0	99	90
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	100	Org-020	<100	1	<100	<100	0	99	92
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	100	Org-020	<100	1	<100	<100	0	127	116
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	50	Org-020	<50	1	<50	<50	0	99	90
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	100	Org-020	<100	1	<100	<100	0	99	92
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	Org-020	<100	1	<100	<100	0	127	116
Surrogate o-Terphenyl	%		Org-020	81	1	91	86	6	110	84

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	280517-4
Date extracted	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
Date analysed	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	130	118
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	109	103
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	126	120
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	104
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	126
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	0.1	0	119	117
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	83	89
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	0.09	57	116	108
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	120	1	118	115	3	103	102

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	280517-4
Date extracted	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
Date analysed	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	116	108
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	124	114
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	107	99
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	126	118
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	126	118
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	117	111
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	126	116
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	121	123
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	123	114
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	90
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	98	1	102	106	4	96	90

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date extracted	-			[NT]	56	20/10/2021	20/10/2021		20/10/2021	[NT]
Date analysed	-			[NT]	56	20/10/2021	20/10/2021		20/10/2021	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	110	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	106	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	77	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	122	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	118	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	117	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	116	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	119	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	114	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	82	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	56	101	96	5	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]	75	20/10/2021	20/10/2021		[NT]	[NT]
Date analysed	-			[NT]	75	20/10/2021	20/10/2021		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	75	103	95	8	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	280517-4
Date extracted	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
Date analysed	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	113	99
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]
Chlorpyrifos-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	126	114
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	115	103
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	130	130
Chlorpyrifos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	130	120
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	111	103
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	115	106
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	98	1	102	106	4	96	90

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date extracted	-			[NT]	56	20/10/2021	20/10/2021		20/10/2021	[NT]
Date analysed	-			[NT]	56	20/10/2021	20/10/2021		20/10/2021	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	99	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	126	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	107	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	130	[NT]
Chlorpyrifos	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	118	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	111	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	111	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	56	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	56	101	96	5	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]	75	20/10/2021	20/10/2021		[NT]	[NT]
Date analysed	-			[NT]	75	20/10/2021	20/10/2021		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	75	103	95	8	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	280517-4
Date extracted	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
Date analysed	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
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	116	108
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	106	1	102	106	4	96	90

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	280517-4
Date prepared	-			20/10/2021	1	20/10/2021	20/10/2021		20/10/2021	20/10/2021
Date analysed	-			21/10/2021	1	21/10/2021	21/10/2021		21/10/2021	21/10/2021
Arsenic	mg/kg	4	Metals-020	<4	1	6	7	15	103	98
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	102	87
Chromium	mg/kg	1	Metals-020	<1	1	9	11	20	97	85
Copper	mg/kg	1	Metals-020	<1	1	17	19	11	100	108
Lead	mg/kg	1	Metals-020	<1	1	13	15	14	103	93
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	103	117
Nickel	mg/kg	1	Metals-020	<1	1	11	12	9	99	88
Zinc	mg/kg	1	Metals-020	<1	1	44	46	4	98	98

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date prepared	-			[NT]	56	20/10/2021	20/10/2021		20/10/2021	[NT]
Date analysed	-			[NT]	56	21/10/2021	21/10/2021		21/10/2021	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	56	7	7	0	103	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	56	<0.4	<0.4	0	102	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	56	8	8	0	98	[NT]
Copper	mg/kg	1	Metals-020	[NT]	56	20	20	0	102	[NT]
Lead	mg/kg	1	Metals-020	[NT]	56	15	16	6	103	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	56	<0.1	<0.1	0	111	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	56	9	9	0	100	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	56	50	52	4	99	[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]	75	20/10/2021	20/10/2021		[NT]	[NT]
Date analysed	-			[NT]	75	21/10/2021	21/10/2021		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	75	6	6	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	75	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	75	14	10	33	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	75	17	19	11	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	75	15	14	7	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	75	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	75	8	9	12	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	75	31	46	39	[NT]	[NT]

**Result Definitions**

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

## Quality Control Definitions

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

# SOIL ANALYSIS CHAIN OF CUSTODY FORM

Project												
Name	P2007700: 21 Vincents Road, Kurrajong, NSW											
Martens Contact Officer	Dean Shi					Contact Email	dshi@martens.com.au					
Sampling and Shipping	Sample Date	15 October 2021		Dispatch Date	15 October 2021		Turnaround Time	Standard				
	Our Reference	P2007700COC05V01				Shipping Method	Hand		Post		Courier	X
	On Ice (X)	X	No Ice (X)		Other (X)							
Laboratory												
Name	EnviroLab											
Sample Delivery Address	12 Ashley Street, Chatswood											
Delivery Contact	Name	Aileen		Phone	9910 6200		Fax		Email	samplereceipt@envirolabservices.com.au		
Please Send Report By (X)	Post		Fax		Email	X	Reporting Email Address	bmgaiffin@martens.com.au dshi@martens.com.au				

Sample ID	Triple Composite	HOLD	Combo 6a	HM	OCP/OPP	BTEX	TRH
1 BH301/0.1 (D-2)			X				
2 BH301/0.5		X					
3 BH301/1.2		X					
4 BH302/0.1			X				
5 BH302/0.6		X					
6 BH303/0.1			X				
7 BH303/0.5		X					
8 BH304/0.1			X				
9 BH304/0.5		X					
10 BH304/1.0		X					
11 BH304/1.5		X					
12 BH305/0.2			X				
13 BH305/0.7		X					
14 BH305/1.4		X					
15 BH306/0.1			X				
16 BH306/0.8		X					
17 BH307/0.2			X				
18 BH307/1.0		X					
19 BH308/0.2			X				
20 BH308/1.0		X					
21 SS01	C01			X	X		

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

Job No: 280517

Date Received: 15/10/21

Time Received: 17:00

Received By: c/h

Temp: Cool/Ambient

Cooling: Ice/icepack

Security: Intact/Broken/None

**Head Office**  
Suite 201, Level 2, 20 George Street  
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

SOIL ANALYSIS CHAIN OF CUSTODY

Sample ID	Triple Composite	HOLD	Combo 6a	HM	OCP/OPP	BTEX	TRH
22 SS02	C02						
23 SS03							
24 SS04							
25 SS05				X	X		
26 SS06	C03						
27 SS07							
28 SS08				X	X		
29 SS09							
30 SS10	C04						
31 SS11				X	X		
32 SS12							
33 SS13							
34 SS14	C05			X	X		
35 SS15							
36 SS16							
37 SS17				X	X		
38 SS18	C06						
39 SS19							
40 SS20				X	X		
41 SS21							
42 SS22	C08						
43 SS23				X	X		
44 SS24							
45 SS25							
46 SS26	C09			X	X		
47 SS27							
48 SS28							
49 SS29							
50 SS30	C10			X	X		
51 SS31							
52 SS32				X	X		
53 SS33							
54 SS34	C11			X	X		
55 SS35				X	X		
56 SS36				X	X		
57 SS37				X	X		
58 SS38				X	X		
59 SS39				X	X		
60 SS40				X	X		
61 SS41				X	X		
62 DS01				X	X		



# SOIL ANALYSIS CHAIN OF CUSTODY

Sample ID	Triple Composite	HOLD	Combo 6a	HM	OCP/OPP	BTEX	TRH
63 DS02				X	X		
64 DUP01		X					
65 DUP02		X					
66 DUP03				X	X		
67 DUP04				X	X		
68 DUP05				X	X		
69 Trip Spike						X	
70 Trip Blank						X	X

71 SS-42