



Soil Contamination Assessment V2

**Lots 3003, 3004 and 3005 Lord
Sheffield Circuit, Penrith NSW**

**Thornton Operations Pty Ltd
September 2021**

Client No: S0079

Job No: 98585S

Executive Summary

Prensa Pty Ltd (Prensa) was engaged by Thornton Operations Pty Ltd (Thornton) to conduct a Soil Contamination Assessment (SCA) of Lots 3003, 3004 and 3005 in Deposited Plan (DP) 1184498, Lord Sheffield Circuit, Penrith NSW (the Site). It is noted that this report is in reference to DA02 – Stage 2 (Lot 3004, 3005 and part 3003) as shown in **Plan 1** in the ‘**Figures**’ section of this report. The location of the Site has been illustrated in **Figure 1** in the ‘**Figures**’ section of this report.

It is understood that Thornton required a SCA to supplement their resubmission of a development application (DA) for the Site. Prensa previously undertook the following assessments of the Site:

- 55494 Penrith Lot 3003 ESA (December 2016);
- 55494 Penrith Lot 3004 and 3005 ESA (October 2016); and
- 55494 ESA Addendum Letter (July 2017).

The Environmental Site Assessment (ESA) Addendum Letter (the Letter), in conjunction with both ESA reports, concluded that soil contamination was not identified at the Site which would preclude the proposed development, and considered the chemical concentration identified in soil at the Site would not preclude the proposed ongoing uses, if the following conditions were met:

- *Provided that all fill materials including bitumen and bedding sands are removed back to the soils identified in the ESA reports;*
- *No significant chemical spills occur from the ongoing use of the site as a carpark;*
- *No bulk storage of chemicals or products within the carpark area which may cause contamination; and*
- *No visual or olfactory evidence of contamination is identified following remediation/removal of the carpark gravels/bitumen layer.*

It is understood that since 2017, the carpark had been deconstructed and the Site has been used as a lay down/storage area for unknown equipment and potential soil stockpiles (particularly noted within Lots 3004 and 3005).

This ongoing Site use had the potential to cause contamination from spills, materials movement and storage of equipment which were not considered within the previous investigation and summary letter document. As such, further assessment in the form of a walkover and surface sampling was recommended to confirm soil conditions have not been altered and are appropriate for the proposed development.

The objective of the SCA was to assess whether soil contamination may exist (from the recent use of the site as a storage/laydown area) that may preclude the development of the Site.

The assessment undertaken by Prensa identified the Site is currently being utilised in the north for storage of building materials and as a site office for a nearby construction. The remainder of the Site appeared to be relatively free of anthropogenic material on the surface and remained grass covered land. These observations were reflected within the soil profile where brown silty clay was encountered with road base gravels and minimal anthropogenic material noted at depth.

Concentrations of contaminants of potential concern (CoPC) analysed from the samples collected from the 20 grid based surface sample locations were less than the adopted health investigation and screening levels (HILs and HSLs, NEPM 2013), adopted for a conservative residential land use. Some

samples reported detectable CoPC concentrations above the laboratory limit of reporting (LOR) with these considered to be comparable to results from the previous assessments undertaken at the Site.

Based on the findings of the SCA, Prensa concludes the following:

- Chemical analysis of soil samples did not identify concentrations of CoPCs above the adopted health investigation and screening levels (HILs/HSLs) for a residential land use and as such, the reported concentrations are unlikely to preclude the proposed redevelopment of the site for mixed use including high-density residential with basement car parking; and
- It is recommended that the road base gravels observed on the surface of Lot 3004 as well as the building materials stored on Lot 3005 and the northern portion of Lot 3004 are removed prior to development works.

Should soil staining or malodorous soil be encountered during development that has not been assessed as part of this SCA, then Prensa should be contacted as further assessment may be warranted.

Statement of Limitations

This document has been prepared in response to specific instructions from Thornton Operations Pty Ltd to whom the report has been addressed. The work has been undertaken with the usual care and thoroughness of the consulting profession. The work is based on generally accepted standards, practices of the time the work was undertaken. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The report has been prepared for the use by Thornton Operations Pty Ltd and the use of this report by other parties may lead to misinterpretation of the issues contained in this report. To avoid misuse of this report, Prensa advises that the report should only be relied upon by Thornton Operations Pty Ltd and those parties expressly referred to in the introduction of the report. The report should not be separated or reproduced in part and Prensa should be retained to assist other professionals who may be affected by the issues addressed in this report to ensure the report is not misused in any way.

Prensa is not a professional quantity surveyor (QS) organisation. Any areas, volumes, tonnages or any other quantities noted in this report are indicative estimates only. The services of a professional QS organisation should be engaged if quantities are to be relied upon.

Sampling Risks

Prensa acknowledges that any scientifically designed sampling program cannot guarantee all sub-surface contamination will be detected. Sampling programs are designed based on known or suspected site conditions and the extent and nature of the sampling and analytical programs will be designed to achieve a level of confidence in the detection of known or suspected subsurface contamination. The sampling and analytical programs adopted will be those that maximises the probability of identifying contaminants. Thornton Operations Pty Ltd must therefore accept a level of risk associated with the possible failure to detect certain sub-surface contamination where the sampling and analytical program misses such contamination. Prensa will detail the nature and extent of the sampling and analytical program used in the investigation in the investigation report provided.

Environmental site assessments identify actual subsurface conditions only at those points where samples are taken and when they are taken. Soil contamination can be expected to be non-homogeneous across the stratified soils where present on site, and the concentrations of contaminants may vary significantly within areas where contamination has occurred. In addition, the migration of contaminants through groundwater and soils may follow preferential pathways, such as areas of higher permeability, which may not be intersected by sampling events. Subsurface conditions including contaminant concentrations can also change over time. For this reason, the results should be regarded as representative only.

Thornton Operations Pty Ltd recognises that sampling of subsurface conditions may result in some cross contamination. All care will be taken and the industry standards used to minimise the risk of such cross contamination occurring, however, Thornton Operations Pty Ltd recognises this risk and waives any claims against Prensa and agrees to defend, indemnify and hold Prensa harmless from any claims or liability for injury or loss which may arise as a result of alleged cross contamination caused by sampling.

Reliance on Information Provided by Others

Prensa notes that where information has been provided by other parties in order for the works to be undertaken, Prensa cannot guarantee the accuracy or completeness of this information. Thornton Operations Pty Ltd therefore waives any claim against the company and agrees to indemnify Prensa for any loss, claim or liability arising from inaccuracies or omissions in information provided to Prensa by third parties. No indications were found during our investigations that information contained in this report, as provided to Prensa, is false.

Recommendations for Further Study

The industry recognised methods used in undertaking the works may dictate a staged approach to specific investigations. The findings therefore of this report may represent preliminary findings in accordance with these industry recognised methodologies. In accordance with these methodologies, recommendations contained in this report may include a need for further investigation or analytical analysis. The decision to accept these recommendations and incur additional costs in doing so will be at the sole discretion of Thornton Operations Pty Ltd and Prensa recognises that Thornton Operations Pty Ltd will consider their specific needs and the business risks involved. Prensa does not accept any liability for losses incurred as a result of Thornton Operations Pty Ltd not accepting the recommendations made within this report.

Table of Contents

1	Introduction	1
2	Background	1
3	Objective	2
4	Scope of Works	2
4.1	Key Undertakings	2
4.2	Assessment Boundaries	2
4.3	Technical Framework	2
5	Site Inspection	3
6	Adopted Soil Assessment Criteria	4
7	Soil Assessment	4
7.1	Sampling Strategy	4
7.2	Soil Screening	4
7.3	Soil Sample Collection	4
7.4	Soil Analytical Schedule	5
8	Results	5
8.1	Field Observations	5
8.2	Analytical Results	6
9	Quality Assurance & Quality Control	6
9.1	Quality Control Sampling and Analysis	6
9.1.1	Blind Replicate and Split Sample RPDs	6
9.1.2	Rinsate, Field Blank and Trip Blanks	7
9.2	Laboratory Quality Assurance/Quality Control	7
9.3	Sample Preservation, Handling and Holding Times	7
9.4	Limits of Reporting	8
9.5	Data Validation	8
10	Discussion	8
11	Conclusions and Recommendations	8

List of Appendices

Abbreviations

Figures

Tables

Photographs

Appendix A: Adopted Soil Investigation Levels, Screening Levels and Criteria

Appendix B: Soil Borehole Logs

Appendix C: Equipment Calibration Certificates

Appendix D: Quality Assurance and Quality Control

Appendix E: NATA Accredited Laboratory Report & Chain of Custody Documentation

1 Introduction

Prensa Pty Ltd (Prensa) was engaged by Thornton Operations Pty Ltd (Thornton) to conduct a Soil Contamination Assessment (SCA) of Lots 3003, 3004 and 3005 in Deposited Plan (DP) 1184498 located at Lord Sheffield Circuit, Penrith NSW (the Site). It is noted that this report is in reference to DA02 – Stage 2 (Lot 3004, 3005 and part 3003) as shown in **Plan 1** in the ‘**Figures**’ section of this report.

The location of the Site has been illustrated in **Figure 1** in the ‘**Figures**’ section of this report.

The approximate areas of the Lots are as follows:

- Lot 3003, approximately 6,305 m² (0.63 ha);
- Lot 3004, approximately 3,235 m² (0.32 ha); and
- Lot 3005, approximately 1,490 m² (0.15 ha).

2 Background

It is understood that Thornton requires a SCA to supplement their resubmission of a development application (DA) for the proposed redevelopment of the Site for mixed use including high-density residential with basement car parking. Prensa previously undertook the following assessments of the Site:

- 55494 Penrith Lot 3003 ESA (December 2016);
- 55494 Penrith Lot 3004 and 3005 ESA (October 2016); and
- 55494 ESA Addendum Letter (July 2017).

The Environmental Site Assessment (ESA) Addendum Letter (the Letter), in conjunction with both ESA reports, concluded that soil contamination was not identified at the Site which would preclude the proposed development, and considered the contamination concentration identified in soil at the Site would not preclude the proposed ongoing uses, if the following conditions were met:

- *Provided that all fill materials including bitumen and bedding sands are removed back to the soils identified in the ESA reports;*
- *No significant chemical spills occur from the ongoing use of the site as a carpark;*
- *No bulk storage of chemicals or products within the carpark area which may cause contamination; and*
- *No visual or olfactory evidence of contamination is identified following remediation/removal of the carpark gravels/bitumen layer.*

It is understood that since 2017, the carpark had been deconstructed and the Site has been used as a lay down/storage area for unknown equipment and potential soil stockpiles (particularly noted within Lots 3004 and 3005).

This ongoing Site use has the potential to cause contamination from spills, materials movement and storage of equipment which were not considered within the previous investigation and summary letter document. As such, further assessment in the form of a walkover and surface sampling was recommended to confirm soil conditions have not been altered and are appropriate for the proposed development.

3 Objective

The objective of the SCA was to assess whether soil contamination may exist (from the recent use of the site as a storage/laydown area) that may preclude the development of the Site.

4 Scope of Works

4.1 Key Undertakings

To complete the SCA, Prensa undertook the following works:

- Desktop assessment, including:
 - Review of previous reports; and
 - Review of historical aerial photographs.
- Prepared a relevant Safe Work Method Statements (SWMS) and reviewed Dial Before You Dig (DBYD) plans;
- Soil assessment, including:
 - Undertake a Site walkover of Lot 3003, 3004 and 3005;
 - Established twenty (20) gridded surface samples using hand tools, to a maximum depth of 0.3 metres below ground level (mBGL);
 - Collected representative soil samples from each bore hole;
 - Collected one (1) sample from each of the two (2) stockpiles identified on Site (two samples total);
 - Collected representative samples of suspected asbestos-containing materials (if identified);
 - Logged the soil observed at each bore hole;
 - Conducted onsite screening of soil at each bore hole for potential volatile contamination using a photo-ionisation detector (PID);
 - Reinstated each bore hole using soil generated during establishment;
 - Arranged analysis of soil samples at a National Association of Testing Authorities (NATA), Australia accredited laboratory; and
 - Compared soil analytical results against relevant guidelines and criteria.
- Prepared this SCA report.

4.2 Assessment Boundaries

The assessment was limited to the soil within the Site to a maximum depth of 0.3 mBGL.

4.3 Technical Framework

The SCA was undertaken in general accordance with the following:

- NSW Work Health and Safety Act 2011 (WHS Act 2011);
- NSW Work Health and Safety Regulation 2017 (WHS Regulation 2017);
- Contaminated Land Management (CLM) Act, 1997 (CLM Act 1997);
- Environmental Planning and Assessment Act 1979;
- Environmental Planning and Assessment Amendment Act 2017;
- Protection of the Environment Operations (POEO) Act 1997 (POEO Act 1997);
- National Environment Protection Council, National Environment Protection (Assessment of Site Contamination) Measure, 1999 (April 2013) (NEPM 2013);

- NSW Environment Protection Authority (EPA) State Environmental Planning Policy 55 – Remediation of Land (SEPP55), 1998;
- NSW Environmental Protection Authority (EPA), Guidelines for Consultants Reporting on Contaminated Sites, 2020 (EPA 2020);
- Australian Standard 4482.1, *Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 1: Non-volatile and semi-volatile compounds*, 2005; and
- Australian Standard 4482.2, *Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances*, 1999.

5 Site Inspection

A visual inspection of the Site was completed by Prensa on 16 September 2021. Detailed in **Table 1** below is a summary of observations made during the site inspection pertaining to the layout and current use of the Site.

Table 1: Site Layout and Current Use	
Site Layout and Use	Details
Current use	The southern portion of the Site is currently unoccupied and remains grass covered land with some areas of surface gravels. A public walkway runs east to west through the central section of Lot 3003, allowing pedestrian access. The northern portion of the Site is leased to an external contractor for use as a lay down/storage area of building materials (timber, scaffolding, metal sheets, cement mix etc.) for an adjacent development. Two (2) stockpiles were observed within the northern portion of the Site (SP1 and SP3).
Surface cover type and condition	The majority of the Site was grass covered with some areas of gravel on the surface. The northern portion comprised bare clay material which had undergone mixing due to wet weather and the movement of plant.
Site topography and surface water drainage systems	The Site was relatively flat with surface water likely flowing into the road way drainage system located on Lord Sheffield Circuit.
Presence and location of groundwater monitoring wells, soil bores, vapour bores, etc.	No groundwater monitoring wells, soil bores, or vapour bores were observed.
Staining/Odours	No staining or odours were identified during the assessment.

6 Adopted Soil Assessment Criteria

To assess the significance of contaminant concentrations in soil, reference was primarily made to NEPM (2013), 'Schedule B1 Guideline on Investigation Levels for Soil and Groundwater' (Schedule B1), assessment criteria, where available. Schedule B1 provides a framework for the use of investigation and screening levels based on human health and ecological risks. Analytical results are compared to residential criteria due to the proposed development of high density residential apartment buildings. A summary of the adopted guidelines for the soil assessment completed have been provided in **Table 2** below. Details pertaining to the derivation of these adopted guidelines have been provided in **Appendix A**.

Table 2: Adopted Site Assessment Guidelines	
Beneficial Use of Land	Adopted Guidelines
Human Health	1. NEPC, NEPM 2013, Health Investigation Levels (HILs) and Health Screening Levels (HSLs) Residential A/B. 2. NEPC, NEPM 2013, Management Limits for petroleum hydrocarbon compounds for residential land use.

7 Soil Assessment

7.1 Sampling Strategy

Prensa established twenty (20) sampling locations as part of this assessment. Sampling locations were established in a systematic gridded pattern, which was consistent with the minimum sampling density recommended in AS4482.1-2005 for a site of this size (approximately 0.9 ha) and was capable of detecting a hotspot diameter of 25.0 m with 95% confidence. It is considered that this sampling density is sufficient to achieve the stated project objectives at the Site and characterise soil contaminants from unknown sources.

One (1) additional sample was taken from each of the two (2) stockpiles identified on Site (SP1 with an estimated volume of 37.5 m³ and SP3 with an estimated volume of 16.0 m³) located within the south west corner of Lot 3005 and central north portion of Lot 3004.

All sampling locations were established with the use of a decontaminated hand auger. Soil samples were collected from the hand auger, taking care not to sample soils directly adhered to the auger. Hand auger locations were extended to a maximum depth of 0.3 mBGL or until refusal. As such depths ranged from 0.15 to 0.3 mBGL with soil samples generally collected from 0.1-0.2 mBGL depths.

Sampling locations are shown in **Figure 1**, in the 'Figures' section of this report.

7.2 Soil Screening

Soil samples were screened in the field using a photo-ionisation detector (PID) to provide an indication of the potential of volatile contamination within the samples. The PID was calibrated each day with isobutylene of a known concentration (100 parts per million (pm)). Calibration certificates have been provided as **Appendix C**.

7.3 Soil Sample Collection

Disposable nitrile gloves were worn during sample collection, which were replaced after the collection of each sample and between sampling locations to avoid cross-contamination. Collected soil samples

were placed in 250 mL glass jars with Teflon-lined lids that were prepared and supplied by a NATA accredited laboratory. Collected samples were stored in chilled ice chests and transported to the laboratory within specified holding times, along with chain of custody documentation. Upon completion of soil sampling, sampling locations were reinstated with soil cuttings.

7.4 Soil Analytical Schedule

Based on the previous site assessments and site use the following analytical schedule was adopted for the soil assessment works and has been summarised in **Table 3** below. The same analytes were used as those in the previous assessments to make comparisons were required.

Table 3: Proposed Soil Analytical Schedule				
Samples	Domain	Samples Collected	Samples Analysed	Analytes
Gridded Boreholes	Fill	20	20	Heavy metals ⁽¹⁾ , TRH ⁽²⁾ , BTEXN ⁽³⁾ , PAH ⁽⁴⁾
Stockpile	Fill	2	2	Heavy metals, TRH, BTEXN, PAH
*QC Samples	Duplicates	2	2	Heavy metals, TRH, BTEXN, PAH
	Rinsate and Field Blank	1	1	Heavy metals, TRH, BTEXN, PAH
	Trip Blank and Trip Spike	1	1	TRH C ₆ -C ₁₀ and BTEX

⁽¹⁾ Heavy metals – arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc

⁽²⁾ TRH – Total Recoverable Hydrocarbons

⁽³⁾ BTEXN – Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (including TRH fractions F1, F2 etc. as per NEPM 2013)

⁽⁴⁾ PAH – Polycyclic Aromatic Hydrocarbons

* One (1) blind replicate, one (1) split sample, one (1) rinsate, one (1) trip blank and one (1) trip spike will be collected and analysed. One (1) field blank will also be collected and put on hold with its analysis subject to the atmospheric conditions onsite during sampling.

Note: Visible evidence of asbestos was not identified during the assessment works. Therefore, no discrete analysis for bulk fragments or asbestos fines was undertaken as per the NEPM 2013 Guidelines.

8 Results

8.1 Field Observations

The subsurface lithology was noted to be relatively consistent across the Site during the soil assessment. A generalised subsurface profile has been summarised in **Table 4** below.

Table 4: Generalised Subsurface Profile		
Approximate Depth (m BGL)	Domain	Soil Description
0.0 – 0.3	Fill	Silty Clay: brown, soft, dry with road base gravels (5-10%, 10-20mm)
0.2 – 0.3	Natural	Silty Clay: light brown, slightly moist, trace ironstone gravel (<5%)

Further details are provided in the borehole logs provided in **Appendix B** of this report.

A number of other key field observations noted during the soil assessment works are summarised in **Table 5** on the following page.

Table 5: Field Observations

Staining	Staining was not observed on the surface of the Site or within the soil profile.
Odours	No odours were identified within soils during the assessment.
PID Readings	No elevated PID readings of soil samples were recorded during the assessment.
Waste/Rubble	Visible evidence of asbestos was not identified during the assessment works. Anthropogenic material, in the form of porcelain tile, was identified within the fill layer of BH11. Stockpile SP1, with an estimated volume of 37.5 m³, comprised red/brown clayey sand with 20% anthropogenic materials including metal wire, concrete blocks and bricks. Stockpile SP3, with an estimated volume of 16.0 m³, was grass covered and comprised silty clay with shale gravels. Anthropogenic material was not identified within this stockpile. Hard building materials (timber, scaffolding, cement bags etc.) were observed to be stored across the surface of Lot 3005 and the northern portion of Lot 3004. During the Site walkover, Prensa did not observe visible evidence of liquid spills, significant storage of fuel or asbestos containing material stored in these areas. Remnants of carpark gravel appeared to remain on the surface in the south east portion of Lot 3003 and at the entry to Lot 3004, adjacent the north west gate.

8.2 Analytical Results

A summary of the soil analytical results compared to the adopted assessment criteria have been provided in **Table A1** in the 'Tables' section of this report. The NATA endorsed laboratory results and chain of custody documentation is provided within **Appendix E**.

Review of the analytical results indicated the following:

- All twenty (22) soil samples analysed reported detectable concentrations of some heavy metals above the limit of reporting (LOR). However, the reported concentrations were below the adopted investigation levels for a residential land use A and B;
- Detectable concentrations of TRH were noted in six (6) soil samples, however were less than the adopted screening levels for a residential land use A and B; and
- The concentrations of PAHs and BTEXN were below the LOR in all samples analysed and therefore were below adopted investigation levels for residential land use A and B.

9 Quality Assurance & Quality Control

Prensa reviewed compliance with the procedures and acceptability limits specified in **Appendix D** of this report. The findings of the quality control and assurance review are presented below.

9.1 Quality Control Sampling and Analysis

9.1.1 Blind Replicate and Split Sample RPDs

Blind replicate and split samples were collected and analysed in accordance with the required frequency acceptability limits. The samples were analysed for the same parameters as the primary sample, as specified in **Section 7.4**. A large portion of the contaminants analysed reported concentrations less than the laboratory LOR, whereby relative percentage differences (RPDs) could not be calculated. RPDs were calculated for the quality control samples collected and analysed, where concentrations were reported greater than the laboratory LOR. All concentrations were noted to be

within the acceptability limits as outlined in **Table 6** below. Detailed results are provided in **Table A2** of the 'Tables' section of this report.

Table 6: Blind Replicate and Split Sample RPD Results			
Quality Control Sample	Type	Primary Sample	RPD Exceedances/Comments
FD1	Blind Replicate	BH14_0.1-0.2	Concentrations within acceptability limits.
FD2	Split Sample	BH14_0.1-0.2	Concentrations within acceptability limits, with the exception of PAH, Chromium and Zinc.

It is noted that the elevated RPDs reported in the blind replicate samples were likely to be associated with some heterogeneity in the fill and therefore these elevated RPDs are not considered to impact upon the reliability of the analytical results provided by the primary laboratory.

9.1.2 Rinsate, Field Blank and Trip Blanks

Rinsate, field blank and trip blank samples were collected and analysed during the assessment works at a frequency consistent with the acceptability limits. A summary of the blank sampling and analysis is provided in **Table 7** below. The analysis of blank samples was reported to be within the acceptability limits. Detailed results are provided in **Table A3** of the 'Tables' section of this report.

Table 7: Blank Sample Results			
Type	Blank Sample ID	Analysis	Results
Rinsate	RB1	Heavy metals, BTEXN, TRH, PAHs	Concentrations less than LOR
Field Blank	FB1	Heavy metals, BTEXN, TRH, PAHs	Concentrations less than LOR
Trip Blank	TB1	BTEX and TRH	Concentrations less than LOR
Trip Spike	TS1	BTEX and TRH	Concentrations within acceptability limits

LOR: Limit of Reporting.

9.2 Laboratory Quality Assurance/Quality Control

Review of the reports provided from the primary (Eurofins) and secondary (Envirolab) laboratories indicated that NATA endorsed methods were used and the frequency and findings of laboratory quality control sampling were within the acceptability limits.

9.3 Sample Preservation, Handling and Holding Times

Review of sample receipt documentation provided by the laboratory indicated that:

- COC was completed correctly;
- Attempt to chill was evident;
- Appropriately preserved sample containers were used;
- All samples were received in good condition; and
- Sample containers for volatile analysis were received with zero headspace.

An evaluation of the laboratory sample extraction and analysis dates was also undertaken by Prensa. The review of the NATA laboratory reports indicated samples were extracted and analysed within the recommended holding times adopted by the laboratory.

9.4 Limits of Reporting

Laboratory limits of reporting (LORs) for inorganic, organic and semi-volatile chemicals of concern analysed were less than the adopted criteria for all soil samples analysed.

9.5 Data Validation

Based on the above, an assessment of the precision and accuracy of the analytical data has been made.

All of the quality control results indicate that precision and accuracy of the data was within acceptability limits and the results from blind replicate and split sample analysis are comparable.

The results are therefore considered representative of analyte concentrations in the media assessed and are suitable for evaluating its contamination status.

10 Discussion

The assessment undertaken by Prensa identified the Site was being utilised in the north for storage of building materials and as a site office for a nearby construction. The remainder of the Site appeared to be relatively free of anthropogenic material on the surface and remained grass covered land with some areas of surface gravels. These observations were reflected within the soil profile where brown silty clay was encountered with road base gravels and minimal anthropogenic material noted at depth.

Concentrations of contaminants of potential concern (CoPC) analysed from the samples collected were less than the adopted health investigation and screening levels (HILs and HSLs, NEPM 2013), adopted for a conservative residential land use A and B. Some samples reported detectable CoPC concentrations above the laboratory limit of reporting (LOR) with these were considered to be comparable to results from the previous assessments undertaken at the Site.

11 Conclusions and Recommendations

Based on the findings of the SCA, Prensa concludes the following:

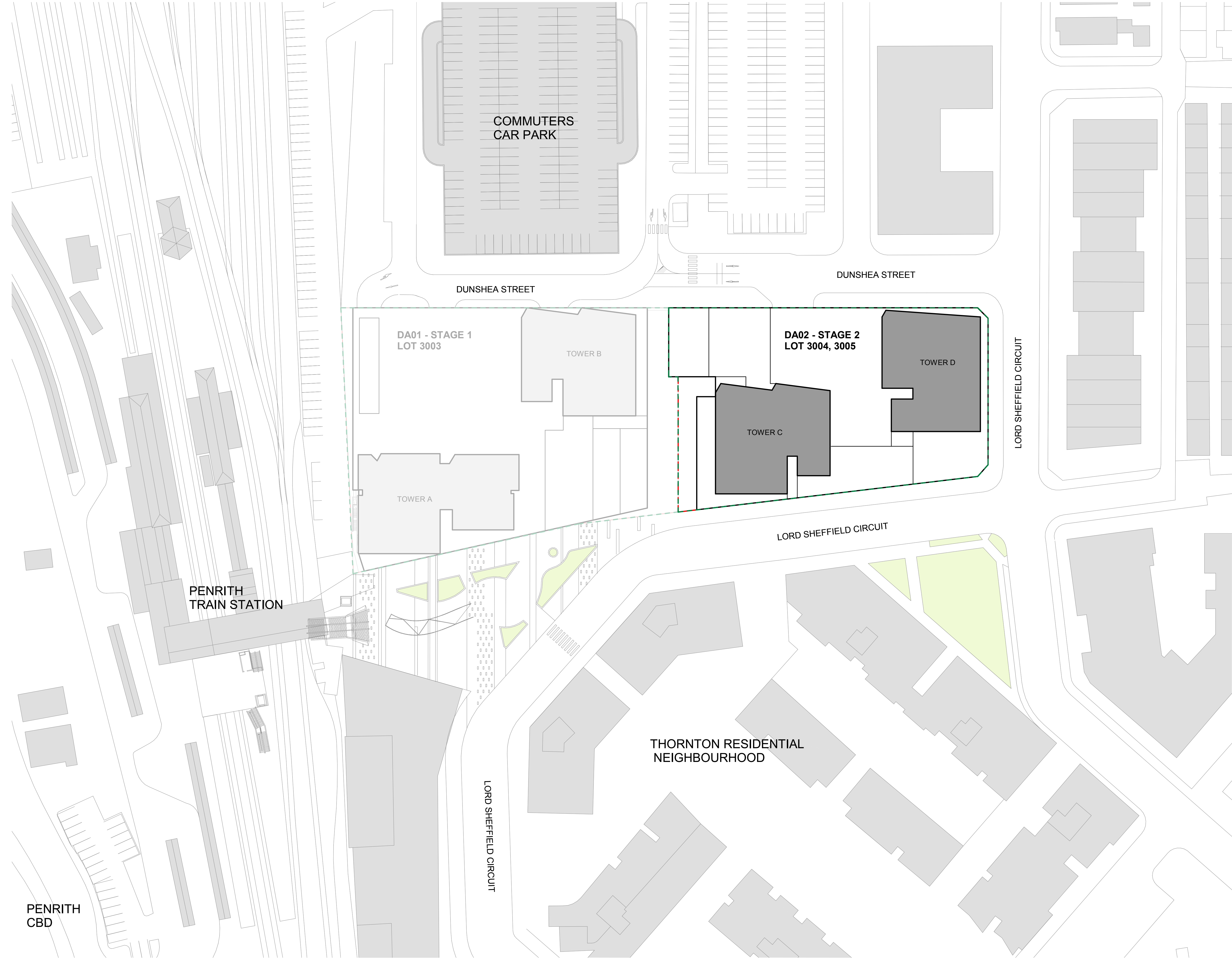
- Chemical analysis of soil samples did not identify concentrations of CoPCs above the adopted health investigation and screening levels (HILs/HSLs) for a residential land use and as such, the reported concentrations are unlikely to preclude the proposed redevelopment of the site for mixed use including high-density residential with basement car parking; and
- It is recommended that the road base gravels observed on the surface of Lot 3004 as well as the building materials stored on Lot 3005 and the northern portion of Lot 3004 are removed prior to development works.

Should soil staining or malodorous soil be encountered during development that has not been assessed as part of this SCA, then Prensa should be contacted as further assessment may be warranted.

Abbreviations

Abbreviation	Definition
BaP	Benzo(a)pyrene
BGL	Below Ground Level
EIL	Ecological Investigation Level
EPA	Environment Protection Authority
ESL	Ecological Screening Level
HIL	Health Investigation Level
HSL	Health Screening Level
m	Metres
m ²	Square Metres (area)
mg/L	Milligrams per Litre
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
PAH	Polycyclic Aromatic Hydrocarbons
PPM	Parts Per Million
QA	Quality Assurance
QC	Quality Control
TRH	Total Recoverable Hydrocarbons
VOC	Volatile Organic Compounds

Figures



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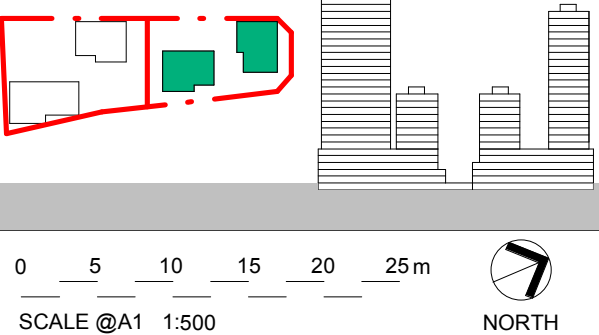
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NOTES:

A 17.11.2021 ISSUED FOR DEVELOPMENT APPLICATION

Rev Date By Revision Notes

KEY PLAN: KEY SECTION:



0 5 10 15 20 25 m

SCALE @A1 1:500 NORTH

PROJECT INFORMATION:

CA3759

Thornton Central Village

Lot 3003, 3004 and 3005 of DP 1184498 (184, 192 and 41 Lord Sheffield Circuit Penrith NSW 2750)

DRAWING TITLE:

LOCATION AND SITE PLAN

SHEET STATUS:
FOR APPROVAL

CHECKED BY:
JV

DRAWING NUMBER:

REV:

DA-02-10001

A

Site Locality and Sampling Locations



Tables

Table A1: Summary of Analytical Results

	Heavy Metal								Inorganic
	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Moisture Content (dried @ 105°C)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
PQL	2	0.4	5	5	5	0.1	5	5	1
Intrusive Maintenance Worker - Direct Contact, CRC CARE (2011)									
Intrusive Maintenance Worker Clay 0-<2 m - Vapour Intrusion, CRC CARE (2011)									
NEPM 2013 Table 1A(1) HILs Res B Soil	500	150	500	30,000	1200	120	1200	60,000	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m									
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil									

Field ID

BH1_0.1-0.2	5.7	<0.4	16	25	20	<0.1	18	52	13
BH2_0.05-0.15	6.2	<0.4	24	21	16	<0.1	13	41	11
BH3_0.05-0.1	3.9	<0.4	17	25	13	<0.1	10	59	3.8
BH4_0.1-0.2	6.2	<0.4	18	23	12	<0.1	6	31	10
BH5_0.1-0.2	5.3	<0.4	21	24	17	<0.1	12	35	15
BH6_0.1-0.2	6.3	<0.4	18	25	21	<0.1	13	56	7
BH7_0.1-0.2	8	<0.4	18	21	19	<0.1	9.4	48	6.3
BH8_0.1-0.2	6.5	<0.4	17	26	27	<0.1	13	67	8.1
BH9_0.1-0.2	6.7	<0.4	17	26	23	<0.1	12	51	15
BH10_0.1-0.2	11	<0.4	25	25	25	<0.1	9.9	48	5.1
BH11_0.1-0.2	8.2	<0.4	28	27	23	<0.1	13	59	4.7
BH12_0.1-0.2	6.2	<0.4	21	24	14	<0.1	10	36	6.4
BH13_0.1-0.2	8.2	<0.4	16	21	20	<0.1	9.4	40	6
BH14_0.1-0.2	6.9	<0.4	17	30	32	0.1	15	78	1.5
BH15_0.1-0.2	7.6	<0.4	19	23	24	<0.1	10	45	5.6
BH16_0.1-0.2	15	<0.4	39	24	24	<0.1	11	43	12
BH17_0.1-0.2	8.8	<0.4	27	25	26	<0.1	15	50	<1
BH18_0.1-0.2	5.7	<0.4	12	14	11	<0.1	5.6	24	6.7
BH19_0.1-0.2	6.4	<0.4	33	30	20	<0.1	30	49	6.9
BH20_0.1-0.2	36	<0.4	130	9.5	24	<0.1	10	17	7.8
SP1	3.8	<0.4	13	16	18	<0.1	7.6	33	8.5
SP3	19	<0.4	25	10	16	<0.1	<5	68	5.6

Table A1: Summary of Analytical Results



	TRH											
	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C40 (Sum of total)	C6-C10 less BTEX (F1)	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C6-C10
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PQL	50	100	100	50	20	100	20	20	50	50	50	20
Intrusive Maintenance Worker - Direct Contact, CRC CARE (2011)												82000
Intrusive Maintenance Worker Clay 0-<2 m - Vapour Intrusion, CRC CARE (2011)												
NEPM 2013 Table 1A(1) HILs Res B Soil												
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m				280			50					
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil	1000	3500	10,000									800

Field ID

BH1_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH2_0.05-0.15	<50	140	<100	<50	<20	140	<20	<20	71	96	167	<20
BH3_0.05-0.1	<50	200	130	<50	<20	330	<20	<20	90	150	240	<20
BH4_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH5_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH6_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH7_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH8_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH9_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH10_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH11_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	61	61	<20
BH12_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH13_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH14_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH15_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH16_0.1-0.2	<50	<100	<100	<50	<20	<100	<20	<20	<50	<50	<50	<20
BH17_0.1-0.2	<50	<100	<100	<50	<20	<100	<21	<20	<50	77	77	<20
BH18_0.1-0.2	<50	<100	<100	<50	<20	<100	<22	<20	<50	<50	<50	<20
BH19_0.1-0.2	<50	<100	<100	<50	<20	<100	<23	<20	<50	68	68	<20
BH20_0.1-0.2	<50	<100	<100	<50	<20	<100	<24	<20	<50	<50	<50	<20
SP1	<50	<100	<100	<50	<20	<100	<25	<20	<50	<50	<50	<20
SP3	<50	<100	<100	<50	<20	<100	<26	<20	50	52	102	<20

Table A1: Summary of Analytical Results



	PAH											
	Benzo(a)pyrene TEQ (LOR)	Benzo(b+i)fluoranthene	Benzo(a)pyrene TEQ calc (	Benzo(a)pyrene TEQ calc (	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PQL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Intrusive Maintenance Worker - Direct Contact, CRC CARE (2011)												
Intrusive Maintenance Worker Clay 0-<2 m - Vapour Intrusion, CRC CARE (2011)												
NEPM 2013 Table 1A(1) HILs Res B Soil			4									
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m												
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil												

Field ID

BH1_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH2_0.05-0.15	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH3_0.05-0.1	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH4_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH5_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH6_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH7_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH8_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH9_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH10_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH11_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH12_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH13_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH14_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH15_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH16_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH17_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH18_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH19_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH20_0.1-0.2	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP1	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP3	1.2	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Table A1: Summary of Analytical Results



	PAH							
	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Pyrene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PQL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Intrusive Maintenance Worker - Direct Contact, CRC CARE (2011)					29000			
Intrusive Maintenance Worker Clay 0-<2 m - Vapour Intrusion, CRC CARE (2011)								
NEPM 2013 Table 1A(1) HILs Res B Soil								
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m					5			
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil								

Field ID								
BH1_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH2_0.05-0.15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH3_0.05-0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH4_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH5_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH6_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH7_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH8_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH9_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH10_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH11_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH12_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH13_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH14_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH15_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH16_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH17_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH18_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH19_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH20_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SP3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Table A1: Summary of Analytical Results



	BTEXN						
	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Naphthalene	Xylene Total
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PQL	0.1	0.1	0.1	0.2	0.1	0.5	0.3
Intrusive Maintenance Worker - Direct Contact, CRC CARE (2011)	1100	85000	120000			29000	130000
Intrusive Maintenance Worker Clay 0-<2 m - Vapour Intrusion, CRC CARE (2011)	350						
NEPM 2013 Table 1A(1) HILs Res B Soil							
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m	0.7	NL	480			5	110
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil							

Field ID							
BH1_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH2_0.05-0.15	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH3_0.05-0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH4_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH5_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH6_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH7_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH8_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH9_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH10_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH11_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH12_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH13_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH14_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH15_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH16_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH17_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH18_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH19_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
BH20_0.1-0.2	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
SP1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
SP3	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3

			Field ID	BH14	FD1	RPD	BH14	FD2	RPD
			Sampled Date	16/09/2021	16/09/2021		16/09/2021	16/09/2021	
Method	ChemName	Units	EQL						
PAH	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	1.2	1.2	0	1.2	<0.5	82
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	0.6	0.6	0	0.6	<0.5	18
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
	Acenaphthene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Acenaphthylene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Benz(a)anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Benzo(a) pyrene	mg/kg	0.5 (Primary): 0.05 (Interlab)	<0.5	<0.5	0	<0.5	<0.05	0
	Benzo(g,h,i)perylene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5		
	Chrysene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Dibenz(a,h)anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Fluoranthene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Fluorene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Naphthalene	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	PAHs (Sum of total)	mg/kg	0.5	<0.5	<0.5	0	<0.5		
	Phenanthrene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Pyrene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
BTEXN	Benzene	mg/kg	0.1 (Primary): 0.2 (Interlab)	<0.1	<0.1	0	<0.1	<0.2	0
	Ethylbenzene	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.1	0	<0.1	<1.0	0
	Toluene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0
	Xylene (m & p)	mg/kg	0.2 (Primary): 2 (Interlab)	<0.2	<0.2	0	<0.2	<2.0	0
	Xylene (o)	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.1	0	<0.1	<1.0	0
	Xylene Total	mg/kg	0.3 (Primary): 3 (Interlab)	<0.3	<0.3	0	<0.3	<3.0	0
	Naphthalene	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<1.0	0
Heavy Metal	Lead	mg/kg	5 (Primary): 1 (Interlab)	32.0	40.0	22	32.0	20.0	46
	Arsenic	mg/kg	2 (Primary): 4 (Interlab)	6.9	11.0	46	6.9	7.0	1
	Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	<0.4	0
	Chromium (III+VI)	mg/kg	5 (Primary): 1 (Interlab)	17.0	23.0	30	17.0	45.0	90
	Copper	mg/kg	5 (Primary): 1 (Interlab)	30.0	30.0	0	30.0	19.0	45
	Mercury	mg/kg	0.1	0.1	<0.1	0	0.1	<0.1	0
	Nickel	mg/kg	5 (Primary): 1 (Interlab)	15.0	19.0	24	15.0	9.0	50
	Zinc	mg/kg	5 (Primary): 1 (Interlab)	78.0	87.0	11	78.0	36.0	74
TRH	C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	C6-C10 less BTEX (F1)	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
	C16-C34	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
	C34-C40	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
	F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	C6 - C9	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
	C10 - C40 (Sum of total)	mg/kg	100 (Primary): 50 (Interlab)	<100.0	<100.0	0	<100.0	<50.0	0
	C6-C10	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0
	C10 - C14	mg/kg	20 (Primary): 50 (Interlab)	<20.0	<20.0	0	<20.0	<50.0	0
	C15 - C28	mg/kg	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0
	C29-C36	mg/kg	50 (Primary): 100 (Interlab)	<50.0	58.0	15	<50.0	<100.0	0
	+C10 - C36 (Sum of total)	mg/kg	50	<50.0	58.0	15	<50.0	<50.0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 80 (1-10 x EQL); 50 (10-30 x EQL); 30 (> 30 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
Any methods in the row header relate to those used in the primary laboratory

Table A4: Quality Control Sample
Results Summary



Field ID Sampled Date		TB1 16/09/2021		TS1 16/09/2021		FB1 16/09/2021		RB1 16/09/2021	
Method_Type	ChemName	Units	EQL	mg/kg	%	mg/l	mg/l		
TRH	C10-C16	mg/kg	50			<0.05	<0.05		
	C16-C34	mg/kg	100			<0.1	<0.1		
	C34-C40	mg/kg	100			<0.1	<0.1		
	F2-NAPHTHALENE	mg/kg	50			<0.05	<0.05		
	Naphthalene	mg/kg	0.5	<0.5	88	<10	<10		
	C6 - C9	mg/kg	20	<20	87	<20	<20		
	C10 - C40 (Sum of total)	mg/kg	100			<100	<100		
	C6-C10 less BTEX (F1)	mg/kg	20	<20		<0.02	<0.02		
	C6-C10	mg/kg	20	<20	86	<0.02	<0.02		
	C10 - C14	mg/kg	20			<50	<50		
	C15 - C28	mg/kg	50			<100	<100		
	C29-C36	mg/kg	50			<100	<100		
	+C10 - C36 (Sum of total)	mg/kg	50			<100	<100		
	BTEX								
	Benzene	mg/kg	0.1	<0.1	94	<50	<50		
	Ethylbenzene	mg/kg	0.1	<0.1	84	<100	<100		
	Toluene	mg/kg	0.1	<0.1	87	<100	<100		
	Xylene (m & p)	mg/kg	0.2	<0.2	83	<100	<100		
	Xylene (o)	mg/kg	0.1	<0.1	84	<1	<1		
	Xylene Total	mg/kg	0.3	<0.3	84	<3	<3		

Photographs

S0079:KLM:98585S DA02 Lots 3003 3004 3005 Lord Sheffield Circ



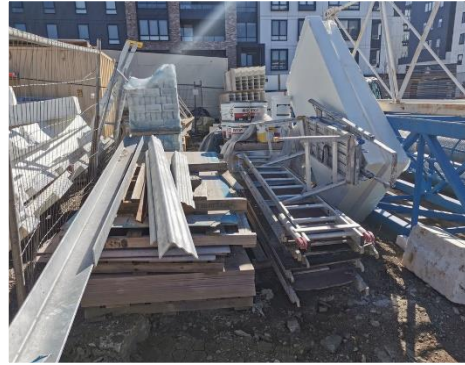
1. Overview of the southern portion of the Site (Lot 3003).



2. Overview of the central portion of the Site (Part Lot 3003/3004).



3. Overview of the northern portion of the Site (Lot 3005).



4. Hard building material stored in the northern portion of the Site.



5. Overview of Stockpile SP1 located in the northern portion of the Site.



6. Overview of Stockpile SP3 located in the central portion of the Site.



7. Surface gravels in the central portion of the Site adjacent gate entry on the western boundary.



8. Hard waste material stored within Lot 3004.



9. Overview of fill material – brown silty clay.

Appendix A: Adopted Soil Investigation Levels, Screening Levels and Criteria

Environmental Value – Human Health

NEPM 2013 - Health Investigation Levels / Health Screening Levels

The NEPM 2013 provides HILs have been developed for a broad range of inorganic and organic substances. The HILs are applicable for assessing human health risk via relevant pathways of exposure. The HILs are generic to all soil types and apply generally to a depth of 3.0 m below the surface for residential use. Site-specific conditions should determine the depth to which HILs apply for other land uses. Investigation level values are provided for four (4) generic land use settings as follows:

- **HIL 'A':** Residential with garden/accessible soil (home-grown produce <10% fruit and vegetable intake (no poultry), also includes childcare day care centres, preschools and primary schools;
- **HIL 'B':** Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments;
- **HIL 'C':** Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate; and
- **HIL 'D':** Commercial/Industrial includes premises such as shops, offices, factories and industrial sites.

HSLs have been developed for petroleum compounds and fractions and are applicable to assessing human health risk via the vapour inhalation pathway. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures. They apply to different soil types and depths extending from the ground surface to < 4 mBGL.

CRC CARE 2011 - Health Screening Levels

The CRC Care Technical Report No. 10, *Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater*, 2011 (CRC 2011) provides the framework for the conduct of petroleum vapour intrusion assessments resulting from contamination of soil and/or groundwater by petroleum hydrocarbons.

The NEPM 2013 HSLs for vapour intrusion were derived from this document. Prensa have also considered the HSLs prescribed in the CRC 2011 for assessing risks from petroleum hydrocarbons through the dermal contact exposure pathway. Based on the continued residential use of the Site and in consideration of unrestricted land use and the protection of construction/maintenance workers performing intrusive works at the Site, the application of HSL A and B were adopted for consideration of direct contact with soil.

NEPM 2013 - Management Limits

In addition to the application of the HSLs, the NEPM 2013 also provides Management Limits for TRH fractions (F1 to F4), which are used to consider the physical and aesthetic risks of light non-aqueous phase liquid (LNAPL) resulting from effects of petroleum hydrocarbons. Application of the Management Limits requires consideration of site-specific factors, such as depth of building basements, services and/or groundwater. Specifically, the management limits are intended to be used as a screening value to assess the likelihood of concentrations of contaminants resulting in:

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosive hazards; and
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services by hydrocarbons.

Therefore, the management limits are adopted, in part, to evaluate risks to human health.

Adopted Guideline Values

For the purpose of this assessment, the following HILs and HSLs are proposed to be adopted, based on the residential use of the Site:

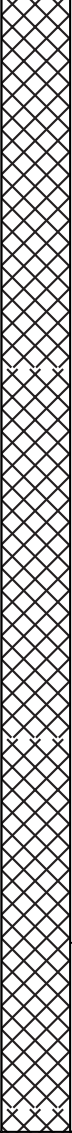
- NEPM 2013 HIL Res A/B to assess whether contamination may be present that may pose a health risk to human receptors for the residential use of the Site;
- NEPM 2013 HSL Res A/B to assess whether petroleum hydrocarbon contamination may be present that may pose a risk to human receptor through the vapour inhalation exposure pathway for the residential use of the Site;
- CRC CARE Residential/Parkland to assess whether petroleum hydrocarbon contamination may be present that may pose a risk to human receptor through the dermal contact exposure pathway for the residential use of the Site;
- NEPM 2013 Management Limits for residential land use setting to assess for the potential generation of LNAPL and the associated potential health effects.

Appendix B: Soil Borehole Logs

BOREHOLE LOG BH01

Client: St. Hilliers Job Number: 98585S Site Location: Sheffield Circuit, Penrith, NSW Job Name: Soil Contamination Assessment	Date of Sampling: 16/09/2021 Excavation Method: Hand Auger	Depth of Hole: 0.3 mBGL Drawn By: MXH Approved By:
---	---	---

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: loose, soft, brown, silty CLAY, trace road base gravel (< 5%, 10-20mm)		
0.2				BH01_0.1_0.2	PID 0.0
0.3			Becoming soft at 0.25 meters below ground level (mBGL)		
			Target depth reached End of hole (EOH) at 0.3 mBGL		

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH02

Client: St. Hilliers	Date of Sampling: 16/09/2021	Depth of Hole: 0.15 mBGL
Job Number: 98585S	Excavation Method: Hand Auger	Drawn By: MXH
Site Location: Sheffield Circuit, Penrith, NSW		Approved By:
Job Name: Soil Contamination Assessment		

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: soft, brown, silty CLAY, trace road base gravel (< 5%, 10-20 mm)	BH02_0.05_0.15	0.0
0.2			Refusal on concrete and EOH at 0.15 mBGL		
0.3					

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH03

Client: St. Hilliers	Date of Sampling: 16/09/2021	Depth of Hole: 0.1 mBGL
Job Number: 98585S	Excavation Method: Hand Auger	Drawn By: MXH
Site Location: Sheffield Circuit, Penrith, NSW		Approved By:
Job Name: Soil Contamination Assessment		

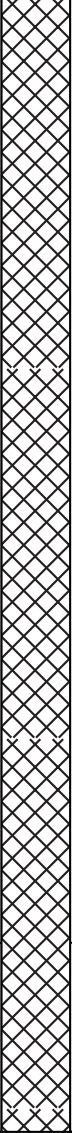
COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: loose, very soft, brown/grey silty CLAY with road base gravel (~10%, 10-20mm)		
				BH03_0.05_0.1	PID 0.0
0.2			Refusal on gravel and EOH at 0.15 mBGL		
0.3					

Disclaimer This log is intended for environmental not geotechnical purposes.

Client: St. Hilliers Job Number: 98585S Site Location: Sheffield Circuit, Penrith, NSW Job Name: Soil Contamination Assessment	Date of Sampling: 16/09/2021 Excavation Method: Hand Auger	Depth of Hole: 0.3 mBGL Drawn By: MXH Approved By:
---	---	---

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: Loose, soft, brown, silty CLAY, trace road base gravel (< 5%, 10-20mm)		
0.2				BH04_0.1_0.2	PID 0.0
0.3	SM		Becoming soft at 0.25 mBGL		
			Target depth reached EOH at 0.3 mBGL		

Disclaimer This log is intended for environmental not geotechnical purposes.

Document produced by ES&S at ES&Sdat.net on 30 Sep 2021
Version: 1, Version Date: 24/03/2022

Client: St. Hilliers Job Number: 98585S Site Location: Sheffield Circuit, Penrith, NSW Job Name: Soil Contamination Assessment	Date of Sampling: 16/09/2021 Excavation Method: Hand Auger	Depth of Hole: 0.3 mBGL Drawn By: MXH Approved By:
---	---	---

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: Very loose, fine grained, grey, gravely SAND, contains road base gravel (~10 - 20%, 5 - 10 mm)		
			Fill: Soft, brown, silty CLAY, traces of gravel (< 5%, 10 - 20 mm)		
				BH06_0.1_0.2	PID 0.2
0.2					
			Becoming firm at 0.25 mBGL		
0.3			Target depth reached EOH at 0.3 mBGL		

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH07

Client: St. Hilliers Job Number: 98585S Site Location: Sheffield Circuit, Penrith, NSW Job Name: Soil Contamination Assessment	Date of Sampling: 16/09/2021 Excavation Method: Hand Auger	Depth of Hole: 0.2 mBGL Drawn By: MXH Approved By:
---	---	---

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: Soft, brown, silty CLAY, trace road base gravel (< 5%, 10 - 20 mm)		
0.2			Refusal on gravel and EOH at 0.2 mBGL	BH07_0.1_0.2	PID 0.0
0.3					

Disclaimer This log is intended for environmental not geotechnical purposes.

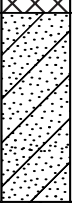
BOREHOLE LOG BH08

Client: St. Hilliers
Job Number: 98585S
Site Location: Sheffield Circuit, Penrith, NSW
Job Name: Soil Contamination Assessment

Date of Sampling: 16/09/2021
Excavation Method: Hand Auger

Depth of Hole: 0.25 mBGL
Drawn By: MXH
Approved By:

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: Soft, brown, silty CLAY, traces of road base gravel (< 5%, 10 - 20 mm)		
0.2	SM		Natural: Soft, light brown, Silty CLAY, with trace ironstone gravel (< 5%)	BH08_0.1_0.2	PID 0.0
0.3			Target depth reached EOH at 0.25 mBGL		

Disclaimer This log is intended for environmental not geotechnical purposes.

Client: St. Hilliers
Job Number: 98585S
Site Location: Sheffield Circuit, Penrith, NSW
Job Name: Soil Contamination Assessment

Date of Sampling: 16/09/2021
Excavation Method: Hand Auger

Depth of Hole: 0.3 mBGL
Drawn By: MXH
Approved By:

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: Very loose, fine grained, grey, gravely SAND, with road base gravel (~10 - 20%, 10 - 20 mm)		
	D		Fill: Soft, brown, silty CLAY, with traces of gravel (less than 5%, 10 - 20 mm)		
0.2				BH09_0.1_0.2	PID 0.2
0.3			Target depth reached EOH at 0.3 mBGL		

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH10

Client: St. Hilliers
Job Number: 98585S
Site Location: Sheffield Circuit, Penrith, NSW
Job Name: Soil Contamination Assessment

Date of Sampling: 16/09/2021
Excavation Method: Hand Auger

Depth of Hole: 0.2 mBGL
Drawn By: MXH
Approved By:

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Natural: Soft, orange, silty/CLAY, with trace ironstone gravel (< 5%)		
0.2			Target depth reached EOH at 0.2 mBGL	BH10_0.1_0.2	PID 0.0
0.3					

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH11

Client: St. Hilliers			Date of Sampling: 16/09/2021	Depth of Hole: 0.2 mBGL	
Job Number: 98585S			Excavation Method: Hand Auger	Drawn By: MXH	
Site Location: Sheffield Circuit, Penrith, NSW			Approved By:		
Job Name: Soil Contamination Assessment					
COMMENTS: Adjacent to stockpile (SP5)					
Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: Soft, light brown, gravelly CLAY, with road base gravel (~10%, 10 - 20 mm) With silt, with roadbase gravel (~20%, 10 - 20mm) 1x porcelain tile fragment (10mm x 5mm)		
				BH11_0.1_0.2	0.0
0.2			Target depth reached EOH at 0.2 mBGL		
0.3					

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH12

Client: St. Hilliers
Job Number: 98585S
Site Location: Sheffield Circuit, Penrith, NSW
Job Name: Soil Contamination Assessment

Date of Sampling: 16/09/2021
Excavation Method: Hand Auger

Depth of Hole: 0.25 mBGL
Drawn By: MXH
Approved By:

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: Soft, brown, silty CLAY, with road base gravel (<10%, 10 - 20 mm)		
0.2				BH12_0.1_0.2	0.0
0.3			Target depth reached EOH at 0.25 mBGL		

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH13

Client: St. Hilliers	Date of Sampling: 16/09/2021	Depth of Hole: 0.2 mBGL
Job Number: 98585S	Excavation Method: Hand Auger	Drawn By: MXH
Site Location: Sheffield Circuit, Penrith, NSW		Approved By:
Job Name: Soil Contamination Assessment		

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: Soft, brown, silty CLAY, with trace road base gravel (< 5%, 10 - 20 mm)		
0.2			Target depth reached EOH at 0.2 mBGL	BH13_0.1_0.2	0.0
0.3					

Disclaimer This log is intended for environmental not geotechnical purposes.

Client: St. Hilliers	Date of Sampling: 16/09/2021	Depth of Hole: 0.28 mBGL
Job Number: 98585S	Excavation Method: Hand Auger	Drawn By: MXH
Site Location: Sheffield Circuit, Penrith, NSW		Approved By:
Job Name: Soil Contamination Assessment		

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
0.1	D		Fill: Soft, brown, silty CLAY, with trace road base gravel (< 5%, 10 - 20 mm)		
0.2				BH14_0.1_0.2 Field Duplicate 1 Field Duplicate 2	0.0
0.3			Target depth reached EOH at 0.28 mBGL		

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Version: 1, Version Date: 24/03/2022

BOREHOLE LOG BH16

Client: St. Hilliers	Date of Sampling: 16/09/2021	Depth of Hole: 0.28 mBGL
Job Number: 98585S	Excavation Method: Hand Auger	Drawn By: MXH
Site Location: Sheffield Circuit, Penrith, NSW		Approved By:
Job Name: Soil Contamination Assessment		

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
			Fill: Soft, brown, silty CLAY, with trace road base gravel (< 5%, 10 - 20 mm)		
0.1	D			BH16_0.1_0.2	0.0
0.2					
0.3			Target depth reached EOH at 0.28 mBGL		

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH17

Client: St. Hilliers	Date of Sampling: 16/09/2021	Depth of Hole: 0.25 mBGL
Job Number: 98585S	Excavation Method: Hand Auger	Drawn By: MXH
Site Location: Sheffield Circuit, Penrith, NSW		Approved By:
Job Name: Soil Contamination Assessment		

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
			Fill: Soft, brown, silty CLAY, with trace road base gravel (< 5%, 10 - 20 mm)		
0.1	D			BH17_0.1_0.2	0.0
0.2					
0.3			Target depth reached EOH at 0.25 mBGL		

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH18

Client: St. Hilliers	Date of Sampling: 16/09/2021	Depth of Hole: 0.25 mBGL
Job Number: 98585S	Excavation Method: Hand Auger	Drawn By: MXH
Site Location: Sheffield Circuit, Penrith, NSW		Approved By:
Job Name: Soil Contamination Assessment		

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
			Fill: Soft, brown, silty CLAY, with road base gravel (~10%, 10 - 20 mm)		
0.1	D			BH18_0.1_0.2	0.0
0.2					
0.3			Target depth reached EOH at 0.25 mBGL		

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH19

Client: St. Hilliers	Date of Sampling: 16/09/2021	Depth of Hole: 0.3 mBGL
Job Number: 98585S	Excavation Method: Hand Auger	Drawn By: MXH
Site Location: Sheffield Circuit, Penrith, NSW		Approved By:
Job Name: Soil Contamination Assessment		

COMMENTS:

Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID
			Fill: Soft, brown, silty CLAY, with trace road base gravel (< 5%, 10 - 20 mm)		
0.1	D			BH19_0.1_0.2	0.0
0.2					
0.3			Target depth reached EOH at 0.3 mBGL		

Disclaimer This log is intended for environmental not geotechnical purposes.

BOREHOLE LOG BH20

Client: St. Hilliers Job Number: 98585S Site Location: Sheffield Circuit, Penrith, NSW Job Name: Soil Contamination Assessment			Date of Sampling: 16/09/2021 Excavation Method: Hand Auger		Depth of Hole: 0.2 mBGL Drawn By: MXH Approved By:	
COMMENTS:						
Depth (m)	Moisture	Graphic Log	Subsurface Profile	Samples	PID	
0.1	D		Fill: Soft, light brown, silty CLAY, with trace road base gravel (< 5%, 10 - 20 mm) and trace iron stones (< 5%, 5 - 10 mm)			
				BH20_0.1_0.2	0.0	
0.2			Target depth reached EOH at 0.2 mBGL			
0.3						

Disclaimer This log is intended for environmental not geotechnical purposes.

Appendix C: Equipment Calibration Certificates

Calibration Certificate

AirMet Scientific P/L

Level 3, 18-26 Dickson
Avenue
Artarmon
NSW 2064, Australia
Tel: 02 8425 8300
Fax: 02 8425 8399

This document certifies that the instrument detailed has been calibrated to the parameters

Certificate Print Date: 10-Jun-2021

Call ID / Order No: 250461

Calibration Date: 10-Jun-2021

Job No / Pack No: S2504610001

Next Calibration Due: 7-Dec-2021

Customer: Prensa-ID 202984

Serial No: 595-000852

Description: MINIRAE

Calibration Summary

Frequency: 180 Days **Temp:** 22°C **As Found:** In Tolerance **Result:** Pass
Humidity: 45% **Certificate:** S2504610001

<u>Desc</u>	<u>As Found</u>		<u>As Left (Cal Status)</u>	
	<u>Actual</u>	<u>Result</u>	<u>Actual</u>	<u>Result</u>
PID ISOBUTYLENE 100ppm	98.2	Pass	100.2	Pass

Standard Used			
<u>Equip ID</u>	<u>Description</u>	<u>Valid Until</u>	<u>Cert</u>
SYFRESHAIR	Ambient Air	29-08-2028	
SY373	Zero Grade Air 20.9%VOL O2, N2 Balance	09-10-2025	400294110
SY387	ISOBUTYLENE 100PPM AIR Balance	10-02-2026	400296268

Completed By: Jason Cheng

Signed:

Appendix D: Quality Assurance and Quality Control

Quality Assurance/Quality Control

Adopted Guidelines

The data quality assurance and control (QA/QC) procedures adopted by Prensa enables for an evaluation to be made regarding the useability of the data collected. Specifically, the use of the data in terms of its accuracy and reliability in forming the conclusions on the condition of the environment being investigated. The approach was generally based on guidance presented in the following documents:

- Standards Australia, Australian Standard, Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 1: Non-volatile and Semi-volatile Compounds, 2005 (AS 4482.1-2005)¹;
- Standards Australia and Standards New Zealand, Australian/New Zealand Standard, Water Quality – Sampling Part 1: Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples, 1998 (AS/NZS 5667.1-1998)²;
- Standards Australia and Standards New Zealand, Australian/New Zealand Standard, *Water Quality – Sampling Part 11: Guidance on Sampling of Groundwaters*, 1998 (AS/NZS 5667.11-1998)³;
- Victorian EPA Industrial Waste Resource Guidelines (IWRG701), *Sampling and Analysis of Waters, Wastewaters, Soils and Waste*, June 2009;
- NEPC, National Environmental Protection (Assessment of Site Contamination) Measure 1999, May 2013;
- USEPA, Guidance on Systematic Planning Using the Data Quality Objectives Process, February 2006; and
- USEPA, Guidance on Environmental Data Verification and Data Validation, January 2008.

¹ AS 4482.1-2005 is only applicable to soil assessment works.

² AS/NZS 5667.1-1998 is only applicable to water assessment works.

³ AS/NZS 5667.11-1998 is only applicable to groundwater assessment works.

Quality Assurance Procedure

The following quality assurance procedures and acceptability limits have been adopted to verify the quality of the data collected during completion of the assessment.

Data Assurance Procedure				
Quality Assurance Process	Data Quality Indicators ⁽¹⁾	Description	Acceptability Limit(s)	Reference(s)
Sampling procedures	Precision, Comparability, Representativeness	Sampling conducted in accordance with Prensa work instructions and appropriate standards. Field forms used.	Adhere to standard procedures and forms.	AS/NZS 5667.11-1998 AS/NZS 5667.1-1998 EPAV, Publication 669 2000 Prensa work instructions HEPA NEMP 2018
Equipment calibration	Accuracy	Field equipment calibrated in accordance with the manufactures specifications.	Field equipment calibrated in accordance with the manufactures specifications.	EPAV, Publication 669 2000 Prensa work instructions
Analytical testing methods	Accuracy, Comparability	National Association of Testing Authorities (NATA) accredited methods to be used for analysis.	Primary and secondary laboratories are to use NATA accredited methods for analysis.	NEPM 2013 Prensa work instructions
Sample preservation, handling and holding times	Accuracy, Comparability, Representativeness	Samples appropriately preserved upon collection, stored, transported and analysed under recommended conditions within holding times.	Sample containers to be supplied by a NATA accredited laboratory. Appropriately preserved sampling containers to be used for the requested analysis. Samples stored and transported directly to the laboratory in chilled ice chests with completed chain of custody forms. Samples extracted and analysed within the recommended holding times specified by the NATA accredited laboratory.	AS/NZS 5667.1-1998 IWRG701 NEPM 2013 Prensa work instructions

S0079:KLM:98585S DA02 Lots 3003 3004 3005 Lord Sheffield Circuit SCA V2

Data Assurance Procedure				
Quality Assurance Process	Data Quality Indicators ⁽¹⁾	Description	Acceptability Limit(s)	Reference(s)
Data management and reporting	Accuracy	Potential for transcription errors.	Entry of field data is to be peer reviewed during an internal technical review of report and appendices.	Prensa work instructions.
			Laboratory data requested in database format from the laboratory. Database files exported to create summary tables. At least 10% of data in the tables checked for inconsistencies.	
Data useability	Completeness	The sample volume and analytical methods enable for the limit of reporting for contaminants of concern to be less than the adopted investigation levels/criteria.	Limits of reporting less than the investigation levels/screening criteria adopted.	Prensa work instructions.

(1) **Precision** - A measure of the variability (or reproducibility) of data, **Comparability** - The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event, **Representativeness** - The confidence (expressed qualitatively) that data is representative of each medium present on the site, **Accuracy (bias)** - A quantitative measure of the closeness of reported data to the true value and **Completeness** - A measure of the amount of usable data from a data collection activity.

Quality Control Sampling and Analysis

The following quality control sampling and analysis procedures and acceptability limits have been adopted to evaluate the validity of the analytical data.

Quality Control Sampling and Analysis Procedure				
Quality Assurance Process	Data Quality Indicators ⁽¹⁾	Description	Acceptability Limit(s)	Reference(s)
Quality control sampling and analysis frequency	Precision	Field quality control samples collected in accordance with Prensa work instructions and appropriate standards.	Blind replicate sample ≥ 1 in 20 primary samples Split sample ≥ 1 in 20 primary samples Rinsate ≥ 1 per piece of equipment per day Field blank ≥ 1 per day Trip blank ≥ 1 per ice chest containing samples to be analysed for volatile compounds	AS/NZS 5667.1-1998 AS 4482.1-2005 Prensa work instructions.
Blind Replicate and split sample analysis	Precision, Accuracy	Blind replicate sample analysis used to quantitatively assess variability in the concentrations of analytes reported from samples collected from the same location. This provides insight into the reproducibility of the lab analysis. Split sample analysis used to assess variability in the analyte concentrations reported when a sample from the same location is analysed at a different laboratory. Used to assess the accuracy of the concentrations reported by the primary laboratory.	Analysed for the same contaminants of concern as the primary sample. RPD ⁴ – non limiting when concentrations are $< 10 \times \text{LOR}$ RPD $< 30\%$ of mean concentration when $> 20 \times \text{LOR}$ RPD $< 50\%$ of mean concentration when $10 - 20 \times \text{LOR}$	AS 4482.1-2005 NATA laboratory procedures
Rinsate preparation and analysis	Accuracy, Comparability, Representativeness	Used to evaluate the potential for contamination on sampling equipment to have cross contaminated a sample. Samples prepared in the field following decontamination of sampling equipment.	Concentrations of analytes below the LOR.	AS 4482.1-2005 Prensa work instructions.

⁴ RPD (relative percentage differences are calculated by dividing the difference between the primary sample and quality control sample by the average of the two, as shown below:

$$\text{RPD} = \frac{(X1 - X2)}{(X1 + X2)/2} \times 100\%$$

Where X1 = Primary sample result
X2 = Replicate sample result

S0079:KLM:98585S DA02 Lots 3003 3004 3005 Lord Sheffield Circuit SCA V2

Quality Control Sampling and Analysis Procedure				
Quality Assurance Process	Data Quality Indicators ⁽¹⁾	Description	Acceptability Limit(s)	Reference(s)
Field blank preparation and analysis	Accuracy, Comparability, Representativeness	Used to evaluate the potential for contamination of a sample during the collection procedure. Samples prepared in the field.	Concentrations of analytes below the LOR.	AS/NZS 5667.1-1998 Prensa work instructions.
Trip blank preparation and analysis	Accuracy, Comparability, Representativeness	Used to evaluate cross contamination between samples in storage and transit as a product of handling. Samples prepared by the laboratory.	Concentrations of analytes below the LOR.	AS/NZS 5667.1-1998 AS 4482.1-2005 Prensa work instructions.
Laboratory quality control analysis	Precision, Accuracy	Duplicates – A second piece of analysis from the same sample and reported in the same units as the result to show comparison	RPD limits specified for blind replicate and split sample analysis.	As per blind replicate and split sample analysis.
		Spike – Addition of a known concentration of an analyte to a sample and reported as percentage recovery.	Recovery typically between 70-130% or 30-130% for phenols. Dynamic limits are typically set by the laboratory.	NATA laboratory procedures
		Method Blanks – Performed on laboratory certified sands (solids) and deionised water (water).	Concentrations below the laboratory's LOR.	NATA laboratory procedures
		Laboratory Control Samples (LCS) – Reported as percent recovery.	Recovery typically between 70-130% or 30-130% for phenols. Dynamic limits are typically set by the laboratory.	NATA laboratory procedures
		Certified Reference Material (CRM) – Use an analyte of known concentration and reported as percent recovery.	Dynamic limits are typically set by the laboratory.	NATA laboratory procedures
		Surrogates - added to all samples where appropriate and reported as a percentage recovery.	Dynamic limits are typically set by the laboratory.	NATA laboratory procedures

Appendix E: NATA Accredited Laboratory Report & Chain of Custody Documentation

S0079:KLM:98585S DA02 Lots 3003 3004 3005 Lord Sheffield Circuit SCA V2

Prensa Pty Ltd NSW
Level 1, 71 Longueville Road
Lane Cove
NSW 2066



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: **Darren Fernandez**

Report **825574-S**
Project name **PENRITH SCA**
Project ID **98585S**
Received Date **Sep 16, 2021**

Client Sample ID			BH1	BH2	BH3	BH4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Se37330	S21-Se37331	S21-Se37332	S21-Se37333
Date Sampled			Sep 16, 2021	Sep 16, 2021	Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	71	90	< 50
TRH C29-C36	50	mg/kg	< 50	96	150	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	167	240	< 50
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	140	200	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	130	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	140	330	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	54	74	85	51
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH1 Soil	BH2 Soil	BH3 Soil	BH4 Soil
Sample Matrix			S21-Se37330	S21-Se37331	S21-Se37332	S21-Se37333
Eurofins Sample No.			Sep 16, 2021	Sep 16, 2021	Sep 16, 2021	Sep 16, 2021
Date Sampled						
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	60	89	94	99
p-Terphenyl-d14 (surr.)	1	%	66	90	93	90
Heavy Metals						
Arsenic	2	mg/kg	5.7	6.2	3.9	6.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	16	24	17	18
Copper	5	mg/kg	25	21	25	23
Lead	5	mg/kg	20	16	13	12
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	18	13	10	6.0
Zinc	5	mg/kg	52	41	59	31
% Moisture	1	%	13	11	3.8	10

Client Sample ID			BH5 Soil	BH6 Soil	BH7 Soil	BH8 Soil
Sample Matrix			S21-Se37334	S21-Se37335	S21-Se37336	S21-Se37337
Eurofins Sample No.			Sep 16, 2021	Sep 16, 2021	Sep 16, 2021	Sep 16, 2021
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	85	90	84	77

Client Sample ID			BH5	BH6	BH7	BH8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Se37334	S21-Se37335	S21-Se37336	S21-Se37337
Date Sampled			Sep 16, 2021	Sep 16, 2021	Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	77	96	81	85
p-Terphenyl-d14 (surr.)	1	%	87	88	89	92
Heavy Metals						
Arsenic	2	mg/kg	5.3	6.3	8.0	6.5
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	21	18	18	17
Copper	5	mg/kg	24	25	21	26
Lead	5	mg/kg	17	21	19	27
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	12	13	9.4	13
Zinc	5	mg/kg	35	56	48	67
% Moisture	1	%	15	7.0	6.3	8.1

Client Sample ID			BH9	BH10	BH11	BH12
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Se37338	S21-Se37339	S21-Se37340	S21-Se37341
Date Sampled			Sep 16, 2021	Sep 16, 2021	Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	61	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	61	< 50
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20

Client Sample ID			BH9 Soil S21-Se37338 Sep 16, 2021	BH10 Soil S21-Se37339 Sep 16, 2021	BH11 Soil S21-Se37340 Sep 16, 2021	BH12 Soil S21-Se37341 Sep 16, 2021
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	78	81	85	52
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	102	100	97	81
p-Terphenyl-d14 (surr.)	1	%	107	107	97	80
Heavy Metals						
Arsenic	2	mg/kg	6.7	11	8.2	6.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	17	25	28	21
Copper	5	mg/kg	26	25	27	24
Lead	5	mg/kg	23	25	23	14
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	12	9.9	13	10
Zinc	5	mg/kg	51	48	59	36
% Moisture	1	%	15	5.1	4.7	6.4

Client Sample ID			BH13 Soil S21-Se37342 Sep 16, 2021	BH14 Soil S21-Se37343 Sep 16, 2021	BH15 Soil S21-Se37344 Sep 16, 2021	BH16 Soil S21-Se37345 Sep 16, 2021
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	89	110	51	82
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	83	96	88	84
p-Terphenyl-d14 (surr.)	1	%	66	100	59	87
Heavy Metals						
Arsenic	2	mg/kg	8.2	6.9	7.6	15
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	16	17	19	39
Copper	5	mg/kg	21	30	23	24

Client Sample ID			BH13	BH14	BH15	BH16
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Se37342	S21-Se37343	S21-Se37344	S21-Se37345
Date Sampled			Sep 16, 2021	Sep 16, 2021	Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	5	mg/kg	20	32	24	24
Mercury	0.1	mg/kg	< 0.1	0.1	< 0.1	< 0.1
Nickel	5	mg/kg	9.4	15	10	11
Zinc	5	mg/kg	40	78	45	43
% Moisture	1	%	6.0	1.5	5.6	12

Client Sample ID			BH17	BH18	BH19	BH20
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Se37346	S21-Se37347	S21-Se37348	S21-Se37349
Date Sampled			Sep 16, 2021	Sep 16, 2021	Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	77	< 50	68	< 50
TRH C10-C36 (Total)	50	mg/kg	77	< 50	68	< 50
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	85	72	86	77
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b,j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH17	BH18	BH19	BH20
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Se37346	S21-Se37347	S21-Se37348	S21-Se37349
Date Sampled			Sep 16, 2021	Sep 16, 2021	Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	88	87	103	87
p-Terphenyl-d14 (surr.)	1	%	92	96	97	87
Heavy Metals						
Arsenic	2	mg/kg	8.8	5.7	6.4	36
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	27	12	33	130
Copper	5	mg/kg	25	14	30	9.5
Lead	5	mg/kg	26	11	20	24
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	15	5.6	30	10.0
Zinc	5	mg/kg	50	24	49	17
% Moisture	1	%	< 1	6.7	6.9	7.8

Client Sample ID			FD1	TRIP BLANK	TRIP SPIKE
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S21-Se37350	S21-Se38853	S21-Se38854
Date Sampled			Sep 16, 2021	Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons					
TRH C6-C9	20	mg/kg	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	-
TRH C15-C28	50	mg/kg	< 50	-	-
TRH C29-C36	50	mg/kg	58	-	-
TRH C10-C36 (Total)	50	mg/kg	58	-	-
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	-	-
TRH >C16-C34	100	mg/kg	< 100	-	-
TRH >C34-C40	100	mg/kg	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-
BTEX					
Benzene	0.1	mg/kg	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	78	78	-

Client Sample ID			FD1	TRIP BLANK	TRIP SPIKE
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S21-Se37350	S21-Se38853	S21-Se38854
Date Sampled			Sep 16, 2021	Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-
Benzo(a)anthracene	0.5	mg/kg	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	-	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-
Pyrene	0.5	mg/kg	< 0.5	-	-
Total PAH*	0.5	mg/kg	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	97	-	-
p-Terphenyl-d14 (surr.)	1	%	90	-	-
Heavy Metals					
Arsenic	2	mg/kg	11	-	-
Cadmium	0.4	mg/kg	< 0.4	-	-
Chromium	5	mg/kg	23	-	-
Copper	5	mg/kg	30	-	-
Lead	5	mg/kg	40	-	-
Mercury	0.1	mg/kg	< 0.1	-	-
Nickel	5	mg/kg	19	-	-
Zinc	5	mg/kg	87	-	-
% Moisture	1	%	11	-	-
TRH C6-C10	1	%	-	-	86
Total Recoverable Hydrocarbons					
Naphthalene	1	%	-	-	88
TRH C6-C9	1	%	-	-	87
BTEX					
Benzene	1	%	-	-	94
Ethylbenzene	1	%	-	-	84
m&p-Xylenes	1	%	-	-	83
o-Xylene	1	%	-	-	84
Toluene	1	%	-	-	87
Xylenes - Total	1	%	-	-	84
4-Bromofluorobenzene (surr.)	1	%	-	-	71

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Sep 21, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 21, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Sydney	Sep 21, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Sep 21, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Eurofins Suite B1			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 21, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Sep 21, 2021	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Sep 21, 2021	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Sep 18, 2021	14 Days
- Method: LTM-GEN-7080 Moisture			

Company Name: Prensa Pty Ltd NSW
Address: Level 1, 71 Longueville Road
Lane Cove
NSW 2066

Order No.:
Report #: 825574
Phone: (02) 8968 2500
Fax:

Received: Sep 16, 2021 4:14 PM
Due: Sep 23, 2021
Priority: 5 Day
Contact Name: Darren Fernandez

Project Name: PENRITH SCA
Project ID: 98585S

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						HOLD	Moisture Set	Eurofins Suite B7	Eurofins Suite B1	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254											
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	BH1	Sep 16, 2021		Soil	S21-Se37330		X	X			
2	BH2	Sep 16, 2021		Soil	S21-Se37331		X	X			
3	BH3	Sep 16, 2021		Soil	S21-Se37332		X	X			
4	BH4	Sep 16, 2021		Soil	S21-Se37333		X	X			
5	BH5	Sep 16, 2021		Soil	S21-Se37334		X	X			
6	BH6	Sep 16, 2021		Soil	S21-Se37335		X	X			
7	BH7	Sep 16, 2021		Soil	S21-Se37336		X	X			
8	BH8	Sep 16, 2021		Soil	S21-Se37337		X	X			
9	BH9	Sep 16, 2021		Soil	S21-Se37338		X	X			

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Melbourne Laboratory - NATA # 1261 Site # 1254											
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
10	BH10	Sep 16, 2021		Soil	S21-Se37339		X	X			
11	BH11	Sep 16, 2021		Soil	S21-Se37340		X	X			
12	BH12	Sep 16, 2021		Soil	S21-Se37341		X	X			
13	BH13	Sep 16, 2021		Soil	S21-Se37342		X	X			
14	BH14	Sep 16, 2021		Soil	S21-Se37343		X	X			
15	BH15	Sep 16, 2021		Soil	S21-Se37344		X	X			
16	BH16	Sep 16, 2021		Soil	S21-Se37345		X	X			
17	BH17	Sep 16, 2021		Soil	S21-Se37346		X	X			
18	BH18	Sep 16, 2021		Soil	S21-Se37347		X	X			
19	BH19	Sep 16, 2021		Soil	S21-Se37348		X	X			
20	BH20	Sep 16, 2021		Soil	S21-Se37349		X	X			

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Sample Detail						HOLD	Moisture Set	Eurofins Suite B7	Eurofins Suite B1	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254											
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
21	FD1	Sep 16, 2021		Soil	S21-Se37350		X	X			
22	RB1	Sep 16, 2021		Water	S21-Se37351				X		
23	FB1	Sep 16, 2021		Water	S21-Se37352				X		
24	SP1	Sep 16, 2021		Soil	S21-Se37353	X					
25	SP3	Sep 16, 2021		Soil	S21-Se37354	X					
26	TRIP BLANK	Sep 16, 2021		Soil	S21-Se38853					X	
27	TRIP SPIKE	Sep 16, 2021		Soil	S21-Se38854						X
Test Counts						2	21	21	2	1	1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	88			70-130	Pass	

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14				%	92			70-130	Pass	
Naphthalene				%	108			70-130	Pass	
Naphthalene				%	96			70-130	Pass	
TRH C6-C10				%	85			70-130	Pass	
TRH C6-C10				%	75			70-130	Pass	
TRH >C10-C16				%	94			70-130	Pass	
LCS - % Recovery										
BTEX										
Benzene				%	94			70-130	Pass	
Toluene				%	90			70-130	Pass	
Ethylbenzene				%	91			70-130	Pass	
m&p-Xylenes				%	92			70-130	Pass	
o-Xylene				%	93			70-130	Pass	
Xylenes - Total*				%	92			70-130	Pass	
LCS - % Recovery										
Polycyclic Aromatic Hydrocarbons										
Acenaphthene				%	92			70-130	Pass	
Acenaphthylene				%	87			70-130	Pass	
Anthracene				%	90			70-130	Pass	
Benz(a)anthracene				%	81			70-130	Pass	
Benzo(a)pyrene				%	72			70-130	Pass	
Benzo(b&j)fluoranthene				%	72			70-130	Pass	
Benzo(g,h,i)perylene				%	104			70-130	Pass	
Benzo(k)fluoranthene				%	72			70-130	Pass	
Chrysene				%	82			70-130	Pass	
Dibenz(a,h)anthracene				%	83			70-130	Pass	
Fluoranthene				%	121			70-130	Pass	
Fluorene				%	79			70-130	Pass	
Indeno(1,2,3-cd)pyrene				%	87			70-130	Pass	
Naphthalene				%	119			70-130	Pass	
Phenanthrene				%	70			70-130	Pass	
Pyrene				%	89			70-130	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	105			80-120	Pass	
Cadmium				%	104			80-120	Pass	
Chromium				%	104			80-120	Pass	
Copper				%	103			80-120	Pass	
Lead				%	102			80-120	Pass	
Mercury				%	108			80-120	Pass	
Nickel				%	104			80-120	Pass	
Zinc				%	103			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Total Recoverable Hydrocarbons				Result 1						
TRH C10-C14	S21-Se34877	NCP	%	76				70-130	Pass	
TRH >C10-C16	S21-Se34877	NCP	%	76				70-130	Pass	
Spike - % Recovery										
Heavy Metals				Result 1						
Arsenic	S21-Se37331	CP	%	98				75-125	Pass	
Cadmium	S21-Se37331	CP	%	91				75-125	Pass	
Chromium	S21-Se37331	CP	%	97				75-125	Pass	
Copper	S21-Se37331	CP	%	91				75-125	Pass	
Lead	S21-Se37331	CP	%	93				75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury	S21-Se37331	CP	%	99			75-125	Pass	
Nickel	S21-Se37331	CP	%	89			75-125	Pass	
Zinc	S21-Se37331	CP	%	107			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S21-Se37337	CP	%	80			70-130	Pass	
Acenaphthylene	S21-Se37337	CP	%	84			70-130	Pass	
Anthracene	S21-Se37337	CP	%	77			70-130	Pass	
Benz(a)anthracene	S21-Se37337	CP	%	86			70-130	Pass	
Benzo(a)pyrene	S21-Se37337	CP	%	97			70-130	Pass	
Benzo(b&j)fluoranthene	S21-Se37337	CP	%	103			70-130	Pass	
Benzo(g,h,i)perylene	S21-Se37337	CP	%	111			70-130	Pass	
Benzo(k)fluoranthene	S21-Se37337	CP	%	72			70-130	Pass	
Chrysene	S21-Se37337	CP	%	82			70-130	Pass	
Dibenz(a,h)anthracene	S21-Se37337	CP	%	130			70-130	Pass	
Fluoranthene	S21-Se37337	CP	%	83			70-130	Pass	
Fluorene	S21-Se37337	CP	%	81			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S21-Se37337	CP	%	105			70-130	Pass	
Naphthalene	S21-Se37337	CP	%	81			70-130	Pass	
Phenanthrene	S21-Se37337	CP	%	76			70-130	Pass	
Pyrene	S21-Se37337	CP	%	83			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S21-Se37347	CP	%	84			70-130	Pass	
Acenaphthylene	S21-Se37347	CP	%	81			70-130	Pass	
Anthracene	S21-Se37347	CP	%	77			70-130	Pass	
Benzo(a)pyrene	S21-Se37347	CP	%	87			70-130	Pass	
Benzo(g,h,i)perylene	S21-Se37347	CP	%	110			70-130	Pass	
Benzo(k)fluoranthene	S21-Se37347	CP	%	99			70-130	Pass	
Chrysene	S21-Se37347	CP	%	87			70-130	Pass	
Fluoranthene	S21-Se37347	CP	%	83			70-130	Pass	
Fluorene	S21-Se37347	CP	%	77			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S21-Se37347	CP	%	124			70-130	Pass	
Naphthalene	S21-Se37347	CP	%	88			70-130	Pass	
Phenanthrene	S21-Se37347	CP	%	77			70-130	Pass	
Pyrene	S21-Se37347	CP	%	83			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Se37330	CP	mg/kg	5.7	6.6	15	30%	Pass	
Cadmium	S21-Se37330	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Se37330	CP	mg/kg	16	22	35	30%	Fail	Q15
Copper	S21-Se37330	CP	mg/kg	25	23	6.0	30%	Pass	
Lead	S21-Se37330	CP	mg/kg	20	18	11	30%	Pass	
Mercury	S21-Se37330	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Se37330	CP	mg/kg	18	12	39	30%	Fail	Q15
Zinc	S21-Se37330	CP	mg/kg	52	41	25	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Se37332	CP	mg/kg	3.9	4.7	18	30%	Pass	
Cadmium	S21-Se37332	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Se37332	CP	mg/kg	17	21	25	30%	Pass	
Copper	S21-Se37332	CP	mg/kg	25	42	49	30%	Fail	Q15
Lead	S21-Se37332	CP	mg/kg	13	17	31	30%	Fail	Q15

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Mercury	S21-Se37332	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S21-Se37332	CP	mg/kg	10	12	17	30%	Pass
Zinc	S21-Se37332	CP	mg/kg	59	89	41	30%	Fail
Q02								
Duplicate								
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD		
TRH C6-C9	S21-Se37334	CP	mg/kg	< 20	< 20	<1	30%	Pass
Naphthalene	S21-Se37334	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S21-Se37334	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S21-Se37334	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S21-Se37334	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S21-Se37334	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S21-Se37334	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S21-Se37334	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total*	S21-Se37334	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD		
TRH C10-C14	S21-Se37335	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S21-Se37335	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S21-Se37335	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C10-C16	S21-Se37335	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S21-Se37335	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S21-Se37335	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S21-Se37335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD		
TRH C10-C14	S21-Se37336	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S21-Se37336	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S21-Se37336	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C10-C16	S21-Se37336	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S21-Se37336	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S21-Se37336	CP	mg/kg	< 100	< 100	<1	30%	Pass

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S21-Se37336	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S21-Se37339	CP	%	5.1	5.7	11	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD		
TRH C10-C14	S21-Se37347	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S21-Se37347	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S21-Se37347	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C10-C16	S21-Se37347	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S21-Se37347	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S21-Se37347	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S21-Se37349	CP	%	7.8	6.6	17	30%	Pass

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C8-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C8-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q02	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)
Roopesh Rangarajan	Senior Analyst-Volatile (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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Level 1, 71 Longueville Road
Lane Cove
NSW 2066



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: **Darren Fernandez**

Report **825574-W**
Project name **PENRITH SCA**
Project ID **98585S**
Received Date **Sep 16, 2021**

Client Sample ID			RB1	FB1
Sample Matrix			Water	Water
Eurofins Sample No.			S21-Se37351	S21-Se37352
Date Sampled			Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons				
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1
BTEX				
Benzene	0.001	mg/L	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	125	134

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 20, 2021	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 18, 2021	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 18, 2021	14 Days
Eurofins Suite B1 Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 20, 2021	7 Days

Company Name:	Prensa Pty Ltd NSW	Order No.:		Received:	Sep 16, 2021 4:14 PM
Address:	Level 1, 71 Longueville Road Lane Cove NSW 2066	Report #:	825574	Due:	Sep 23, 2021
		Phone:	(02) 8968 2500	Priority:	5 Day
		Fax:		Contact Name:	Darren Fernandez
Project Name:	PENRITH SCA				
Project ID:	98585S				

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						HOLD	Moisture Set	Eurofins Suite B7	Eurofins Suite B1	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254											
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	BH1	Sep 16, 2021		Soil	S21-Se37330		X	X			
2	BH2	Sep 16, 2021		Soil	S21-Se37331		X	X			
3	BH3	Sep 16, 2021		Soil	S21-Se37332		X	X			
4	BH4	Sep 16, 2021		Soil	S21-Se37333		X	X			
5	BH5	Sep 16, 2021		Soil	S21-Se37334		X	X			
6	BH6	Sep 16, 2021		Soil	S21-Se37335		X	X			
7	BH7	Sep 16, 2021		Soil	S21-Se37336		X	X			
8	BH8	Sep 16, 2021		Soil	S21-Se37337		X	X			
9	BH9	Sep 16, 2021		Soil	S21-Se37338		X	X			

Company Name: Prensa Pty Ltd NSW
Address: Level 1, 71 Longueville Road
Lane Cove
NSW 2066

Project Name: PENRITH SCA
Project ID: 98585S

Order No.:
Report #: 825574
Phone: (02) 8968 2500
Fax:

Received: Sep 16, 2021 4:14 PM
Due: Sep 23, 2021
Priority: 5 Day
Contact Name: Darren Fernandez

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						HOLD	Moisture Set	Eurofins Suite B7	Eurofins Suite B1	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254											
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
10	BH10	Sep 16, 2021		Soil	S21-Se37339		X	X			
11	BH11	Sep 16, 2021		Soil	S21-Se37340		X	X			
12	BH12	Sep 16, 2021		Soil	S21-Se37341		X	X			
13	BH13	Sep 16, 2021		Soil	S21-Se37342		X	X			
14	BH14	Sep 16, 2021		Soil	S21-Se37343		X	X			
15	BH15	Sep 16, 2021		Soil	S21-Se37344		X	X			
16	BH16	Sep 16, 2021		Soil	S21-Se37345		X	X			
17	BH17	Sep 16, 2021		Soil	S21-Se37346		X	X			
18	BH18	Sep 16, 2021		Soil	S21-Se37347		X	X			
19	BH19	Sep 16, 2021		Soil	S21-Se37348		X	X			
20	BH20	Sep 16, 2021		Soil	S21-Se37349		X	X			

Company Name: Prensa Pty Ltd NSW
Address: Level 1, 71 Longueville Road
Lane Cove
NSW 2066

Project Name: PENRITH SCA
Project ID: 98585S

Order No.:
Report #: 825574
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Received: Sep 16, 2021 4:14 PM
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Sample Detail						HOLD	Moisture Set	Eurofins Suite B7	Eurofins Suite B1	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254											
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
21	FD1	Sep 16, 2021		Soil	S21-Se37350		X	X			
22	RB1	Sep 16, 2021		Water	S21-Se37351				X		
23	FB1	Sep 16, 2021		Water	S21-Se37352				X		
24	SP1	Sep 16, 2021		Soil	S21-Se37353	X					
25	SP3	Sep 16, 2021		Soil	S21-Se37354	X					
26	TRIP BLANK	Sep 16, 2021		Soil	S21-Se38853					X	
27	TRIP SPIKE	Sep 16, 2021		Soil	S21-Se38854						X
Test Counts						2	21	21	2	1	1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

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

Quality Control Results

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank										
Total Recoverable Hydrocarbons										
TRH C10-C14				mg/L	< 0.05			0.05	Pass	
TRH C15-C28				mg/L	< 0.1			0.1	Pass	
TRH C29-C36				mg/L	< 0.1			0.1	Pass	
TRH >C10-C16				mg/L	< 0.05			0.05	Pass	
TRH >C16-C34				mg/L	< 0.1			0.1	Pass	
TRH >C34-C40				mg/L	< 0.1			0.1	Pass	
LCS - % Recovery										
Total Recoverable Hydrocarbons										
TRH C10-C14				%	110			70-130	Pass	
TRH >C10-C16				%	107			70-130	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Total Recoverable Hydrocarbons					Result 1					
TRH C10-C14		N21-Se28389	NCP	%	104			70-130	Pass	
TRH >C10-C16		N21-Se28389	NCP	%	102			70-130	Pass	
Spike - % Recovery										
Total Recoverable Hydrocarbons					Result 1					
TRH C6-C9		S21-Se37352	CP	%	105			70-130	Pass	
Naphthalene		S21-Se37352	CP	%	106			70-130	Pass	
TRH C6-C10		S21-Se37352	CP	%	113			70-130	Pass	
Spike - % Recovery										
BTEX					Result 1					
Benzene		S21-Se37352	CP	%	100			70-130	Pass	
Toluene		S21-Se37352	CP	%	110			70-130	Pass	
Ethylbenzene		S21-Se37352	CP	%	112			70-130	Pass	
m&p-Xylenes		S21-Se37352	CP	%	122			70-130	Pass	
o-Xylene		S21-Se37352	CP	%	112			70-130	Pass	
Xylenes - Total*		S21-Se37352	CP	%	118			70-130	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
Total Recoverable Hydrocarbons					Result 1	Result 2	RPD			
TRH C10-C14		N21-Se35424	NCP	mg/L	0.06	0.06	1.0	30%	Pass	
TRH C15-C28		N21-Se35424	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36		N21-Se35424	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C10-C16		N21-Se35424	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34		N21-Se35424	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40		N21-Se35424	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C8-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C8-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised by:

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Roopesh Rangarajan	Senior Analyst-Volatile (NSW)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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CHAIN OF CUSTODY RECORD

Eurofins | mgf ABN 50 005 095 521

☐ **Sydney Laboratory**
Unit T3 3rd Fl 16 Mars Road Lane Cove West NSW 2056
07 5900 8400 EurofinsSampleSydney@eurofins.com

☐ **Brisbane Laboratory**
Unit 1 121 Smallwood Place Marano QLD 4172
07 3902 4500 EurofinsSampleBrisbane@eurofins.com

☐ **Perth Laboratory**
Unit 2 81 Leach Highway Kewdale WA 6105
08 9251 9600 EurofinsSamplePerth@eurofins.com

☐ **Melbourne Laboratory**
6 Monerney Road Dandenong South VIC 3175
03 8554 5000 EurofinsSampleMel@eurofins.com

Company	Prensa Pty Ltd			Project No	985855			Project Manager	Darren Fernandez			Sampler(s)	Kelsie McMillen				
Address	L17/1 Longueville Rd, Lane Cove			Project Name	Penith SCA			EDP Format	Esdat			Handed over by	Kelsie McMillen				
Contact Name	Kelsie McMillen												Email for Invoice	Kelsie.McMillen@prensa.com.au			
Phone No	0451 340 489												Email for Results	Kelsie.McMillen@prensa.com.au, Darren.fernandez			
Special Directions													Containers Change container type & size if necessary				
Purchase Order													Required Turnaround Time (TAT) Default will be 5 days if not ticked.				
Quote ID No													☐ Overnight (reporting by 9am) ♦ ☐ Same day ♦ ☒ 2 days ♦ ☐ 3 days ♦ ☐ 5 days (Standard) ☐ Other				
No	Client Sample ID	Sampled Date/Time (dd/mm/yyyy hh:mm)	Matrix Solid (S) Water (W)										Sample Comments / Dangerous Goods Hazard Warning				
1	BH1 - BH26	16/9/21	S	X													
2	FD1	16/9/21	W	X													
3	RB1	"	W	X													
4	SP1	"	S		X												
5	SP3	"	S		X												
6	FB1	"	W	X													
7																	
8																	
9																	
10																	
Total Counts																	
Method of Shipment	☐ Courier (#) ☐ Hand Delivered ☐ Postal			Name										Signature			
Eurofins mgf Laboratory Use Only	Received By												Date				
														Time			



CHAIN OF CUSTODY RECORD

Eurofins | mgf ABN 50 005 095 521

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Unit T3 3rd Flr 16 Mars Road Lane Cove West NSW 2056
07 5900 8400 EurofinsSampleSydney@eurofins.com

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07 3902 4500 EurofinsSampleBrisbane@eurofins.com

☐ **Perth Laboratory**
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08 9251 9600 EurofinsSamplePerth@eurofins.com

☐ **Melbourne Laboratory**
6 Monerney Road Dandenong South VIC 3175
03 8554 5000 EurofinsSampleMel@eurofins.com

Company	Prensa Pty Ltd	Project No	985855	Project Manager	Darren Fernandez	Sampler(s)	Kelsie McGillen
Address	L17/1 Longueville Rd, Lane Cove	Project Name	Penith SCA	EDP Format	Esdat	Handed over by	Kelsie McGillen
Contact Name	Kelsie McGillen					Email for Invoice	Kelsie.McGillen@prensa.com.au
Phone No	0451 340 489					Email for Results	Kelsie.McGillen@prensa.com.au, Darren.fernandez
Special Directions		Analyses	B7			Containers	Required Turnaround Time (TAT)
Purchase Order		Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing.				500mL Plastic	Overnight (reporting by 9am) ♦
Quote ID No			B1 (TRH BTEX)			250mL Plastic	Same day ♦
			HOLD			125mL Plastic	2 days ♦
						200mL Amber Glass	3 days ♦
						40mL VOA vial	5 days (Standard)
						500mL PFAS Bottle	Other (Asbestos AS4964, WA Guidelines)
						Jar (Glass or HDPE)	Other
							Sample Comments
							/ Dangerous Goods Hazard Warning
No	Client Sample ID	Sampled Date/Time	Matrix				
1	BH1 - BH26	16/9/21	S	X			
2	FD1	16/9/21	W	X			
3	RB1	"	W	X			
4	SP1	"	S	X			
5	SP3	"	S	X			
6	FB1	"	W	X			
7							
8							
9							
10							
		Total Counts					
Method of Shipment	☐ Courier (#) ☐ Hand Delivered ☐ Postal	Name				Signature	Date
Eurofins mgf Laboratory Use Only	Received By						Time



CHAIN OF CUSTODY RECORD

Eurofins | mgf ABN 50 005 095 521

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6 Monerney Road Dandenong South VIC 3175
03 8554 5000 EurofinsSampleMel@eurofins.com

Company	Prensa Pty Ltd		Project No	985855		Project Manager	Darren Fernandez		Sampler(s)	Kelsie McMillen	
Address	L17/1 Longueville Rd, Lane Cove		Project Name	Penith SCA		EDP Format	Esdat		Handed over by	Kelsie McMillen	
Contact Name	Kelsie McMillen		Analyses Where metals are requested, please specify "Total" or "Filtered" SUITE code must be used to attract SUITE pricing.								
Phone No	0451 340 489		B7 B1 (TRH BTEX) HOLD								
Special Directions											
Purchase Order											
Quote ID No											
No	Client Sample ID	Sampled Date/Time (dd/mm/yyyy hh:mm)	Matrix Solid (S) Water (W)								
1	BH1 - BH26	16/9/21	S	X							
2	FD1	16/9/21	W	X							
3	RB1	"	W	X							
4	SP1	"	S		X						
5	SP3	"	S		X						
6	FB1	"	W	X							
7											
8											
9											
10											
Total Counts											
Method of Shipment	☐ Courier (#) ☐ Hand Delivered ☐ Postal		Name								
Eurofins mgf Laboratory Use Only	Received By										
Signature											
Date											
Time											
Containers Change container type & size if necessary											
Required Turnaround Time (TAT) Default will be 5 days if not ticked.											
500mL Plastic ☐ Overnight (reporting by 9am) ♦											
250mL Plastic ☐ Same day ♦ ☐ 1 day ♦											
125mL Plastic ☐ 2 days ♦ ☐ 3 days ♦											
200mL Amber Glass ☒ 5 days (Standard)											
40mL VOA vial ☐ Other											
500mL PFAS Bottle											
Jar (Glass or HDPE)											
Other (Asbestos AS4964, WA Guidelines)											
Sample Comments / Dangerous Goods Hazard Warning											

Prensa Pty Ltd NSW
Level 1, 71 Longueville Road
Lane Cove
NSW 2066



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Kelsie McGillen

Report 827665-S
Project name PENRITH SCA
Project ID 98585S
Received Date Sep 16, 2021

Client Sample ID			SP1	SP3
Sample Matrix			Soil	Soil
Eurofins Sample No.			S21-Se37353	S21-Se37354
Date Sampled			Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	50
TRH C29-C36	50	mg/kg	< 50	52
TRH C10-C36 (Total)	50	mg/kg	< 50	102
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	118	119
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5

Client Sample ID			SP1	SP3
Sample Matrix			Soil	Soil
Eurofins Sample No.			S21-Se37353	S21-Se37354
Date Sampled			Sep 16, 2021	Sep 16, 2021
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	91	116
p-Terphenyl-d14 (surr.)	1	%	88	114
Heavy Metals				
Arsenic	2	mg/kg	3.8	19
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	13	25
Copper	5	mg/kg	16	9.9
Lead	5	mg/kg	18	16
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	7.6	< 5
Zinc	5	mg/kg	33	68
% Moisture	1	%	8.5	5.6

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 29, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 29, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 29, 2021	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Sep 29, 2021	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Sep 29, 2021	14 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Sep 29, 2021	28 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Sep 27, 2021	14 Days

Company Name:	Prensa Pty Ltd NSW	Order No.:		Received:	Sep 27, 2021 3:58 PM
Address:	Level 1, 71 Longueville Road Lane Cove NSW 2066	Report #:	827665	Due:	Sep 30, 2021
		Phone:	(02) 8968 2500	Priority:	3 Day
		Fax:		Contact Name:	Kelsie McGillen
Project Name:	PENRITH SCA				
Project ID:	98585S				
Eurofins Analytical Services Manager : Ursula Long					

Sample Detail						Moisture Set	Eurofins Suite B7
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	SP1	Sep 16, 2021		Soil	S21-Se37353	X	X
2	SP3	Sep 16, 2021		Soil	S21-Se37354	X	X
Test Counts						2	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

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

Results <10 times the LOR : No Limit

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

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

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs..

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	103			70-130	Pass	
Naphthalene	%	99			70-130	Pass	
TRH C6-C10	%	101			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	105			70-130	Pass	
Toluene	%	100			70-130	Pass	
Ethylbenzene	%	102			70-130	Pass	
m&p-Xylenes	%	105			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
o-Xylene			%	104			70-130	Pass	
Xylenes - Total*			%	105			70-130	Pass	
LCS - % Recovery									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene			%	72			70-130	Pass	
Acenaphthylene			%	75			70-130	Pass	
Anthracene			%	73			70-130	Pass	
Benz(a)anthracene			%	75			70-130	Pass	
Benzo(a)pyrene			%	74			70-130	Pass	
Benzo(b&j)fluoranthene			%	74			70-130	Pass	
Benzo(g,h,i)perylene			%	93			70-130	Pass	
Benzo(k)fluoranthene			%	72			70-130	Pass	
Chrysene			%	74			70-130	Pass	
Dibenz(a,h)anthracene			%	72			70-130	Pass	
Fluoranthene			%	76			70-130	Pass	
Fluorene			%	75			70-130	Pass	
Indeno(1,2,3-cd)pyrene			%	71			70-130	Pass	
Naphthalene			%	72			70-130	Pass	
Phenanthrene			%	76			70-130	Pass	
Pyrene			%	77			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	101			80-120	Pass	
Cadmium			%	103			80-120	Pass	
Chromium			%	107			80-120	Pass	
Copper			%	109			80-120	Pass	
Lead			%	103			80-120	Pass	
Mercury			%	110			80-120	Pass	
Nickel			%	109			80-120	Pass	
Zinc			%	105			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	S21-Se55405	NCP	%	106			70-130	Pass	
Naphthalene	S21-Se55405	NCP	%	103			70-130	Pass	
TRH C6-C10	S21-Se55405	NCP	%	104			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S21-Se55405	NCP	%	106			70-130	Pass	
Toluene	S21-Se55405	NCP	%	104			70-130	Pass	
Ethylbenzene	S21-Se55405	NCP	%	107			70-130	Pass	
m&p-Xylenes	S21-Se55405	NCP	%	110			70-130	Pass	
o-Xylene	S21-Se55405	NCP	%	110			70-130	Pass	
Xylenes - Total*	S21-Se55405	NCP	%	110			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	N21-Se46251	NCP	%	82			75-125	Pass	
Cadmium	N21-Se46251	NCP	%	89			75-125	Pass	
Chromium	N21-Se46251	NCP	%	84			75-125	Pass	
Copper	N21-Se46251	NCP	%	98			75-125	Pass	
Lead	N21-Se46251	NCP	%	113			75-125	Pass	
Mercury	N21-Se46251	NCP	%	97			75-125	Pass	
Nickel	N21-Se46251	NCP	%	101			75-125	Pass	
Zinc	S21-Se46428	NCP	%	79			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S21-Se55404	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Naphthalene	S21-Se55404	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S21-Se55404	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S21-Se55404	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S21-Se55404	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S21-Se55404	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S21-Se55404	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S21-Se55404	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S21-Se55404	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	N21-Se46251	NCP	%	21	22	6.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Se37354	CP	mg/kg	19	21	9.0	30%	Pass	
Cadmium	S21-Se37354	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Se37354	CP	mg/kg	25	28	9.0	30%	Pass	
Copper	S21-Se37354	CP	mg/kg	9.9	11	8.0	30%	Pass	
Lead	S21-Se37354	CP	mg/kg	16	18	8.0	30%	Pass	
Mercury	S21-Se37354	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Se37354	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S21-Se37354	CP	mg/kg	68	74	8.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C8-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C8-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised by:

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)
Roopesh Rangarajan	Senior Analyst-Volatile (NSW)



Glenn Jackson
General Manager

Final Report – this report replaces any previously Issued Report

- Indicates Not Requested

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

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

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CERTIFICATE OF ANALYSIS 278456

Client Details

Client	Prensa Pty Ltd
Attention	Kelsie McGillen
Address	Ground Floor, 5 Burwood Road, HAWTHORN, VIC, 3122

Sample Details

Your Reference	<u>98585S</u>
Number of Samples	1 soil
Date samples received	20/09/2021
Date completed instructions received	20/09/2021

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.

Report Details

Date results requested by	27/09/2021
Date of Issue	24/09/2021
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Dragana Tomas, Senior Chemist
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		278456-1
Your Reference	UNITS	FD2
Date Sampled		16/09/2021
Type of sample		soil
Date extracted	-	21/09/2021
Date analysed	-	22/09/2021
TRH C ₆ - C ₉	mg/kg	<25
TRH C ₆ - C ₁₀	mg/kg	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	93

svTRH (C10-C40) in Soil		
Our Reference		278456-1
Your Reference	UNITS	FD2
Date Sampled		16/09/2021
Type of sample		soil
Date extracted	-	21/09/2021
Date analysed	-	22/09/2021
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	72

Moisture		
Our Reference	UNITS	278456-1
Your Reference		FD2
Date Sampled		16/09/2021
Type of sample		soil
Date prepared	-	21/09/2021
Date analysed	-	22/09/2021
Moisture	%	12

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
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-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-2	[NT]
Date extracted	-			21/09/2021	[NT]	[NT]	[NT]	[NT]	21/09/2021	[NT]
Date analysed	-			22/09/2021	[NT]	[NT]	[NT]	[NT]	22/09/2021	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	94	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	94	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	106	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	90	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	94	[NT]	[NT]	[NT]	[NT]	77	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			21/09/2021	[NT]	[NT]	[NT]	[NT]	21/09/2021	[NT]
Date analysed	-			22/09/2021	[NT]	[NT]	[NT]	[NT]	22/09/2021	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	83	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	79	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	83	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	79	[NT]
Surrogate o-Terphenyl	%		Org-020	75	[NT]	[NT]	[NT]	[NT]	96	[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.

CERTIFICATE OF ANALYSIS 278456-A

Client Details

Client	Prensa Pty Ltd
Attention	Kelsie McGillen
Address	Ground Floor, 5 Burwood Road, HAWTHORN, VIC, 3122

Sample Details

Your Reference	<u>98585S</u>
Number of Samples	additional analysis
Date samples received	20/09/2021
Date completed instructions received	24/09/2021

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.

Report Details

Date results requested by	29/09/2021
Date of Issue	29/09/2021
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

PAHs in Soil		
Our Reference		278456-A-1
Your Reference	UNITS	FD2
Date Sampled		16/09/2021
Type of sample		soil
Date extracted	-	28/09/2021
Date analysed	-	29/09/2021
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	105

Acid Extractable metals in soil		
Our Reference		278456-A-1
Your Reference	UNITS	FD2
Date Sampled		16/09/2021
Type of sample		soil
Date prepared	-	29/09/2021
Date analysed	-	29/09/2021
Arsenic	mg/kg	7
Cadmium	mg/kg	<0.4
Chromium	mg/kg	45
Copper	mg/kg	19
Lead	mg/kg	20
Mercury	mg/kg	<0.1
Nickel	mg/kg	9
Zinc	mg/kg	36

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
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.

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			28/09/2021	[NT]	[NT]	[NT]	[NT]	28/09/2021	[NT]
Date analysed	-			29/09/2021	[NT]	[NT]	[NT]	[NT]	29/09/2021	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	114	[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]	113	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	120	[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]	118	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	121	[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]	105	[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	126	[NT]	[NT]	[NT]	[NT]	131	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			29/09/2021	[NT]	[NT]	[NT]	[NT]	29/09/2021	[NT]
Date analysed	-			29/09/2021	[NT]	[NT]	[NT]	[NT]	29/09/2021	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	91	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	89	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]

Result Definitions

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