Monterey Equity Pty Ltd

C/- Centurion Group

Supplementary Site Investigation:
Lot 2, DP857520,
119 Barton Street, Monterey, NSW

P1706332JR01V01
October 2021

martens consulting engineers

ENVIRONMENTAL

WATER

WASTEWATER

GEOTECHNICAL

CIVIL

PROJECT MANAGEMENT

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

Contents

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 Overview

1.1 Introduction

This report, prepared by Martens and Associates (MA), documents a supplementary soil and groundwater investigation program recently completed at 119 Barton Street, Monterey, NSW ('the site').

We understand that a development application (DA) has been lodged with Bayside Council (Council) for a proposed aged care facility. As part of the DA assessment process, Council have requested additional soil and groundwater information to adequately assess the contaminated status of the site. MA have previously completed the following documents in relation to site contamination:

- Martens and Associates (2018) *Contamination Assessment: Lot 2, DP857520, 119 Barton Street, Monterey NSW* (Ref: P1706332JR01V01).
- Martens and Associates (2020) *Remediation Action Plan: Lot 2, DP857520, 119 Barton Street, Monterey NSW* (Ref: P1706332JR02V01).

These documents are summarised in Section 2 and should be read in conjunction with this document.

The location of the site is shown in Map 01 in Attachment A.

1.2 Objectives

The primary objective of this investigation is to address council identified 'data gaps' in the previous site investigation (MA, 2018) including:

- Assessment of potential Per and Poly-Fluoroalkyl Substances (PFAS) impacts.
- Site groundwater characterisation.
- Additional characterisation of identified site fill material.

1.3 Project Scope

To achieve the above objectives, the following scope of works was completed:

- Review of previous site documentation.
- Installation of three (3) groundwater monitoring wells.
- Collection of soil samples during monitoring well installation.
- Completion of a single groundwater sampling event.
- Laboratory analysis of collected soil and groundwater samples for contaminants of potential concern.
- Preparation of a supplementary investigation report.

2 Previous Site Investigation and Remediation Advice

2.1 Contamination Assessment

The contamination assessment (MA, 2018) provided a review of historic land use and current activities that had potential to cause contamination.

Areas of environmental concern (AEC) were identified and assessed for contaminants of potential concern (COPC) through subsurface investigation and laboratory analysis of soil samples. A summary of key findings is provided in Table 1.

Table 1: Contamination assessment summary (MA, 2018).

Investigation Details	Investigation Task and Findings
Scope of works	o Walkover inspection to review current land use, potential contaminating activities and neighbouring land uses. o Site history review using available aerial photographs and historic records. o Review of NSW EPA notices under the Contaminated Land Management Act (1997). o Identification of AEC and associated COPC. o Subsurface investigation and sampling. o Laboratory analysis of soil samples for COPC. o Preparation of a report in general accordance with the relevant sections of ASC NEPM (2013), NSW EPA (2017) and NSW EPA (2020).
Historic site review and site walkover findings	Historical aerials indicated that the site was used as a recreational bowling club with greens and a clubhouse since some time between 1943 and 1961, and did not indicate any other site use. The initial site inspection completed on 5 February 2020 noted the following: o The site was occupied by a timber and brick clad bowling club in the southern portion of the site. o Two artificial turf bowling greens were located in the central portion of the site. o An asphalt driveway and carpark were located in the north and eastern portions of the site. o Brick and galvanised metal sheds for storage were noted in the northern portion of the site, adjacent to the bowling greens. o Potential filling was noted beneath the bowling greens and carpark, likely for site levelling purposes.
Identified AEC and associated COPC	MA (2018) identified the following AEC: o AEC A – The existing bowling green with COPC consisting of heavy metals, pesticides, and asbestos. o AEC B – Filled former pond with COPC consisting of heavy metals, hydrocarbons, pesticides and asbestos. o AEC C – Potential filling (entire site), with COPC consisting of heavy metals, hydrocarbons, pesticides and asbestos. o AEC D – Bowling greens, with COPC consisting of heavy

Investigation Details	Investigation Task and Findings
	metals and pesticides.
Subsurface investigation findings	Subsurface investigations were completed on 14 February 2018, and involved the excavation of 10 boreholes in AECs B, C and D. Soil samples were tested against site assessment criteria (SAC) for residential land use with access to soil, derived from NEPM (2013). Laboratory analytical results identified SAC exceedances for heavy metals (EIL and HIL) and PAHs (EIL AND HIL) within fill material at one sample location (6332/BH101/1.5), which required remediation.
Data gaps	Due to access restrictions, soils underlying the existing bowling club at the site (AEC A) were not tested during the investigation. It was recommended that the investigation of this AEC be undertaken following demolition of site structures, at the remediation stage.
Conclusions	The contamination assessment recommended that a RAP be prepared for the site to close out data gaps, and to manage heavy metal and PAH impacted fill material.

In summary, contaminants exceeding site acceptance criteria (SAC) were identified in one location beneath the asphalt covered carpark in the northeast of the site (BH101/1.5). This material was considered to pose a risk to future receptors at the site, and remediation was recommended.

2.2 Remediation Action Plan

A remediation action plan (RAP) was prepared for the site by MA in December 2020.

The RAP considered a number of options to remediate the identified PAH and heavy metal contamination identified in fill material at BH101. Ultimately, excavation of contaminated soils and offsite disposal to a licensed waste facility was adopted as the preferred remediation strategy.

The RAP outlined a specific 'Remediation Area' (identified in the RAP as Remediation Area A) which was based on the distance to adjacent testing locations were no exceedance of the adopted SAC criteria was identified. This area was measured as approximately 580 m^2 however it was noted in the RAP that this area could likely be reduced with further testing around BH101.

2.3 Data Gaps

The following data gaps were identified in the contamination assessment (MA, 2018) as requiring additional assessment:

1. Data Gap Area A – Footprint of the existing clubhouse which was inaccessible at the time of inspection.

2. Data Gap Area B – Footprint of the existing storage sheds which were inaccessible at the time of inspection.

Council also identified the following additional data gap following review of the contamination assessment:

3. Insufficient testing for characterization of the south portion of the former pond that has been filled in (noting that this area was also generally inaccessible at the time of inspection)

The RAP provides a data gap closure investigation program, including the collection of additional soil samples and laboratory analysis.

While no additional assessment of these 'data gaps' were completed during this current investigation, it is anticipated that these works (including assessment of the additional Council data gap) will be undertaken during future site remediation works following demolition of existing site structures.

3 Additional Site Information

3.1 Site Location and Physical Setting

Site information is summarised in Table 2 and has been reproduced from MA, 2018. Based on the findings of recent site inspections and information review, no major changes are from the site conditions during 2018 investigations.

Table 2: Site information.

Item	Description / Detail
Site address	119 Barton Street, Monterey, NSW
Legal identifier	Lot 2, DP 857520
Approximate area	7,200 m^2 (NSW SIX Maps, 2020)
Local Government Area	Bayside Council
Current land use	The site is currently occupied by a clubhouse and bowling greens which are unused.
Surrounding land uses	The site is bordered by Barton Street to the north and residential properties to the east, south and west.
Topography	Site is generally flat. Site elevations range from approximately 6 mAHD in the northeast corner of the site to approximately 5 mAHD along the western border of the site.
Geology and soil mapping	The Sydney 1:100,000 Geological Series Sheet 9130 (1983) indicates that the site is underlain by quaternary deposits comprised of quartz sand, minor shell content, interdune (swale) silt and fine sand. The NSW Environment and Heritage eSPADE website identifies the site as having soils of the Tuggerah soil landscape, consisting of deep (>200 cm) podzols on dunes and podzols/humus podzol intergrades on swales.
Surface hydrology	A stormwater planning assessment completed by ADG Engineers Australia Pty Ltd (2016) concluded that all stormwater runoff generated at the site is contained within the site boundaries and is discharged via infiltration into sandy soils.

3.2 Hydrogeology

Review of the NSW Department of Primary Industries (DPI) Water's database provided the following information for the five closest groundwater bores (with relevant information) to the site (Table 3).

Table 3: Available hydrogeological information.

Groundwater Bore Identification	Direction and Distance	Standing Water Level (m)	Intended Use	Water Bearing Zone Substrate
GW100520	On site	NE[1] (7 mBGL)	Recreation	ND[2]
GW106456	Approximately 15 m south	NE[1] (6 mBGL)	Domestic	ND[2]
GW108549	Approximately 10 m east	5.0 mBGL	Domestic	Sand
GW108550	Approximately 10 m east	5.0 mBGL	Domestic	Sand
GW108652	Approximately 15 m east	5.0 mBGL	Domestic	Sand

Notes

[1] NE – Groundwater not encountered (maximum depth of well).

[2] ND – No data available.

Three groundwater monitoring well (MW01 – MW03) have been installed onsite as part of this assessment. During the recently completed sampling event, groundwater levels were measured between 2.92 mBGL – 3.49 mBGL. These are similar depths to groundwater conditions encountered during borehole drilling as part of previous MA assessment work.

Groundwater flow is expected to be in east / south easterly direction towards Botany Bay located approximately 200 m to the east.

3.3 PFAS Assessment

As noted in Section 1.2, Council considered that an assessment for PFAS is necessary for the site. The PFAS *National Environmental Management Plan* (NEPM 2020) provides guidance in relation to conducting a desktop screening assessment which informs decisions as to whether PFAS sampling of soil and groundwater is required. Table 4 has been derived from NEPM (2020).

Table 4: PFAS Screening Assessment.

Screening Assessment	Outcome
Have past or current activities occurred onsite which are nominated in NEPM (2020) as being an activity associated with PFAS contamination.	Based on available site history (as outlined in MA, 2018), there is no evidence to suggest activities associated with PFAS contamination have occurred onsite.
Have past or current offsite activities, up gradient or adjacent to the site occurred which are nominated in NEPM (2020) as being an activity associated with PFAS contamination.	Surrounding land use consists predominantly of residential land use. Historical activities associated with PFAS are considered unlikely to have occurred in close proximity to the site.

Has fire training occurred on or adjacent to site which included the use of fire suppressants.	There is no evidence to suggest that any form of fire training has occurred onsite or adjacent to the site.
Have PFAS been stored or used onsite in any manufacturing capacity.	Unknown, however considered unlikely based on available site information.
Could PFAS impacted fill material have been imported to site	Based on site aerial images, site filling is expected to have occurred sometime prior to 1961. NEPM (2020) notes that PFAS use emerged in the 1970s, and it is therefore considered unlikely that imported fill material was sourced from a site associated with potential PFAS use.
Could PFAS impacted groundwater migrated to site.	Given the generally low risk surrounding land use, it is considered unlikely that PFAS impacted groundwater has or is currently migrating onto site.

Based on the screening assessment outlined in Table 4, the potential for PFAS to be present onsite is considered low. However, as a conservative measure, sampling of site groundwater for PFAS was undertaken as part of this assessment.

4 Sampling, Analytical and Quality Plan

A Sampling Analytical and Quality Plan (SAQP) was developed to ensure that data collected for this assessment 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.

4.1 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 (2020) and NEPM (2013) guidelines, and are presented in Table 5

Table 5: Data quality objectives.

Step 1 **Stating the Problem**	As part of the current site DA assessment, Council have identified the need for the collection of additional soil and groundwater samples to determine the suitability of the site for a proposed seniors living development.
Step 2 **Identifying the Decision(s)**	To assess the suitability of the site for future land use, decisions are to be made based on the following questions: o Are additional COPC present within site groundwater? o Are additional COPC present at current soil sampling locations. o Does the site require any additional remediation or management further to what is currently outlined in the site RAP (MA, 2020)?
Step 3 **Identification of Inputs to the Decision**	The inputs to the assessment include: o Soil sampling at nominated locations across the IA. o Groundwater sampling at monitoring wells. o Laboratory analytical results for relevant COPC. o Assessment of analytical results against site suitable guidelines.
Step 4 **Study Boundary Definitions**	Study boundaries are as follows: o Lateral – Lateral boundary of the assessment is defined by the IA boundary. o Vertical – Vertical boundary is governed by the maximum depth reached during subsurface investigations. o Temporal – Two rounds of soil and groundwater sampling has been undertaken at this stage.
Step 5 **Development of Decision Rules**	The decision rule for this investigation is as follows: If the concentration of contaminants exceeds the adopted assessment criteria, a risk assessment is required. Should the risk be unacceptable, further investigations to remediate and / or manage the onsite impacts, in relation to the proposed development, will be undertaken.
Step 6 **Specification of Limits on Decision Errors**	Guidance found in ASC NEPM (2013) Schedule B2 regarding 95% upper confidence limit (UCL) states that the 95% UCL of the arithmetic mean provides a 95% confidence level that the true population mean will be less than or equal to this value. Therefore a decision can be made based on a probability that 95% of the data collected will satisfy the site acceptance criteria. A limit on decision error will be 5% that a conclusive statement may be incorrect.
Step 7 **Optimisation of Sampling Design**	Proposed sampling locations shall provide even coverage across the site in the identified AEC and positioned strategically to assess hydrocarbon impacts from the adjacent service station. 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.

4.2 Data Quality Indicators

In accordance with NSW EPA (2017), the investigation data set has been compared with DQI outlined in Table 6 to ensure that collected data meets the project needs and that DQO has been met.

Table 6: Data quality indicators.

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

4.3 Methodology and Quality Assurance / Quality Control

Site investigation and soil sampling methodology as shown in Table 7, was completed to meet the project DQO.

Table 7: Investigation and sampling methodology.

Activity	Detail / Comments
Fieldworks	Subsurface soil investigations were completed on 10 September 2021 and involved: o Drilling of 3 boreholes (BH201 to BH203) using a drill rig to a maximum investigation depth of 5.5 mbgl. o Installation and development of 3 monitoring wells (MW01 – MW03). o Collection of representative soil samples for laboratory analysis. o Collection of 1 QA / QC samples for laboratory analysis. Groundwater monitoring event was completed 24 September 2021 and involved: o Dip wells and measure groundwater quality. o Collection of groundwater samples from 3 monitoring wells for laboratory analysis. o Collection of 1 QA / QC samples for laboratory analysis. Soil and groundwater sampling locations are shown in Attachment A, and borehole and monitoring well logs are provided in Attachment B.
Soil screening and sampling	Soil sampling was completed by the MA environmental consultant using a clean pair of nitrile gloves for each sample. 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.
Groundwater sampling	All wells were developed on the same day as construction. A minimum of three well volumes were removed as part of the purging process. Groundwater sampling was completed by MA environmental consultants 14 days after monitoring wells were fully developed. Prior to sampling, each well was gauged with an oil – water interface probe to detect possible light non aqueous phase liquid (LNAPL). Groundwater samples were collected only when water quality parameters (pH, electrical conductivity, oxidation and temperature) stabilised (3 consecutive similar readings), indicating chemical equilibrium has occurred. Groundwater quality parameter field sheets are provided in Attachment E. Groundwater sampling was conducted using a clean pair of nitrile gloves for each sample, and collected into laboratory supplied bottles with appropriate preservations via a peristaltic pump. Samples for metal analysis were filtered at the laboratory.
QA / QC sampling	QA samples were collected for CA are as follows: o One soil duplicate sample was collected for intra laboratory analysis during investigations. o One soil trip blank and one trip spike sample were used during soil sampling. o One water duplicate sample was collected for intra laboratory analysis during the investigation.

Activity	Detail / Comments
Sample handling and transport	Sample collection, storage and transport were conducted according to MA SOP. Collected soil and groundwater samples were placed immediately into an ice chilled cooler box. Samples were dispatched to NATA accredited laboratories under chain of custody documentation within holding times.

4.4 Laboratory Analytical Suite

Laboratory analysis was carried out by Envirolab Pty Ltd a NATA accredited laboratory. Summary of laboratory analyses is provided in Table 8.

Table 8: Summary of soil laboratory analyses.

COPC	Primary Samples Analysed	QA / QC Samples Analysed
BTEXN	5	1 trip spike
TRH	5	1 trip blank
PAH	5	
Heavy metals[1]	5	1 duplicate
OCP / OPP	5	
Asbestos in soil	5	

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

Table 9: Summary of groundwater laboratory analyses.

COPC	Primary Samples Analysed	QA / QC Samples Analysed
BTEXN	3	
TRH	3	
PAH	3	
Heavy metals[1]	3	1 duplicate
PFAS	3	

Laboratory chain of custody documentation are provided in Attachment C.

5 Site Assessment Criteria

The site assessment criteria (SAC) adopted for this assessment, are listed in Table 10 and derived from the relevant NSW EPA endorsed guidelines.

Table 10: Site assessment criteria.

Media	Adopted Guidelines	Applicability
Soil	ASC NEPM (2013)	Health investigation levels (HIL) HIL A – Residential with access to soil based on the proposed development. Health screening levels (HSL) HSL A – Residential land use for sand was adopted based on granular natural material as a conservative measure. Management Limits Residential land use, coarse soil
Groundwater	ANZG (2018) ASC NEPM (2013) NEPM (2020)	Marine water 95 % species protection based on the nearest body of surface water being Botany Bay. Health screening levels (HSL) HSL A – Residential land use for sand was adopted based on granular natural material as a conservative measure

6 Results

6.1 Soil Conditions

Subsurface conditions observed during monitoring well installation were generally similar to those identified during the previous contamination assessment (MA, 2018) and consisted of fill comprising mainly gravely sand up to a maximum depth of 2.1 mbgl. Natural soil consisting of medium grain sand was encountered beneath overlying fill.

No visual or olfactory indications of potential contamination were recorded within fill or natural soil layers during the intrusive investigation.

Borehole locations are shown on the sampling plan in Attachment A. Borehole logs are provided in Attachment B.

6.2 Groundwater Conditions

Groundwater was observed to be generally clear and non-turbid. No visual or olfactory indications of potential contamination were recorded during groundwater sampling. The oil / water interface probe did not identify any potential non aqueous phase liquids (NAPL).

During sampling, water was purged from the well through a flow cell connected to groundwater quality probes. Sampling was conducted after water quality parameters stabilised as outlined in Table 11.

Table 11: Groundwater field water quality indicators.

Well ID	Water level [mbgl]	Temp. [°C]	DO [ppm]	EC [µS/cm]	pH	ORP (mV)
MW01	3.49	22.1	1.98	240	6.58	87.2
MW02	2.92	22.2	1.86	360	6.52	61.8
MW03	3.12	22.1	0.86	410	6.49	110.2

6.3 Analytical Results

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

6.3.1 Soil Results

Soil laboratory analytical results are summarised in Table 12.

Table 12: Summary of soil analytical results.

Analyte	Results Compared to SAC
Heavy metals	HIL All results below the SAC.
TPH/BTEXN	HSL All results below SAC. Management Limits All results below SAC.
OCP/OPP	HIL All results below SAC.
PAH	HIL All results below SAC. Management Limits All results below SAC.
PCBs	HIL All results below SAC.
Asbestos in soil	No asbestos detected.

6.3.2 Groundwater Results

Soil laboratory analytical results are summarised in Table 13.

Table 13: Summary of groundwater analytical results.

Analyte	Results Compared to SAC
Heavy metals	ANZG 95% Marine water MW01 (220 µg/L) and MW02 (43 µg/L) exceeded the SAC for zinc (15 µg/L). All other results below SAC.
TRH / BTEXN / PAH	ANZG 95% Marine water and HSL All results below SAC.
PCBs	ANZG 95% Marine water All results below SAC.
OCP/OPP	ANZG 95% Marine water All results below SAC.
PFAS	NEPM (2020) 95% Marine water All results below SAC.

6.3.3 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 F.

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

7 Discussion

Soil laboratory analytical results indicate all tested analytes were below the adopted SAC and generally below the laboratory detection limits. Based on soil data collected as part of this assessment, no additional soil contamination requiring remediation has been identified.

Council identified the need to characterise site groundwater conditions as part of the DA assessment. To achieve this, three groundwater monitoring wells were installed and a groundwater sampling event was undertaken. Concentrations of contaminants of concern were all below either the laboratory detection limit or below the adopted groundwater criteria with the exception of zinc. Low level heavy metal concentrations are common in urban groundwater environment and these results are expected to be representative of the wider regional aquifer quality. In consideration of potential site receptors, MA understands that beneficial reuse of groundwater is not proposed as part of site development works and therefore elevated zinc in groundwater does not pose a risk to future site users. It is expected that dewatering may be required as part of the future basement excavation works. Management of elevated heavy metal concentrations in groundwater may be required as part of any dewatering program (if required).

Council also identified a 'data gap' in relation to potential PFAS impacts at the site. The PFAS screening assessment (Section 3.3) indicated a generally low likelihood of PFAS contamination based on known site history and surrounding land uses. As a conservative measure, PFAS was included in the groundwater analytical suite. All results were found to be below human and ecological assessment criteria outlined in NEPM (2020).

As noted in Section 2.3, further site assessment will be required to address data gaps identified in MA (2018) and additional council requirements. The site RAP has outlined a data gap closure investigation program to be implemented following demolition of existing site structures.

8 Conclusion

The results of additional site soil and groundwater sampling did not identify any further site contamination requiring remediation.

We consider that the site can be made suitable for the proposed development provided that the existing site RAP (MA, 2020) is implement and a site validation report is prepared confirming successful site remediation. The nature of the proposed remediation works (i.e. excavation and offsite disposal) provides Council with certainty that the site shall be made suitable for the intended future residential use. As such, Clause 7(1) of SEPP 55 is satisfied as:

- The contamination status of the site is known.
- The site may be made suitable through the works proposed in the application by way of the existing site RAP (MA, 2020).
- By imposing condition of consent, certainty that the site shall be remediated is achieved.

9 Limitations Statement

This soil and groundwater assessment was undertaken in line with current industry standards.

It is important, however, 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 on sites where additional assessment work and remediation is identified as being required. Therefore, this report should not be read as a guarantee that no further contamination shall be found on the site. Should material be exposed in future which appears to be contaminated or inconsistent with natural site soils, additional testing may be required to determine the implications for the site.

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

References

Martens and Associates (2018) *Contamination Assessment: Lot 2, DP857520, 119 Barton Street, Monterey NSW* (Ref: P1706332JR01V01).

Martens and Associates (2020) *Remediation Action Plan: Lot 2, DP857520, 119 Barton Street, Monterey NSW* (Ref: P1706332JR02V01).

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

NEPM (2020) *PFAS National Environmental Management Plan Version 2.0, Heads of EPA Australia and New Zealand*.

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

NSW EPA (1995) *Sampling Design Guidelines.*

NSW EPA (2020) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, 2nd Edition.*

SEPP 55 Remediation of Land.

10 Attachment A – Site Location and Testing Plan

Map	Title
Map 01	Site Locality Plan
Map 02	Borehole and Monitoring Well Locations

0 30 60 90 120 150 m

1:2500 @ A3

Map Title / Figure:

Site Locality Plan

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Environment | Water | Geotechnics | Civil | Projects

Map 01	Map
115 Barton Road, Monterey, NSW	Site
Proposed Aged Care Facility	Project
Site Investigation	Sub-Project
Monterey Equity Pty Ltd	Client
14/10/2021	Date

Project No: P1706332 Map Set: MS02-R01 EPSG: 28356

0 6 12 18 24 30 m

1:500 @ A3

Map Title / Figure:

Borehole and Monitoring Well Locations

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Environment | Water | Geotechnics | Civil | Projects

Map	Map 02
Site	115 Barton Road, Monterey, NSW
Project	Proposed Aged Care Facility
Sub-Project	Site Investigation
Client	Monterey Equity Pty Ltd
Date	14/10/2021

Project No: P1706332 Map Set: MS02-R01 EPSG: 28356

11 Attachment B – Borehole Logs

CLIENT	Monterey Equity Pty Ltd		COMMENCED	10/09/2021	COMPLETED	10/09/2021	**REF BH301**
PROJECT	Detailed Site Investigation		LOGGED	RM	CHECKED		Sheet 1 OF 1
SITE	119 Barton Street, Monterey, NSW.		GEOLOGY	Quaternary	VEGETATION	N/A	PROJECT NO. P1706332
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE		RL SURFACE	m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 5.50 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
AD/T		Not Encountered	1						FILL: SAND; fine grained; white and grey.			FILL
			2	*2.10*					SAND; fine grained; yellow to brown.			
			3	*3.00*					Grading to pale grey / yellow.			
			4									
			5									
				5.50					Hole Terminated at 5.50 m (Target depth reached)			

EXCAVATION LOG TO BE READ IN CONJUCTION 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

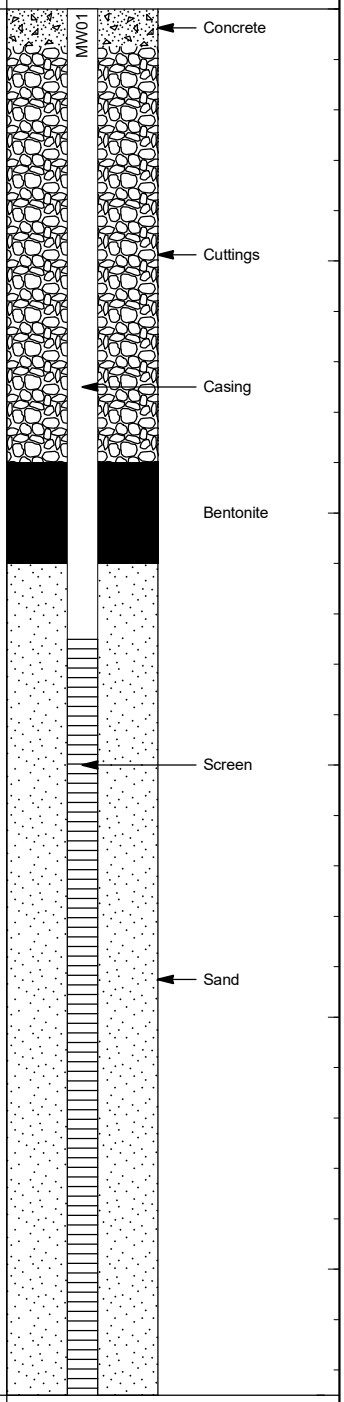
Engineering Log - BOREHOLE

CLIENT	Monterey Equity Pty Ltd		COMMENCED	10/09/2021	COMPLETED	10/09/2021	**REF BH301/MW01**
PROJECT	Detailed Site Investigation		LOGGED	RM	CHECKED		Sheet 1 OF 1
SITE	119 Barton Street, Monterey, NSW.		GEOLOGY	Quaternary	VEGETATION	N/A	PROJECT NO. P1706332
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE		RL SURFACE	m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 5.50 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
AD/T		Not Encountered	0						FILL: SAND; fine grained; white and grey.		
			1								
			2	2.10					SAND; fine grained; yellow to brown.		
			3	3.00					Grading to pale grey / yellow.		
			4								
			5								
				5.50					Hole Terminated at 5.50 m (Target depth reached)		

PIEZOMETER DETAILS

ID MW01 — Static Water Level



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

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Engineering Log - TEST

CLIENT	Monterey Equity Pty Ltd		COMMENCED	10/09/2021	COMPLETED	10/09/2021	**REF BH302**
PROJECT	Detailed Site Investigation		LOGGED	RM	CHECKED		Sheet 1 OF 1
SITE	119 Barton Street, Monterey, NSW.		GEOLOGY	Quaternary	VEGETATION	N/A	PROJECT NO. P1706332
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE		RL SURFACE	m	DATUM AHD
EXCAVATION DIMENSIONS		5.50 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
AD/T		Not Encountered	0	*0.20*					ASPHALT.			
									FILL: gravely SAND; fine to medium grained; grey, shale gravels			FILL
			1									
			2	*2.10*					SAND; fine grained; yellow to brown.			
			3									
			4									
			5									
				5.50					Hole Terminated at 5.50 m (Target depth reached)			

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

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Engineering Log - BOREHOLE

CLIENT	Monterey Equity Pty Ltd		COMMENCED	10/09/2021	COMPLETED	10/09/2021	**REF BH302/MW02**
PROJECT	Detailed Site Investigation		LOGGED	RM	CHECKED		Sheet 1 OF 1
SITE	119 Barton Street, Monterey, NSW.		GEOLOGY	Quaternary	VEGETATION	N/A	PROJECT NO. P1706332
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE		RL SURFACE	m	DATUM AHD
EXCAVATION DIMENSIONS		5.50 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	PIEZOMETER DETAILS ID MW02 Static Water Level
AD/T		Not Encountered	0	0.20					ASPHALT.			Concrete
									FILL: gravely SAND; fine to medium grained; grey, shale gravels			Cuttings
			1									Casing
												Bentonite
			2	2.10					SAND; fine grained; yellow to brown.			
			3									Screen
			4									Sand
			5									
				5.50					Hole Terminated at 5.50 m (Target depth reached)			

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

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Engineering Log - TEST

CLIENT	Monterey Equity Pty Ltd		COMMENCED	10/09/2021	COMPLETED	10/09/2021	**REF BH303**
PROJECT	Detailed Site Investigation		LOGGED	RM	CHECKED		Sheet 1 OF 1
SITE	119 Barton Street, Monterey, NSW.		GEOLOGY	Quaternary	VEGETATION	N/A	PROJECT NO. P1706332
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE		RL SURFACE	m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 5.50 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
AD/T		Not Encountered	0	*0.20*					ASPHALT.			
									FILL: gravely SAND; fine to medium grained; grey, shale gravels			FILL
			1									
			2	*2.10*					SAND; fine grained; yellow to brown.			
			3									
			4									
			5									
				5.50					Hole Terminated at 5.50 m (Target depth reached)			

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

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Engineering Log - BOREHOLE

CLIENT	Monterey Equity Pty Ltd		COMMENCED	10/09/2021	COMPLETED	10/09/2021	**REF BH303/MW03**
PROJECT	Detailed Site Investigation		LOGGED	RM	CHECKED		Sheet 1 OF 1
SITE	119 Barton Street, Monterey, NSW.		GEOLOGY	Quaternary	VEGETATION	N/A	PROJECT NO. P1706332
EQUIPMENT		4WD truck-mounted hydraulic drill rig	LONGITUDE		RL SURFACE	m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 5.50 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	PIEZOMETER DETAILS ID MW03 Static Water Level
AD/T		Not Encountered	0	*0.20*					ASPHALT.			Concrete
									FILL: gravely SAND; fine to medium grained; grey, shale gravels			Cuttings
			1									Casing
												Bentonite
			2	*2.10*					SAND; fine grained; yellow to brown.			
			3									Screen
												Sand
			4									
			5									
				5.50					Hole Terminated at 5.50 m (Target depth reached)			

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Engineering Log - TEST

12 Attachment C – Laboratory Analytical Documentation

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

CERTIFICATE OF ANALYSIS 277940

Client Details

Client	Martens & Associates Pty Ltd
Attention	Ben McGiffin, Robert Mehaffey
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**P1706332 - 119 Barton St Monterey**
Number of Samples	15 Soil
Date samples received	13/09/2021
Date completed instructions received	13/09/2021

Analysis Details

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

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

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

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

Report Details

Date results requested by	20/09/2021
Date of Issue	20/09/2021

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

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Lucy Zhu, Asbestos Supervisor
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		277940-1	277940-2	277940-5	277940-7	277940-9
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0.4	1.0	0.4	2.0	0.4
Date Sampled		10/09/2021	10/09/2021	10/09/2021	10/09/2021	10/09/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2021	15/09/2021	15/09/2021	15/09/2021	15/09/2021
Date analysed	-	16/09/2021	16/09/2021	16/09/2021	16/09/2021	16/09/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	97	100	99	101	99

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		277940-14	277940-15
Your Reference	UNITS	Trip Spike	Trip Blank
Depth		-	-
Date Sampled		10/09/2021	10/09/2021
Type of sample		Soil	Soil
Date extracted	-	15/09/2021	15/09/2021
Date analysed	-	16/09/2021	16/09/2021
TRH C_6 - C_9	mg/kg	[NA]	<25
TRH C_6 - C_{10}	mg/kg	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	<25
Benzene	mg/kg	104%	<0.2
Toluene	mg/kg	91%	<0.5
Ethylbenzene	mg/kg	111%	<1
m+p-xylene	mg/kg	124%	<2
o-Xylene	mg/kg	125%	<1
naphthalene	mg/kg	[NA]	<1
Total +ve Xylenes	mg/kg	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	91	101

svTRH (C10-C40) in Soil						
Our Reference		277940-1	277940-2	277940-5	277940-7	277940-9
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0.4	1.0	0.4	2.0	0.4
Date Sampled		10/09/2021	10/09/2021	10/09/2021	10/09/2021	10/09/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2021	15/09/2021	15/09/2021	15/09/2021	15/09/2021
Date analysed	-	16/09/2021	16/09/2021	16/09/2021	16/09/2021	16/09/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	83	82	81	84	89

PAHs in Soil						
Our Reference		277940-1	277940-2	277940-5	277940-7	277940-9
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0.4	1.0	0.4	2.0	0.4
Date Sampled		10/09/2021	10/09/2021	10/09/2021	10/09/2021	10/09/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2021	15/09/2021	15/09/2021	15/09/2021	15/09/2021
Date analysed	-	16/09/2021	16/09/2021	16/09/2021	16/09/2021	16/09/2021
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	0.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	95	95	97	102	97

Organochlorine Pesticides in soil						
Our Reference		277940-1	277940-2	277940-5	277940-7	277940-9
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0.4	1.0	0.4	2.0	0.4
Date Sampled		10/09/2021	10/09/2021	10/09/2021	10/09/2021	10/09/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2021	15/09/2021	15/09/2021	15/09/2021	15/09/2021
Date analysed	-	16/09/2021	16/09/2021	16/09/2021	16/09/2021	16/09/2021
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	%	118	116	112	113	113

Organophosphorus Pesticides in Soil						
Our Reference		277940-1	277940-2	277940-5	277940-7	277940-9
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0.4	1.0	0.4	2.0	0.4
Date Sampled		10/09/2021	10/09/2021	10/09/2021	10/09/2021	10/09/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2021	15/09/2021	15/09/2021	15/09/2021	15/09/2021
Date analysed	-	16/09/2021	16/09/2021	16/09/2021	16/09/2021	16/09/2021
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	118	116	112	113	113

PCBs in Soil						
Our Reference		277940-1	277940-2	277940-5	277940-7	277940-9
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0.4	1.0	0.4	2.0	0.4
Date Sampled		10/09/2021	10/09/2021	10/09/2021	10/09/2021	10/09/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2021	15/09/2021	15/09/2021	15/09/2021	15/09/2021
Date analysed	-	16/09/2021	16/09/2021	16/09/2021	16/09/2021	16/09/2021
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	%	118	116	112	113	113

Acid Extractable metals in soil						
Our Reference		277940-1	277940-2	277940-5	277940-7	277940-9
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0.4	1.0	0.4	2.0	0.4
Date Sampled		10/09/2021	10/09/2021	10/09/2021	10/09/2021	10/09/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/09/2021	15/09/2021	15/09/2021	15/09/2021	15/09/2021
Date analysed	-	16/09/2021	16/09/2021	16/09/2021	16/09/2021	16/09/2021
Arsenic	mg/kg	<4	<4	<4	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	1	<1	3	<1	9
Copper	mg/kg	2	<1	2	<1	12
Lead	mg/kg	1	<1	6	<1	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1	<1	4	<1	16
Zinc	mg/kg	2	1	5	5	46

Acid Extractable metals in soil		
Our Reference		277940-13
Your Reference	UNITS	DUP201
Depth		-
Date Sampled		10/09/2021
Type of sample		Soil
Date prepared	-	15/09/2021
Date analysed	-	16/09/2021
Arsenic	mg/kg	7
Cadmium	mg/kg	<0.4
Chromium	mg/kg	9
Copper	mg/kg	15
Lead	mg/kg	18
Mercury	mg/kg	0.1
Nickel	mg/kg	15
Zinc	mg/kg	55

Moisture						
Our Reference		277940-1	277940-2	277940-5	277940-7	277940-9
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0.4	1.0	0.4	2.0	0.4
Date Sampled		10/09/2021	10/09/2021	10/09/2021	10/09/2021	10/09/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/09/2021	15/09/2021	15/09/2021	15/09/2021	15/09/2021
Date analysed	-	16/09/2021	16/09/2021	16/09/2021	16/09/2021	16/09/2021
Moisture	%	9.9	4.8	4.8	2.2	7.0

Moisture		
Our Reference		277940-13
Your Reference	UNITS	DUP201
Depth		-
Date Sampled		10/09/2021
Type of sample		Soil
Date prepared	-	15/09/2021
Date analysed	-	16/09/2021
Moisture	%	6.6

Asbestos ID - soils						
Our Reference		277940-1	277940-2	277940-5	277940-7	277940-9
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0.4	1.0	0.4	2.0	0.4
Date Sampled		10/09/2021	10/09/2021	10/09/2021	10/09/2021	10/09/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	17/09/2021	17/09/2021	17/09/2021	17/09/2021	17/09/2021
Sample mass tested	g	Approx. 25g	Approx. 30g	Approx. 35g	Approx. 35g	Approx. 30g
Sample Description	-	Black fine-grained soil & rocks	Beige fine-grained soil &	Grey fine-grained soil & rocks	Beige fine-grained soil &	Grey fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

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

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

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			15/09/2021	[NT]	[NT]	[NT]	[NT]	15/09/2021	[NT]
Date analysed	-			16/09/2021	[NT]	[NT]	[NT]	[NT]	16/09/2021	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	115	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	115	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	111	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	110	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	116	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	117	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	75	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			15/09/2021	[NT]	[NT]	[NT]	[NT]	15/09/2021	[NT]
Date analysed	-			16/09/2021	[NT]	[NT]	[NT]	[NT]	16/09/2021	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	70	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	76	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	70	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	76	[NT]
Surrogate o-Terphenyl	%		Org-020	83	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			15/09/2021	[NT]	[NT]	[NT]	[NT]	15/09/2021	[NT]
Date analysed	-			16/09/2021	[NT]	[NT]	[NT]	[NT]	16/09/2021	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	118	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	81	[NT]	[NT]	[NT]	[NT]	94	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			15/09/2021	[NT]	[NT]	[NT]	[NT]	15/09/2021	[NT]
Date analysed	-			16/09/2021	[NT]	[NT]	[NT]	[NT]	16/09/2021	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	119	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	126	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	126	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	127	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	120	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	114	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			15/09/2021	[NT]	[NT]	[NT]	[NT]	15/09/2021	[NT]
Date analysed	-			16/09/2021	[NT]	[NT]	[NT]	[NT]	16/09/2021	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	130	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	70	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	114	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			15/09/2021	[NT]	[NT]	[NT]	[NT]	15/09/2021	[NT]
Date analysed	-			16/09/2021	[NT]	[NT]	[NT]	[NT]	16/09/2021	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	114	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date prepared	-			15/09/2021	[NT]	[NT]	[NT]	[NT]	15/09/2021	[NT]
Date analysed	-			16/09/2021	[NT]	[NT]	[NT]	[NT]	16/09/2021	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	90	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	88	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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.

COC 1836
13/9/2021

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consulting engineers since 1989

SOIL ANALYSIS CHAIN OF CUSTODY FORM

Additional Testing												
Name	P1706332 - 119 Barton St, Monterey											
Martens Contact Officer	Robert Mehaffey				**Contact Email**	rmehaffey@martens.com.au						
Sampling and Shipping	**Sample Date**	10 September 2021	**Dispatch Date**	13 September 2021	**Turnaround Time**	standard						
	Our Reference	P1706332COC02V01			**Shipping Method (X)**	**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**	rmehaffey@martens.com.au bmcgiffin@martens.com.au				

Sample ID	Combo 6a	8HM	BTEX	TRH	HOLD
1 BH201/0.4	X				
2 BH201/1.0	X				
3 BH201/2.0					X
4 BH201/4.0					X
5 BH202/0.4	X				
6 BH202/1.0					X
7 BH202/2.0	X				
8 BH202/4.0					X
9 BH203/0.4	X				
10 BH203/1.0					X
11 BH203/2.0					X
12 BH203/4.0					X
13 DUP201		X			
14 Trip Spike			X		
15 Trip Blank				X	

ENVIROLAB Chatswood NSW
Ph: (02) 9910 6

Job No: 27940
Date Received: 13/9/2021
Time Received: 1836
Received By:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security:

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

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

CERTIFICATE OF ANALYSIS 279674

Client Details

Client	Martens & Associates Pty Ltd
Attention	Ben McGiffin, Robert Mehaffey
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**P1706332 - 119 Barton St Monterey**
Number of Samples	4 Water
Date samples received	05/10/2021
Date completed instructions received	05/10/2021

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.

Report Details

Date results requested by	08/10/2021
Date of Issue	08/10/2021

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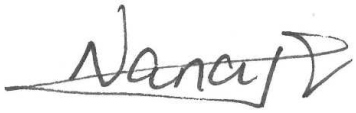
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water				
Our Reference		279674-1	279674-2	279674-3
Your Reference	UNITS	MW01	MW02	MW03
Date Sampled		24/09/2021	24/09/2021	24/09/2021
Type of sample		Water	Water	Water
Date extracted	-	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	06/10/2021	06/10/2021	06/10/2021
TRH C_6 - C_9	µg/L	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10
Benzene	µg/L	<1	<1	<1
Toluene	µg/L	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2
o-xylene	µg/L	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1
Surrogate Dibromofluoromethane	%	111	92	112
Surrogate toluene-d8	%	110	117	110
Surrogate 4-BFB	%	100	89	100

svTRH (C10-C40) in Water				
Our Reference	UNITS	279674-1	279674-2	279674-3
Your Reference		MW01	MW02	MW03
Date Sampled		24/09/2021	24/09/2021	24/09/2021
Type of sample		Water	Water	Water
Date extracted	-	07/10/2021	07/10/2021	07/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021
TRH C_{10} - C_{14}	µg/L	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50
Surrogate o-Terphenyl	%	75	78	81

PFAS in Waters Extended				
Our Reference		279674-1	279674-2	279674-3
Your Reference	UNITS	MW01	MW02	MW03
Date Sampled		24/09/2021	24/09/2021	24/09/2021
Type of sample		Water	Water	Water
Date prepared	-	06/10/2021	06/10/2021	06/10/2021
Date analysed	-	06/10/2021	06/10/2021	06/10/2021
Perfluorobutanesulfonic acid	µg/L	<0.01	0.03	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.03	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	95	96	96
Surrogate $^{13}C_2$ *PFOA*	%	98	97	97
Extracted ISTD $^{13}C_3$ *PFBS*	%	92	95	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%	106	106	108
Extracted ISTD $^{13}C_4$ *PFOS*	%	103	103	105
Extracted ISTD $^{13}C_4$ *PFBA*	%	97	101	104

PFAS in Waters Extended				
Our Reference	UNITS	279674-1	279674-2	279674-3
Your Reference		MW01	MW02	MW03
Date Sampled		24/09/2021	24/09/2021	24/09/2021
Type of sample		Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	98	101	101
Extracted ISTD $^{13}C_2$ *PFHxA*	%	103	102	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%	110	109	110
Extracted ISTD $^{13}C_4$ *PFOA*	%	115	110	116
Extracted ISTD $^{13}C_5$ *PFNA*	%	127	119	122
Extracted ISTD $^{13}C_2$ *PFDA*	%	128	122	129
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	116	110	116
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	96	103	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	73	87	79
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	113	96	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	127	114	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	129	123	132
Extracted ISTD $^{13}C_8$ *FOSA*	%	105	110	109
Extracted ISTD d_3 *N MeFOSA*	%	95	101	103
Extracted ISTD d_5 *N EtFOSA*	%	97	105	105
Extracted ISTD d_7 *N MeFOSE*	%	110	110	109
Extracted ISTD d_9 *N EtFOSE*	%	104	111	113
Extracted ISTD d_3 *N MeFOSAA*	%	125	85	83
Extracted ISTD d_5 *N EtFOSAA*	%	101	99	108
Total Positive PFHxS & PFOS	µg/L	0.03	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	0.03	<0.01	<0.01
Total Positive PFAS	µg/L	0.03	0.03	0.01

PAHs in Water				
Our Reference	UNITS	279674-1	279674-2	279674-3
Your Reference		MW01	MW02	MW03
Date Sampled		24/09/2021	24/09/2021	24/09/2021
Type of sample		Water	Water	Water
Date extracted	-	07/10/2021	07/10/2021	07/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021
Naphthalene	µg/L	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1
Fluorene	µg/L	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1
Anthracene	µg/L	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1
Pyrene	µg/L	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1
Chrysene	µg/L	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	99	93	101

Organochlorine Pesticides in Water				
Our Reference		279674-1	279674-2	279674-3
Your Reference	UNITS	MW01	MW02	MW03
Date Sampled		24/09/2021	24/09/2021	24/09/2021
Type of sample		Water	Water	Water
Date extracted	-	07/10/2021	07/10/2021	07/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021
alpha-BHC	µg/L	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2
Surrogate TCMX	%	88	87	92

OP Pesticides in Water				
Our Reference	UNITS	279674-1	279674-2	279674-3
Your Reference		MW01	MW02	MW03
Date Sampled		24/09/2021	24/09/2021	24/09/2021
Type of sample		Water	Water	Water
Date extracted	-	07/10/2021	07/10/2021	07/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021
Dichlorvos	µg/L	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2
Surrogate TCMX	%	88	87	92

PCBs in Water				
Our Reference		279674-1	279674-2	279674-3
Your Reference	UNITS	MW01	MW02	MW03
Date Sampled		24/09/2021	24/09/2021	24/09/2021
Type of sample		Water	Water	Water
Date extracted	-	07/10/2021	07/10/2021	07/10/2021
Date analysed	-	08/10/2021	08/10/2021	08/10/2021
Aroclor 1016	µg/L	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2
Surrogate TCMX	%	88	87	92

HM in water - dissolved					
Our Reference	UNITS	279674-1	279674-2	279674-3	279674-4
Your Reference		MW01	MW02	MW03	DUP01
Date Sampled		24/09/2021	24/09/2021	24/09/2021	24/09/2021
Type of sample		Water	Water	Water	Water
Date prepared	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Date analysed	-	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Arsenic-Dissolved	µg/L	4	<1	<1	<1
Cadmium-Dissolved	µg/L	0.2	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	1	1	<1	1
Lead-Dissolved	µg/L	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	<1	<1	<1
Zinc-Dissolved	µg/L	220	43	5	43

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			06/10/2021	[NT]	[NT]	[NT]	[NT]	06/10/2021	[NT]
Date analysed	-			06/10/2021	[NT]	[NT]	[NT]	[NT]	06/10/2021	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	111	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	111	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	120	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	122	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	104	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	109	[NT]	[NT]	[NT]	[NT]	109	[NT]
Surrogate toluene-d8	%		Org-023	108	[NT]	[NT]	[NT]	[NT]	111	[NT]
Surrogate 4-BFB	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	114	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			07/10/2021	[NT]	[NT]	[NT]	[NT]	07/10/2021	[NT]
Date analysed	-			07/10/2021	[NT]	[NT]	[NT]	[NT]	07/10/2021	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	119	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	104	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	125	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	119	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	104	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	125	[NT]
Surrogate o-Terphenyl	%		Org-020	82	[NT]	[NT]	[NT]	[NT]	112	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	279674-2
Date prepared	-			06/10/2021	1	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Date analysed	-			06/10/2021	1	06/10/2021	06/10/2021		06/10/2021	06/10/2021
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	103
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	97	93
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	103
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	98	100
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.03	0.03	0	102	95
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	92	92
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	100
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	102
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	96
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	107	103
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	95
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	95	91
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	94	96
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	97
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	97	107
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	101	98
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	107	106
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	107
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	99
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	108	93
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	107	83
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	111	109
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	102	98
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	102	92
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	107	100
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	110	105
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	99	94
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	108	97
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	98	1	95	96	1	100	97
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	96	1	98	99	1	98	96

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	279674-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	99	1	92	94	2	98	97
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	108	1	106	104	2	106	104
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	106	1	103	104	1	103	104
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	104	1	97	100	3	101	99
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	104	1	98	101	3	101	100
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	105	1	103	101	2	103	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	113	1	110	112	2	109	108
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	114	1	115	112	3	113	111
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	119	1	127	121	5	115	118
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	129	1	128	122	5	126	117
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	125	1	116	118	2	119	115
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	121	1	96	106	10	121	101
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	101	1	73	82	12	104	83
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	110	1	113	101	11	107	98
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	116	1	127	119	7	128	116
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	131	1	129	129	0	120	125
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	111	1	105	109	4	103	101
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	102	1	95	100	5	103	101
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	104	1	97	105	8	101	104
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	111	1	110	106	4	108	112

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	279674-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	113	1	104	111	7	107	109
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	93	1	125	94	28	107	98
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	116	1	101	103	2	108	112

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			07/10/2021	[NT]	[NT]	[NT]	[NT]	07/10/2021	[NT]
Date analysed	-			08/10/2021	[NT]	[NT]	[NT]	[NT]	08/10/2021	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	72	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	93	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			07/10/2021	[NT]	[NT]	[NT]	[NT]	07/10/2021	[NT]
Date analysed	-			08/10/2021	[NT]	[NT]	[NT]	[NT]	08/10/2021	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	104	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	106	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	95	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	88	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			07/10/2021	[NT]	[NT]	[NT]	[NT]	07/10/2021	[NT]
Date analysed	-			08/10/2021	[NT]	[NT]	[NT]	[NT]	08/10/2021	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	74	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	91	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	113	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	102	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	88	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			07/10/2021	[NT]	[NT]	[NT]	[NT]	07/10/2021	[NT]
Date analysed	-			08/10/2021	[NT]	[NT]	[NT]	[NT]	08/10/2021	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	88	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			07/10/2021	1	07/10/2021	07/10/2021		07/10/2021	[NT]
Date analysed	-			07/10/2021	1	07/10/2021	07/10/2021		07/10/2021	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	4	4	0	91	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	0.2	0.2	0	90	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	92	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	92	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	93	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	108	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	92	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	220	210	5	92	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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.

COC rec'd: 1730

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SOIL ANALYSIS CHAIN OF CUSTODY FORM

Additional Testing												
Name	P1706332 - 119 Barton St, Monterey											
Martens Contact Officer	Ben McGiffin					**Contact Email**	bmcgiffin@martens.com.au					
Sampling and Shipping	**Sample Date**	24 September 2021		**Dispatch Date**	5 October 2021		**Turnaround Time**		3 Day			
	Our Reference	P1706332COC02V01				**Shipping Method (X)**	**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**	rmehaffey@martens.com.au bmcgiffin@martens.com.au				

Sample ID	Combo 6 Water	PFAS – Routine Extended	8 Metals		
1 MW01	X	X			
2 MW02	X	X			
3 MW03	X	X			
4 DUP01			X		

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

Job No: 279674
Date Received: 05/10/21
Time Received: 1500
Received By: CH
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

13 Attachment D – Laboratory Summary Tables

13 Attachment D – Laboratory Summary Tables

				Field ID	BH201	BH201	BH202	BH202	BH203
				Date	10/09/2021	10/09/2021	10/09/2021	10/09/2021	10/09/2021
	Unit	EQL	NEPM 2013 Table 1A(3) Res A/B Soil HSL for	NEPM 2013 Table 1A(1) HILs Res A					
Asbestos									
Asbestos fibres	**Detect**				0	0	0	0	0
BTEX									
Benzene	**mg/kg**	0.2	0.5 | 0.5 | 0.5 | 0.5		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	**mg/kg**	0.5	160 | 220 | 310 | 540		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	**mg/kg**	1	55		<1	<1	<1	<1	<1
Xylene (m & p)	**mg/kg**	2			<2	<2	<2	<2	<2
Xylene (o)	**mg/kg**	1			<1	<1	<1	<1	<1
Xylene Total	**mg/kg**	3	40 | 60 | 95 | 170		<3	<3	<3	<3	<3
TRH									
C6-C10 Fraction (F1)	**mg/kg**	25			<25	<25	<25	<25	<25
C6-C10 (F1 minus BTEX)	**mg/kg**	25	45 | 70 | 110 | 200		<25	<25	<25	<25	<25
>C10-C16 Fraction (F2)	**mg/kg**	50			<50	<50	<50	<50	<50
>C10-C16 Fraction (F2 minus Naphthalene)	**mg/kg**	50	110 | 240 | 440		<50	<50	<50	<50	<50
>C16-C34 Fraction (F3)	**mg/kg**	100			<100	<100	<100	<100	<100
>C34-C40 Fraction (F4)	**mg/kg**	100			<100	<100	<100	<100	<100
>C10-C40 Fraction (Sum)	**mg/kg**	50			<50	<50	<50	<50	<50
Halogenated Benzenes									
Hexachlorobenzene	**mg/kg**	0.1		10	<0.1	<0.1	<0.1	<0.1	<0.1
Inorganics									
Moisture Content	**%**	0.1			9.9	4.8	4.8	2.2	7.0
Metals									
Arsenic	**mg/kg**	4		100	<4	<4	<4	<4	5
Cadmium	**mg/kg**	0.4		20	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium (III+VI)	**mg/kg**	1			1	<1	3	<1	9
Copper	**mg/kg**	1		6,000	2	<1	2	<1	12
Lead	**mg/kg**	1		300	1	<1	6	<1	15
Mercury	**mg/kg**	0.1		40	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	**mg/kg**	1		400	1	<1	4	<1	16
Zinc	**mg/kg**	1		7,400	2	1	5	5	46
Organochlorine Pesticides									
4,4-DDE	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
a-BHC	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
b-BHC	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Chlordane (cis)	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Chlordane (trans)	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
d-BHC	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
DDD	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
DDT	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
DDT+DDE+DDD	**mg/kg**	0.1		240	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	**mg/kg**	0.1		10	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin aldehyde	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
g-BHC (Lindane)	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	**mg/kg**	0.1		6	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	**mg/kg**	0.1		300	<0.1	<0.1	<0.1	<0.1	<0.1
Organophosphorous Pesticides									
Azinophos methyl	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	**mg/kg**	0.1		160	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
PAH									
Benzo(b+j+k)fluoranthene	**mg/kg**	0.2			<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	0.1
Benzo(a) pyrene	**mg/kg**	0.05			<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	0.1
Dibenz(a,h)anthracene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	**mg/kg**	0.1	3		<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	0.1
Pyrene	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
PAHs (Sum of positives)	**mg/kg**	0.05			<0.05	<0.05	<0.05	<0.05	0.4
PCBs									
Arochlor 1016	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
PCBs (Sum of total)	**mg/kg**	0.1		1	<0.1	<0.1	<0.1	<0.1	<0.1
Pesticides									
Parathion	**mg/kg**	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
TPH									
C6-C9 Fraction	**mg/kg**	25			<25	<25	<25	<25	<25
C10-C14 Fraction	**mg/kg**	50			<50	<50	<50	<50	<50
C15-C28 Fraction	**mg/kg**	100			<100	<100	<100	<100	<100
C29-C36 Fraction	**mg/kg**	100			<100	<100	<100	<100	<100
C10-C36 Fraction (Sum)	**mg/kg**	50			<50	<50	<50	<50	<50

Environmental Standards
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1A(1) HILs Res A Soil

				Field ID	MW01	MW02	MW03
				Date	24/09/2021	24/09/2021	24/09/2021
	Unit	EQL	ANZG (2018) Marine Water 95% LOSP Toxicant DGVs	PFAS NEMP 2020 Interim Marine 95%			
BTEX							
Benzene	µg/L	1	700		<1	<1	<1
Toluene	µg/L	1	180		<1	<1	<1
Ethylbenzene	µg/L	1	80		<1	<1	<1
Xylene (m & p)	µg/L	2			<2	<2	<2
Xylene (o)	µg/L	1			<1	<1	<1
TRH							
C6-C10 Fraction (F1)	µg/L	10			<10	<10	<10
C6-C10 (F1 minus BTEX)	µg/L	10			<10	<10	<10
>C10-C16 Fraction (F2)	µg/L	50			<50	<50	<50
>C10-C16 Fraction (F2 minus Naphthalene)	µg/L	50			<50	<50	<50
>C16-C34 Fraction (F3)	µg/L	100			<100	<100	<100
>C34-C40 Fraction (F4)	µg/L	100			<100	<100	<100
>C10-C40 Fraction (Sum)	µg/L	50			<50	<50	<50
Halogenated Benzenes							
Hexachlorobenzene	µg/L	0.2	0.1		<0.2	<0.2	<0.2
Perfluoroalkane Carboxylic Acids							
Perfluorobutanoic acid (PFBA)	µg/L	0.02			<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.01			<0.01	<0.01	0.01
Perfluoropentanoic acid (PFPeA)	µg/L	0.02			<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01			<0.01	<0.01	<0.01
Perfluorooctanoic acid (PFOA)	µg/L	0.01		220	<0.01	<0.01	<0.01
Perfluorodecanoic acid (PFDA)	µg/L	0.02			<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.05			<0.05	<0.05	<0.05
Perfluorononanoic acid (PFNA)	µg/L	0.01			<0.01	<0.01	<0.01
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.5			<0.5	<0.5	<0.5
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.1			<0.1	<0.1	<0.1
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02			<0.02	<0.02	<0.02
(n:2) Fluorotelomer Sulfonic Acids							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01			<0.01	<0.01	<0.01
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01			<0.01	<0.01	<0.01
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02			<0.02	<0.02	<0.02
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02			<0.02	<0.02	<0.02
Perfluoroalkane Sulfonic Acids							
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01			<0.01	0.03	<0.01
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01			<0.01	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01			<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01			<0.01	<0.01	<0.01
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01		0.13	0.03	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02			<0.02	<0.02	<0.02
Perfluoroalkyl Sulfonamides							
Perfluorooctane sulfonamide (FOSA)	µg/L	0.1			<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05			<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02			<0.02	<0.02	<0.02
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05			<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.1			<0.1	<0.1	<0.1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02			<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.5			<0.5	<0.5	<0.5
PFAS							
Sum of PFHxS and PFOS	µg/L	0.01			0.03	<0.01	<0.01
Sum of PFAS	µg/L	0.01			0.03	0.03	0.01
Sum of PFAS (PFOS + PFOA)	µg/L	0.01			0.03	<0.01	<0.01
Metals							
Arsenic (filtered)	mg/L	0.001			0.004	<0.001	<0.001
Cadmium (filtered)	mg/L	0.0001	0.0055		0.0002	<0.0001	<0.0001
Chromium (III+VI) (filtered)	mg/L	0.001			<0.001	<0.001	<0.001
Copper (filtered)	mg/L	0.001	0.0013		0.001	0.001	<0.001
Lead (filtered)	mg/L	0.001	0.0044		<0.001	<0.001	<0.001
Mercury (filtered)	mg/L	0.00005	0.0004		<0.00005	<0.00005	<0.00005
Nickel (filtered)	mg/L	0.001	0.07		<0.001	<0.001	<0.001
Zinc (filtered)	mg/L	0.001	0.015		0.22	0.043	0.005
Organochlorine Pesticides							
4,4-DDE	µg/L	0.2			<0.2	<0.2	<0.2
a-BHC	µg/L	0.2			<0.2	<0.2	<0.2
Aldrin	µg/L	0.2			<0.2	<0.2	<0.2
b-BHC	µg/L	0.2			<0.2	<0.2	<0.2
Chlordane (cis)	µg/L	0.2			<0.2	<0.2	<0.2
Chlordane (trans)	µg/L	0.2			<0.2	<0.2	<0.2
d-BHC	µg/L	0.2			<0.2	<0.2	<0.2
DDD	µg/L	0.2			<0.2	<0.2	<0.2
DDT	µg/L	0.2			<0.2	<0.2	<0.2
Dieldrin	µg/L	0.2			<0.2	<0.2	<0.2
Endosulfan I	µg/L	0.2			<0.2	<0.2	<0.2
Endosulfan II	µg/L	0.2			<0.2	<0.2	<0.2
Endosulfan sulphate	µg/L	0.2			<0.2	<0.2	<0.2
Endrin	µg/L	0.2	0.008		<0.2	<0.2	<0.2

					Field ID	MW01	MW02	MW03
					Date	24/09/2021	24/09/2021	24/09/2021
	Unit	EQL	ANZG (2018) Marine Water 95% LOSP Toxicant DGVs	PFAS NEMP 2020 Interim Marine 95%			
Endrin aldehyde	µg/L	0.2				<0.2	<0.2	<0.2
g-BHC (Lindane)	µg/L	0.2				<0.2	<0.2	<0.2
Heptachlor	µg/L	0.2				<0.2	<0.2	<0.2
Heptachlor epoxide	µg/L	0.2				<0.2	<0.2	<0.2
Methoxychlor	µg/L	0.2				<0.2	<0.2	<0.2
Organophosphorous Pesticides								
Azinophos methyl	µg/L	0.2				<0.2	<0.2	<0.2
Bromophos-ethyl	µg/L	0.2				<0.2	<0.2	<0.2
Chlorpyrifos	µg/L	0.2	0.009			<0.2	<0.2	<0.2
Chlorpyrifos-methyl	mg/L	0.0002				<0.0002	<0.0002	<0.0002
Diazinon	µg/L	0.2				<0.2	<0.2	<0.2
Dichlorvos	µg/L	0.2				<0.2	<0.2	<0.2
Dimethoate	µg/L	0.2				<0.2	<0.2	<0.2
Ethion	µg/L	0.2				<0.2	<0.2	<0.2
Fenitrothion	µg/L	0.2				<0.2	<0.2	<0.2
Malathion	µg/L	0.2				<0.2	<0.2	<0.2
Ronnel	µg/L	0.2				<0.2	<0.2	<0.2
PAH								
Benzo(b+j+k)fluoranthene	mg/L	0.002				<0.002	<0.002	<0.002
Acenaphthene	µg/L	1				<1	<1	<1
Acenaphthylene	µg/L	1				<1	<1	<1
Anthracene	µg/L	1	0.4			<1	<1	<1
Benz(a)anthracene	µg/L	1				<1	<1	<1
Benzo(a) pyrene	µg/L	1	0.2			<1	<1	<1
Benzo(g,h,i)perylene	µg/L	1				<1	<1	<1
Chrysene	µg/L	1				<1	<1	<1
Dibenz(a,h)anthracene	µg/L	1				<1	<1	<1
Fluoranthene	µg/L	1	1.4			<1	<1	<1
Fluorene	µg/L	1				<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	1				<1	<1	<1
Naphthalene	µg/L	1	70			<1	<1	<1
Phenanthrene	µg/L	1	2			<1	<1	<1
Pyrene	µg/L	1				<1	<1	<1
Benzo(a)pyrene TEQ	mg/L	0.005				<0.005	<0.005	<0.005
PAHs (Sum of positives)	mg/L	0.001				0	0	0
PCBs								
Arochlor 1016	µg/L	2				<2	<2	<2
Arochlor 1221	µg/L	2				<2	<2	<2
Arochlor 1232	µg/L	2				<2	<2	<2
Arochlor 1242	µg/L	2				<2	<2	<2
Arochlor 1248	µg/L	2				<2	<2	<2
Arochlor 1254	µg/L	2				<2	<2	<2
Arochlor 1260	µg/L	2				<2	<2	<2
Pesticides								
Parathion	µg/L	0.2				<0.2	<0.2	<0.2
TPH								
C6-C9 Fraction	µg/L	10				<10	<10	<10
C10-C14 Fraction	µg/L	50				<50	<50	<50
C15-C28 Fraction	µg/L	100				<100	<100	<100
C29-C36 Fraction	µg/L	100				<100	<100	<100
C10-C36 Fraction (Sum)	µg/L	50				<50	<50	<50

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs

HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%

14 Attachment E – Groundwater Field Sheets

WATER SAMPLING RECORD FORM

martens consulting engineers since 1989

PROJECT INFORMATION

PROJECT NUMBER: 6332 - 119 Barton Street, Montery

CLIENT: Montery Equity

SITE LOCATION:

DATE: 24.9.21

SAMPLED BY: BM

MW01

WATER SAMPLING FIELD PARAMETERS

Bore / Location ID	Time	Depth to Water (TOC)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L - % Sat)	EC uS/CM - mS/cm	Turbidity (ntu)	Appearance (colour, turbidity, odour, etc)	Samples Collected
MW01	·	3.49	22.4	6.51	80.5	1.62	211		Clear - Low turbiding	
			21.2	6.52	86.8	1.79	242		No odour / staining or	MW02
		|	21.1	6.56	87.1	1.96	235		Sheen	
		|	21.1	6.58	87.2	1.91	239			
		3.39.	22.1	6.58	87.2	1.98	240	—		

Sample bottle codes: P-plastic, G - glass, V - vial

Preservation Codes - U - unpreserved, S -sulfuric acid, N - nitric acid, H - hydrochloric acid

OBSERVATIONS

Weather conditions:

Temperature:.....

Precipitation:.....

WATER SAMPLING RECORD FORM

martens
consulting engineers since 1989

PROJECT INFORMATION

PROJECT NUMBER: 6332 - 119 Barton Street

CLIENT:

SITE LOCATION:

DATE: 24.9.21

SAMPLED BY: BM

MW02

WATER SAMPLING FIELD PARAMETERS

Bore / Location ID	Time	Depth to Water (TOC)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L - % Sat)	EC uS/CM - mS/cm	Turbidity (ntu)	Appearance (colour, turbidity, odour, etc)	Samples Collected
MW02		2.92		6.51	62.6	1.92	342		Clear - low turbidity	
		|		6.51	61.2	1.82	358		NO odour | Stainless	MW02+
		|		6.52	60.4	1.83	356		steel	
		2.98	22.2	[illegible]	61.8	1.86	360	—		Dup01
				6.52						

Sample bottle codes: P-plastic, G - glass, V - vial

Preservation Codes - U - unpreserved, S -sulfuric acid, N - nitric acid, H - hydrochloric acid

OBSERVATIONS

Weather conditions:

Temperature:.....

Precipitation:.....

WATER SAMPLING RECORD FORM

martens
consulting engineers since 1989

PROJECT INFORMATION

PROJECT NUMBER: 6332 - 119 Barton Street, Mortery

DATE: 24.9.21

CLIENT:

SAMPLED BY: BM

MW03

SITE LOCATION:

WATER SAMPLING FIELD PARAMETERS

Bore / Location ID	Time	Depth to Water (TOC)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L - % Sat)	EC uS/CM - mS/cm	Turbidity (ntu)	Appearance (colour, turbidity, odour, etc)	Samples Collected
MW03		3.12	22.5	6.55	100.4	1.64	490		Clear, low turbidity	MW03
		|	22.2	6.51	102.1	1.02	485		No odour, stain or	
		|	22.1	6.44	110.1	0.90	420		sheen	
		|	22.1	6.48	109.8	0.88	416			
		3.48	22.1	6.49	110.2	0.86	410	—		

Sample bottle codes: P-plastic, G - glass, V - vial

Preservation Codes - U - unpreserved, S -sulfuric acid, N - nitric acid, H - hydrochloric acid

OBSERVATIONS

Weather conditions:

Temperature:.....

Precipitation:.....

Attachment F – 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
277940 - S	Pass	Pass	Pass	Pass
279674 - W	Pass	Pass	Pass	Pass

All soil and water 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
277940 - S	Pass	Pass	Pass	NA
279674 - W	Pass	Pass	Pass	NA

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

Both soil and water trip blanks reported less that 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
277940 - S	Pass	Pass	Pass	Pass	Pass
279674 - W	Pass	Pass	Pass	Pass	Pass

The data is usable for this report.