

Allam Property Group

Detailed Site Investigation - Contamination Assessment

Proposed Manufactured Home Estate

40-80 Chapmans Road, Tuncurry

Report No. RGS03137.1-AC

14 November 2022



RGS03137.1-AC

14 November 2022

Allam Property Group
PO Box 7385
BAULKHAM HILLS BC NSW 2153

Attention: Mark Cerone

Dear Mark

**RE: Proposed Manufactured Home Estate – 40-80 Chapmans Road, Tuncurry
Detailed Site Investigation - Contamination Assessment**

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a Detailed Site Investigation (Contamination Assessment) for the proposed manufactured home estate at 40-80 Chapmans Road, Tuncurry, NSW. The site is identified as Lot 1 DP304132.

The assessment found that the site can be made suitable for the proposed development, from a contamination perspective, provided the recommendations and advice of this report are adopted.

The work presented herein was reviewed by Dr David Tully CEnvP SC. A copy of Dr Tully's letter pertaining to the review is appended to the report.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of

Regional Geotechnical Solutions Pty Ltd

Prepared by



Andrew Hills

Senior Environmental Engineer

Reviewed by



Steven Morton

Principal Geotechnical Engineer

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1 INTRODUCTION

1.1 Background

Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a Detailed Site Investigation (DSI) Contamination Assessment for the proposed manufactured home estate (MHE) at 40-80 Chapmans Road, Tuncurry, NSW. The site is identified as Lot 100 DP1286524 (formerly Lot 1 DP304132) and occupies approximately 6.11 hectares.

The site location and proposed MHE layout are shown on Figure 1 and Figure 2 respectively.

RGS has previously undertaken a Geotechnical & Preliminary Site Contamination Assessment at the site, the results of which are presented in report RGS02673.1-AB, dated 13 December 2021. The RGS report is summarised in Section 2.

It is understood that a Request for Further Information (RFI) from Midcoast Council (Council) regarding the proposed development of an 88 lot MHE was issued.

In regard to contamination, Council's RFI states the following:

15. A Detailed Site Investigation is required to be prepared and provided to Council.

Matters identified in the Regional Geotechnical Solutions 'Geotechnical & Preliminary Site Contamination Assessments' (Report No. RGS02673.1-AB, dated 13 December 2021) that should be covered in the Detailed Site Investigation include (but are not limited to):

- Updated Conceptual Site Model (CSM) that investigates alleged past use of land (including but not limited to an abattoir).
- Use of Contemporary CSM to direct prospective sampling plan and allow for appropriate RAP design if required.
- Justified sampling plan. The number of samples taken to date is below the NSW Environment Protection Authority's 'Sample Design Guidelines'. The sampling plan should cover all sampling plan should cover all relevant areas of development on the site.
- Complete quality assurance/quality control (QA/QC) discussion that should include information in relation to rinsate samples.
- Discussion in relation to duplicate samples based on how close they agree to the LOR, amongst other factors.
- Discussion in relation to groundwater. Refer to the Guidelines for the Assessment and Management of Groundwater (DEC 2007) for steps included to assess the need and methods for groundwater investigations.

- Further investigation of the extent and nature of the existing filling, which is appropriate to adequately address the potential uneven distribution of contaminants within fill material.
- Applied fill/ dredged sand in the central portion of the site is to be appropriately sampled and characterised to determine the materials suitability from a contaminated land perspective.
- Historic reports waste classifications on past stockpiles. These reports are requested to be included as an appendix. These classifications should be discussed to determine their accuracy, relevance and compliance with current guidelines.
- Waste classification as per Environment Operations (Waste) Regulation 2014 and EPA guidelines on any remaining stockpiles is required to determine if fill is "fit for purpose" for the proposed use OR unsuitable and to be taken to a licenced waste facility.

The DSI is required to delineate the nature and extent of contamination present at the site (if any) and evaluate the site's suitability for future residential land use. In addition, the assessment is aimed at addressing Item 15 of Council's RFI in order for the DA to be progressed

The work was commissioned by Mark Cerone of Allam Property Group and was undertaken in accordance with proposal number RGS03137.1-AA, dated 12 August 2022.

1.2 Objectives

The objectives of the DSI were to:

- Characterise the nature and extent of soil contamination present on the site (if any);
- Assess the suitability of the site for future residential land use; and
- Provide recommendations for on-site management, the need and options for remediation and any further investigation and testing that is required.

1.3 Scope of Works

In general accordance with the relevant sections of the *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013)*, the assessment involved the following process:

- Review of the previous RGS Geotechnical & Preliminary Site Contamination report;
- Review of other available Geotechnical, Geo-Environmental, Waste Classification and Recovered Aggregate Exemption reports undertaken at the site;
- Site walkover to assess surface conditions and, in conjunction with the information above, identify any Areas of Environmental Concern and associated Chemicals of Concern on the site;
- Undertake sampling in accordance with applicable industry guidelines. The NSW EPA (2022) *Sampling Design: Contaminated Land Guidelines* indicate that approximately fifty-five

sampling points are required for characterisation of the contamination status of the proposed development area (approximately 5 hectares);

- Based on the above, excavation of 55 test pits across the proposed development area to about 1.0m below ground surface or 0.5m into natural soil (unless excavating a fill stockpile) using a track mounted excavator;
- Collection of soil samples from the test pits for contamination testing;
- Installation of four groundwater wells and collection of groundwater samples from each of the wells;
- Analysis of soil and groundwater samples for a broad suite of potential contaminants; and
- Evaluate the results against industry accepted criteria for the proposed residential land use.

1.4 Site Identification

General site information is provided below in Table 1. The site location is shown in Figure 1 and the proposed MHE layout is shown on Figure 2.

Table 1: Summary of Site Details

Site location:	40-80 Chapmans Road, Tuncurry
Approximate site area:	6.11 hectares (ha)
Title Identification Details:	Lot 100 DP1286524 (formerly Lot 1 DP304132)
Current Ownership:	Allam MHE #3 Pty Ltd
Current Landuse:	Vacant land. Fill stockpiling and Council equipment and structures storage yard.
Proposed Landuse:	MHE
Adjoining Site Uses:	• Former landscape supply yard to the east; • Undeveloped land to the south and west; and • Chapmans Road, a self-storage facility, a racetrack and rural residential properties to the north.
Government Area:	Midcoast Council

2 PREVIOUS INVESTIGATIONS

2.1 Regional Geotechnical Solutions (2021) – Geotechnical & Preliminary Site Contamination Assessment

With respect to site contamination, the previous RGS assessment (Ref: RGS02673.1-AB, dated 13 December 2021) made the following conclusions and recommendations:

- Identified Areas of Environmental Concern (AEC's) were soils in the vicinity of the existing and former structures, stored equipment and materials, and imported fill from unknown origin;
- No visual or olfactory evidence of contamination (such as oil staining or hydrocarbon odours) were observed. However, fragments of vinyl tile suspected of being asbestos containing material (ACM) were identified on the floor on the inside of one of the old sheds near the site entrance;
- The results of laboratory analysis of surface soil samples collected from eight targeted locations (AEC's outlined above), revealed concentrations of the chemicals of concern were either below the laboratory limit of reporting (LOR), or below the adopted health investigation criteria for a Residential A site. Asbestos was not detected in each of the soil samples submitted for analysis;
- Analysis of suspect ACM sample AS1, a fragment of vinyl tile collected from the floor of one of the old sheds near the site entrance, contained Chrysotile (white) asbestos;
- It was recommended that an Asbestos Management Plan be prepared by a suitably qualified person in accordance with the NSW WorkCover Code of Practice (How to Manage and Control Asbestos in the Workplace), to facilitate the removal of the identified ACM. This is likely to involve visual identification and removal of asbestos fragments from the site by licensed asbestos removal contractors. Additional sampling may be required if a significant proportion of fine asbestos material is detected during the removal works;
- It was also recommended that the concrete pipes and bollards, roof sheeting, gangway, pontoons and treated pine logs be removed and disposed of at a licenced landfill or recycling facility; or stored at an alternative location;
- Based on the results obtained in this investigation and the NEPM 2013 guidelines, it was considered that the site could be made suitable for the proposed residential land use with regard to the presence of soil contamination, provided the recommendations and advice of the report were adopted, and site preparation works are conducted in accordance with appropriate site management protocols and legislative requirements.

2.2 Regional Geotechnical Solutions (2012) – Geotechnical Investigation

With respect to site contamination associated with stockpiled materials present near the entrance to the site on the eastern side of the access road at the time of the investigation, RGS report (Ref: RGS00319.1-AB, dated 30 January 2012) made the following conclusions and recommendations:

- RGS has previously undertaken testing on some of the existing stockpiles in the eastern part of the site in accordance with the *Protection of the Environment Operations (Waste)*

Regulation 2005 – General Exemption Under Part 6, Clause 51 and 51A, The Recovered Aggregate Exemption (RAE) 2008 (since revised in 2014); and

- The results of the RAE testing indicated that the materials comply with RAE criteria which allows for the material to be used for road making activities, building, landscaping and construction works. The report concluded that these materials could therefore be re-used in future road making activities on the site.

A review of the RAE test results indicate that the material would comply with current RAE criteria and that conclusions made at the time of the report remain valid.

RGS report RGS00319.1-AB is presented in Appendix D.

2.1 Regional Geotechnical Solutions (2012) – Filling Observations & Testing

With respect to site filling works at the time of the observations and testing, RGS report (Ref: RGS00319.1-AD, dated 14 May 2013) made the following remarks:

- The site was being filled using sand won from dredging operations in nearby Wallis Lake;
- Issues such as acid sulphate soil potential in the dredged material have been dealt with separately, and the sand material being placed on the site was not acid sulphate soil;
- Filling of the site commenced in early September 2012 and continued until late November of that year;
- It was understood that filling operations would re-commence in February/March 2013, however, the filling operations had ceased, and may re-commence at some later date;
- The results of Perth Sand Penetrometer testing show very loose to loose sands in the top 30cm which is to be expected underlain by medium dense to very dense sands at up to 2.0m.

RGS report RGS00319.1-AD is presented in Appendix D.

3 SITE DESCRIPTION

3.1 Topography and Drainage

The site is rectangular in shape and is bound by Chapmans Road to the north, a former landscape supply yard and undeveloped land to the east and by undeveloped land to the south and west. It is located approximately 500m east of the Wallamba River. Site access is via an access road located near the eastern end of the property.

The site is situated on a low-lying Aeolian sandplain with the natural ground level being typically flat. It has been extensively filled including a large stockpile of dredged sand located in the central part of the site. Where fill is present, slope changes are of the order of 1° to 3° in various directions. Stockpiles of fill are generally constrained to the central part of the site. Several old structures such as sheds and picnic tables are present near the site entrance along with roof sheeting, concrete pipes and bollards, gangways, pontoons, treated pine and vegetation.

The eastern and western ends of the site had been recently cleared of thick vegetation with mulching works in progress at the time of the field investigations. Water was ponding in these areas at the time of the field investigations.

The western end of the site was previously inaccessible due to the presence of the steep fill batter grading down to the low-lying swampy natural ground level which was heavily vegetated prior to clearing works. Slopes to the west were 8° to 10° at the southern end of the fill batter, 6° to 8° and 4° to 6° along the central and northern parts of the fill batter respectively.

Site surface elevations vary from about RL1m to about RL3m.

Drainage of the site will be primarily via infiltration into the upper sandy soils. However, given the extensive filling some overland flow is also anticipated.

Vegetation predominantly comprised long grass, weeds, reeds and shrubs in the filled areas. The ground surface was covered by fallen vegetation following clearing at the eastern and western ends of the site.

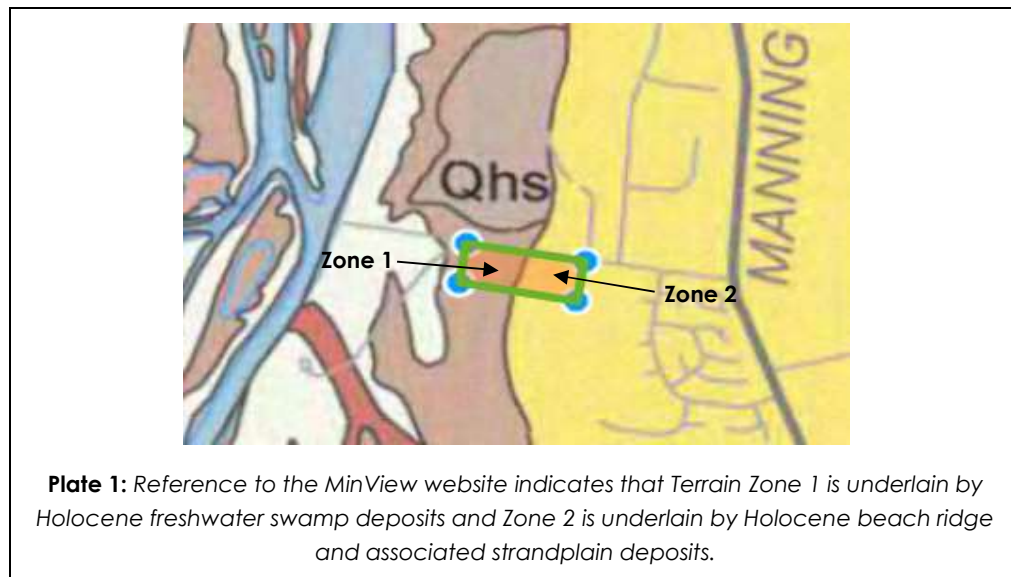
Trafficability was average to poor via 4WD vehicle.

3.2 Geology

Based on the topographic conditions, the site has been divided into two terrain zones. Reference to the MinView website indicates that the underlying geology varies with each terrain as outlined below:

- Terrain Zone 1: The western half of the site is underlain by Holocene freshwater swamp deposits comprising organic mud, peat, clay, silt and marine sand; and
- Terrain Zone 2: The eastern half of the site is underlain by Holocene beach ridge and associated strandplain deposits comprising marine sand, shell and gravel.

The geology of the site is presented in Plate 1 below:



The materials encountered during the investigation are summarised in Table 2 and Table 3. Further details are presented on the attached engineering logs (Appendix A).

Table 2: Summary of Geotechnical Units

Unit	Material	Material Description
UNIT 1A	Fill (Roadbase)	Sandy Gravelly CLAY, low plasticity, gravel, coarse grained, sand fine to medium grained, some roots
UNIT 1B	Fill	Sandy GRAVEL or Clayey Gravelly SAND, fine to coarse grained, sand, fine to medium grained, clay, low to medium plasticity, some cobbles, some roots
UNIT 1C	Fill (Rock aggregate)	Sandy Gravel, fine to coarse grained, sand, fine to medium grained, lots of rock aggregate, some cobbles and boulders, trace roots
UNIT 1D	Fill/Topsoil	SAND or Silty SAND, fine to coarse grained, some roots
UNIT 1E	Fill (Asphalt)	Clayey Gravel, coarse grained, clay, low plasticity, lots of asphalt pieces
UNIT 1F	Fill (Dredged Sand)	SAND, fine to medium grained, some shells
UNIT 2	Topsoil	Clayey SAND, fine to medium grained, clay, low plasticity, some roots
UNIT 3	Aeolian Soil	SAND, fine to coarse grained, medium dense, trace clay, low plasticity, trace roots
UNIT 4	Lightly Indurated Sand	Clayey SAND, fine to coarse grained, clay, low plasticity
UNIT 5	Alluvial Soil	Clayey SAND, fine to coarse grained, clay low plasticity

Table 3: Summary of Subsurface Profile

Test Pit	Depth of Material Layer (m)									
	UNIT 1A Fill (Roadbase)	UNIT 1B Fill	UNIT 1C Fill (Rock aggregate)	UNIT 1D Fill/Topsoil	UNIT 1E Fill (Asphalt)	UNIT 1F Fill (Dredged sand)	UNIT 2 Topsoil	UNIT 3 Aeolian Soil	UNIT 4 Lightly Indurated Sand	UNIT 5 Alluvial Soil
TP1	--	--	--	--	--	--	0.0 – 0.25	0.25 – ≥1.0	--	--
TP2	--	--	--	--	--	--	0.0 – 0.25	0.25 – ≥1.0	--	--
TP3	--	--	--	--	--	--	0.0 – 0.25	--	0.25 – ≥1.2	--
TP4	--	--	--	--	--	--	0.0 – 0.25	--	0.25 – ≥1.0	--
TP5	--	0.8 – 1.2	--	0.0 – 0.8	--	--	1.2 – 1.4	--	1.4 – ≥1.5	--
TP6	--	0.6 – 1.0	--	0.0 – 0.6	--	--	1.0 – 1.2	--	1.2 – ≥1.5	--
TP7	0.0 – 1.1	--	--	--	--	--	1.1 – ≥1.4	--	--	--
TP8	--	0.0 – 0.7	--	--	--	0.7 – 1.1	1.1 – ≥1.3	--	--	--
TP9	--	--	--	--	--	--	0.0 – 0.2	0.25 – ≥0.8	--	--
TP10	1.5 – ≥1.8*	0.0 – 0.15	0.15 – 1.5	--	--	--	--	--	--	--
TP11	--	--	--	0.0 – 0.25	--	--	0.25 – 0.5	0.5 – 0.8	0.8 – ≥0.9	--
TP12	0.0 – 0.35	0.55 – 0.9	--	--	0.35 – 0.55	--	0.9 – 1.1	--	1.1 – ≥1.2	--
TP13	0.25 – 0.5	0.0 – 0.25; 0.5 – 0.85	--	--	--	--	0.85 – ≥1.0	--	--	--
TP14	--	--	--	0.0 – 0.8	0.8 – 1.3	--	1.3 – ≥1.5	--	--	--
TP15	--	--	--	0.0 – 0.9	0.9 – 1.3	--	1.3 – ≥1.5	--	--	--
TP16	--	0.8 – 1.0; 1.2 – 1.4	--	0.0 – 0.8	1.0 – 1.2	--	1.4 – ≥1.6	--	--	--
TP17	0.2 – 0.75	0.0 – 0.2	--	--	--	--	0.75 – 1.0	--	--	--
TP18	--	0.0 – 0.25	--	--	--	--	--	0.25 – ≥0.5	--	--
TP19	--	0.0 – 0.8	--	--	--	--	--	0.8 – ≥1.0	--	--
TP20	--	--	--	--	--	--	0.0 – 0.3	--	0.3 – ≥0.6	--

Test Pit	Depth of Material Layer (m)									
	UNIT 1A Fill (Roadbase)	UNIT 1B Fill	UNIT 1C Fill (Rock aggregate)	UNIT 1D Fill/Topsoil	UNIT 1E Fill (Asphalt)	UNIT 1F Fill (Dredged sand)	UNIT 2 Topsoil	UNIT 3 Aeolian Soil	UNIT 4 Lightly Indurated Sand	UNIT 5 Alluvial Soil
TP21	--	--	--	--	--	--	0.0 – 0.25	--	0.25 – ≥0.5	--
TP22	--	--	--	0.0 – 0.15	--	0.15 – 0.8	0.8 – ≥1.0	--	--	--
TP23	--	0.15 – 1.3	--	0.0 – 0.15	--	--	1.3 – ≥1.5	--	--	--
TP24	--	--	--	0.0 – 0.2	--	0.2 – 1.1	1.1 – ≥1.3	--	--	--
TP25	--	0.0 – ≥1.8**	--	--	--	--	--	--	--	--
TP26	--	--	--	--	--	0.0 – 1.2	1.2 – ≥1.5	--	--	--
TP27	--	--	--	--	--	0.0 – 0.5	0.5 – 0.7	--	0.7 – ≥1.0**	--
TP28	--	0.4 – 0.6	--	0.0 – 0.4	--	0.6 – ≥1.3**	--	--	--	--
TP29	--	--	--	0.0 – 0.3	--	0.3 – 2.3	2.3 – ≥2.4**	--	--	--
TP30	--	--	--	0.0 – 0.25	--	0.25 – ≥2.0**	--	--	--	--
TP31	--	--	--	0.0 – 0.25	--	0.25 – ≥1.6**	--	--	--	--
TP32	--	--	--	0.0 – 0.3	--	0.3 – ≥2.5**	--	--	--	--
TP33	--	--	--	0.0 – 0.3	--	0.3 – 2.5	2.5 – ≥2.6**	--	--	--
TP34	--	--	--	0.0 – 0.25	--	0.25 – ≥2.5**	--	--	--	--
TP35	--	--	--	0.0 – 0.25	--	0.25 – ≥1.8**	--	--	--	--
TP36	--	--	--	0.0 – 0.45	--	--	0.45 – 0.65	--	0.65 – ≥1.0	--
TP37	--	--	--	0.0 – 0.5	--	--	0.5 – 0.7	--	0.7 – ≥1.0	--
TP38	--	0.15 – 0.8	--	0.0 – 0.15	--	--	0.8 – ≥1.0	--	--	--
TP39	--	--	--	0.0 – 0.2	--	0.2 – 2.0	2.0 – ≥2.5**	--	--	--
TP40	--	0.0 – 0.9	--	--	--	--	0.9 – 1.1	1.1 – ≥1.4**	--	--
TP41	--	--	--	--	--	0.0 – 0.7	--	0.7 – ≥0.8**	--	--
TP42	--	--	--	0.0 – 0.3	--	0.3 – 2.5	2.5 – ≥2.6**	--	--	--

Test Pit	Depth of Material Layer (m)									
	UNIT 1A Fill (Roadbase)	UNIT 1B Fill	UNIT 1C Fill (Rock aggregate)	UNIT 1D Fill/Topsoil	UNIT 1E Fill (Asphalt)	UNIT 1F Fill (Dredged sand)	UNIT 2 Topsoil	UNIT 3 Aeolian Soil	UNIT 4 Lightly Indurated Sand	UNIT 5 Alluvial Soil
TP43	--	--	--	0.0 – 0.25	--	0.25 – 2.0	2.0 – ≥2.1**	--	--	--
TP44	--	--	--	0.0 – 0.2	--	0.2 – 2.0	2.0 – ≥2.1**	--	--	--
TP45	--	--	--	0.0 – 1.0	--	1.0 – 2.0	2.0 – ≥2.1**	--	--	--
TP46	--	0.2 – 0.8	--	0.0 – 0.2	--	--	0.8 – ≥1.0	--	--	--
TP47	--	0.0 – 0.9	--	--	--	--	0.9 – ≥1.0	--	--	--
TP48	--	--	--	--	--	--	0.0 – 0.25	--	--	0.25 – ≥1.6**
TP49	--	--	--	--	--	--	0.0 – 0.25	--	--	0.25 – ≥1.6**
TP50	--	--	--	--	--	--	0.0 – 0.25	--	--	0.25 – ≥1.6**
TP51	--	--	--	--	--	--	0.0 – 0.25	--	--	0.25 – ≥1.9**
TP52	--	--	--	--	--	--	0.0 – 0.25	--	--	0.25 – ≥2.1**
TP53	--	--	--	--	--	--	0.0 – 0.25	--	--	0.25 – ≥2.0**
TP54	--	--	--	--	--	--	0.0 – 0.25	--	--	0.25 – ≥1.0
TP55	--	--	--	--	--	--	0.0 – 0.25	--	--	0.25 – ≥1.0

Note: ≥ Indicates that base of material layer was not encountered

* Indicates that the test pit was terminated due to practical excavator refusal on rock

** Indicates that the test pit was terminated due to excavation collapse

-- Indicates that the material was not encountered at the test location

Groundwater inflow was encountered in the some of the test pits between 0.1m and 2.55m below ground surface during the limited time they remained open during the field investigations.

It should be noted that fluctuations in groundwater levels can occur as a result of seasonal variations, temperature, rainfall, and other similar factors, the influence of which may not have been apparent at the time of the assessment.

3.3 Hydrogeology

A groundwater bore search on the NSW Water Information website, <http://waterinfo.nsw.gov.au/gw/> indicates that there is a licenced groundwater bore (with available work summary) located approximately 400 m to the south-east of the site as shown below.



Groundwater bore GW200229 was drilled to a depth of 9m on 1 June 2002, is licenced for recreational purposes with a standing water level of 2.7m. The driller's log indicates that the soil profile comprised sand from 0m to 9m.

3.4 Site Observations

Observations from a contamination perspective made during the site visit on 4 October 2022 are summarised below:

- The far eastern and western ends of the site had recently been cleared with felled vegetation scattered across the ground surface and mulching works in progress;
- The central part of the site has been extensively filled with dredged sand and other materials;
- There is an access track from Chapmans Road to the central part of the site. A number of old structures (such as sheds and picnic tables) are located on the southern side of the access track;
- There are a number of stockpiles of various other materials such as rock aggregate, road base, gravel, vegetation and foreign materials located in the central and eastern parts of the site (in the vicinity of the access track); and

- Stockpiles of foreign materials included concrete pipes and bollards, treated pine, pontoons, a gangway, and roof sheeting materials.

A selection of images of the site is presented below.



Looking south from Chapmans Road along the site access road showing an old shed structure and picnic table on the sight.



Looking north showing stockpiles of dredged sand in the central part of the site.



Looking east showing stored roof sheeting and a gangway located in the eastern side of the access road.



Looking west showing stored concrete bollards and pipes and an old shed in the background located on the western side of the access road.



Looking south showing stored pontoons and a gangway located at the southern end of the access road.



Looking north showing the western end of the site which had recently been cleared of thick vegetation.

3.5 Additional Site History Information

The Council RFI states that the DSI investigate alleged past use of the land (including but not limited to an abattoir).

RGS found no evidence to support the suggestion that the site had been previously used as an abattoir or slaughterhouse during the site history review undertaken during the preliminary site contamination assessment. Anecdotally, reports of previous use for such a facility were unknown and it is anticipated that if such a facility had been operating on the site that evidence of large sheds or other structures, livestock loading ramps and enclosures, vehicle access roads etc would have been identified in historical photographs prior to 1978. The historical aerial photograph review dating back to 1952 which was undertaken during the preliminary assessment indicated that the first developments on the site were sheds constructed between 1978 and 1997 with some of the sheds being removed between 1997 and 2001.

In addition, an internet search for historical evidence of the land being used as an abattoir or slaughterhouse was undertaken. Historical information from the internet search suggests that George Chapman purchased 40 acres of land on the bank of Tuncurry Creek (also known as "Miller's Mistake"; the eastern arm of the Wallamba River) and built a slaughterhouse.

The land where this information indicates the slaughterhouse was located is on the bank of the Wallamba River which is located approximately 500m to the west of the subject site. Whilst it appears that an abattoir or slaughterhouse was present near to the site, there is no evidence or information to suggest that a facility was located on the subject site. On the basis of this information, in conjunction with the historical aerial photograph review, the likelihood that the land has been used for such activities in the past is considered to be low. The Conceptual Site Model presented in Section 7.4 has been updated to include this information.

4 FIELD and LABORATORY INVESTIGATIONS

4.1 Sampling Plan

The NSW EPA (2022) *Sampling Design: Contaminated Land Guidelines* recommend that approximately fifty-five sampling points are required for characterisation of the contamination status of the proposed development area (approximately 5 hectares);

Based on the above, 66 soil samples were collected from 55 test pits (TP1 to TP55) and 6 surface soil sample locations (SS101 to SS106).

4.2 Field Work

Field work for the assessment was undertaken on 4, 5, 7 and 12 October 2022 by an Environmental Engineer from RGS and included:

- Site walkover of the AEC's to assess visible surface conditions and identify evidence of contamination, or past activities that may cause contamination;
- Logging and sampling of 55 test pits across the site using a track mounted excavator;
- Collection of 66 soil samples from the test pits and surface sample locations; and
- Installation of 4 groundwater monitoring wells and collection of groundwater samples from each of the wells.

The locations of the sampling points are shown on Figure 3. They were obtained on site and located by measurement relative to existing site features.

Soil samples were taken from fill and natural soil using disposable gloves directly from the excavator bucket (test pits) and using hand tools (surface sample locations) which were decontaminated between sampling points using Decon90 detergent and deionised water. The samples were collected in acid-rinsed 250mL glass jars and placed in an ice-chilled cooler box.

4.3 Laboratory Analysis

Samples were transported under chain-of-custody conditions to ALS Laboratory Group, a NATA accredited specialist chemical testing laboratory, to be analysed for the following suite of contaminants;

Soil:

- Polycyclic Aromatic Hydrocarbons (PAH);
- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethyl-benzene, Xylenes (BTEX);
- Organochlorine and Organophosphorus Pesticides (OC/OPs);
- Heavy metals (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, and zinc);
- Polychlorinated Biphenyls (PCB); and
- Presence of asbestos.

Groundwater:

- Polycyclic Aromatic Hydrocarbons (PAH);
- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethyl-benzene, Xylenes (BTEX);
- Organochlorine and Organophosphorus Pesticides (OC/OPs);
- Heavy metals (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, and zinc);
- Polychlorinated Biphenyls (PCB); and
- Physical parameters (pH, electrical conductivity, total suspended solids & dissolved oxygen)

The soil and groundwater results are presented in Appendix B.

4.4 Data Quality Objectives

The Data Quality Objectives (DQOs) are presented in Table 4.

Table 4 – Data Quality Objectives

DQO	Details of Process
State the Problem	A DSI is required to assess the suitability of the site for the proposed future residential land use from a contamination perspective.
Identify the Decision	The principal study questions re: • What is the nature and extent of soil contamination in the identified AECs (if any)?; and • Is the land suitable for the proposed residential development from a contamination viewpoint?
Identify Inputs to the Decision	The primary inputs are: • Review of previous geo-environmental and geotechnical reports • Site walkover assessment of AEC's; • Chemical analysis of selected soil and groundwater samples; and • Results summary.
Define the Boundary of the Assessment	• The spatial boundaries are limited to the AEC's and property boundaries of the subject site as shown on Figures 2 and 3; • The investigation and screening levels for a Residential A land use scenario.
Develop a Decision Rule	The decision rules for the investigation are:

	• If concentrations of contaminants in soil exceed the adopted investigation and screening levels for a Residential A land use scenario, then further assessment may be required; • If concentrations of contaminants in groundwater exceed the adopted investigation and screening levels for vapour intrusion, the protection of 95% of species for marine water aquatic ecosystems and guidelines for managing risks in recreational water criteria, then further assessment may be required. Decision criteria for QA/QC measures are defined in Section 5. A decision on the acceptance of analytical data will be made on the basis of the data quality indicators (DQIs) in the context of precision, accuracy, representativeness, completeness and comparability (PARCC) parameters as follows: • Precision: NATA registered laboratories were used following NATA endorsed methods. An appropriate number of intra-laboratory samples were collected and analysed (following ASC NEPM guidance), the results of which are considered to be satisfactory; • Accuracy: The laboratory limit or reporting (LOR) was appropriate for the screening criteria utilised. NATA registered laboratories were used following NATA endorsed methods including appropriate method blanks, laboratory control samples, laboratory spikes and duplicates the results of which are considered to be satisfactory. • Representativeness – The samples were received by the laboratories in good condition. The data obtained is considered to be representative of the soils and groundwater present on site; • Completeness – Experienced field staff were utilised to undertake the sampling and keep appropriate documentation. Samples were in proper custody between the field and reaching the laboratory. The laboratories performed the tests requested. The data obtained from the field investigations is considered to be relevant and usable; and • Comparability – Sample holding times were met and samples were properly and adequately preserved. Field sampling and handling procedures were followed. The data collected is considered to be comparable.
Specify Acceptable Limits on Decision Errors	• Acceptable limits for QA/QC measures are defined in Section 5; • Acceptable investigation and screening levels are those for a Residential A land use scenario; and • Specific limits are in accordance with the appropriate NSW EPA guidelines including indicators of data quality and standard procedures for field sampling and handling.

Optimise the Design for Obtaining Data	Based on the above steps of the DQO process. The design for obtaining the required data (i.e proposed field and laboratory investigations) is presented in Section 4.1.
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5 GUIDELINES AND ASSESSMENT CRITERIA

5.1 Soil

Assessment as outlined in NSW EPA *Guidelines for Consultants Reporting on Contaminated Land (2020)*.

To evaluate results, and for guidance on assessment requirements, the assessment will adopt the guidelines provided in the *National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM 2013)*. The ASC NEPM document provides a range of guidelines for assessment of contaminants for various land use scenarios. It is understood that the future land use for the site is residential. As such, comparison with the ASC NEPM guideline Health Investigation Levels (HIL) for Residential A land use is considered appropriate for the site. In accordance with the NEPM guideline the following criteria will be adopted for this assessment:

- Health Investigation Levels (HILs) for residential 'A' land use (HIL-A) were used to assess the potential human health impact of heavy metals and polycyclic aromatic hydrocarbons (PAHs);
- Health Screening Levels (HSLs) for coarse textured (sand) or fine textured (silt and clay) soils on a residential site were adopted as appropriate for the soils encountered to assess the potential human health impact of petroleum hydrocarbons and benzene, toluene, ethylbenzene and xylene (BTEX) compounds;
- Ecological Investigation Levels (EILs) for residential land use were used for evaluation of the potential ecological / environmental impact of heavy metals and PAHs;
- Ecological Screening Levels (ESLs) for coarse textured (sand) soils or fine textured (silt and clay) soils on a residential land use site were adopted as appropriate for the soils encountered, to assess the potential ecological / environmental impact of petroleum hydrocarbons and BTEX compounds.

In accordance with NEPM 2013, exceedance of the respective criteria does not necessarily deem that remediation or clean-up is required but is a trigger for further assessment of the extent of contamination and associated risks.

5.2 Groundwater

The NEPM 2013 provides a series of Groundwater Investigation Levels (GILs) for the protection of drinking water or aquatic ecosystems, as appropriate based on down-gradient recipients of groundwater emanating from the site. For assessing groundwater quality therefore, it is first necessary to assess the beneficial uses or sensitive receptors of groundwater down-gradient of the site being assessed.

As discussed in Section 3.1, the most sensitive receptors in the likely direction of groundwater flow are the aquatic ecosystems of the Wallamba River which is located approximately 500m to the

west of the site. It is therefore reasonable to adopt GIL's aimed at protecting the aquatic ecosystem. On this basis, the results of groundwater sampling and analyses were evaluated against ANZECC 2000 criteria for protection of 95% of species for marine water ecosystems as the Wallamba River is tidally influenced with marine water from the Pacific Ocean. The guidelines apply to water entering an ecosystem and are therefore conservative values for assessment of groundwater. In addition, the results were evaluated against recreational human health screening criteria presented in Section 9 of the National Health and Medical Research Council (NHMRC) 2008, Guidelines for Managing Risks in Recreational Water.

Groundwater HSLs from the NEPM document have been utilised to assess potential risks associated with hydrocarbon vapour intrusion from the groundwater regime.

6 QUALITY ASSURANCE / QUALITY CONTROL

6.1 Soil

Samples were obtained using industry accepted protocols for sample treatment, preservation, and equipment decontamination. Sampling equipment was decontaminated between sample locations and a clean pair of nitrile gloves used for the collection of each sample into laboratory supplied glass sampling jars.

Samples were placed on ice on-site and maintained on ice during transport to the testing laboratories. Seven duplicate samples were collected and submitted to the laboratory for analysis for quality control purposes as follows:

- Duplicate (D1) – Replicate of primary sample TP5 0.8 – 1.0m;
- Duplicate (D2) – Replicate of primary sample TP12 0.4 – 0.5m;
- Duplicate (D3) – Replicate of primary sample TP23 0.2 – 0.4m;
- Duplicate (D4) – Replicate of primary sample TP42 0.0 – 0.2m;
- Duplicate (D5) – Replicate of primary sample TP52 0.0 – 0.2m;
- Duplicate (D6) – Replicate of primary sample SS101 0.0 – 0.2m; and
- Duplicate (D7) – Replicate of primary sample SS103 0.0 – 0.2m.

Comparison between the primary and duplicate samples are presented in the results summary table in Appendix B.

The Relative Percent Differences (RPDs) were calculated for the duplicate samples and are presented in the results summary table in Appendix B.

The duplicate RPDs were within the control limit of 40% and indicated generally good correlation between the primary and duplicate samples with the following exceptions:

- PAH and Chromium in sample D1;
- TRH C10-C16, C16-34 and Total TRH in sample D2 and D4;
- Total TRH in sample D5; and
- Total TRH and Chromium, Copper and Zinc in sample D6.

It is noted that low analyte concentrations exaggerate the percentage differences with respect to small total concentration differences, therefore where results for the primary and duplicate, were less than 10 times the laboratory limit of reporting (LOR), the RPDs have been disregarded. Each of the RPD's which exceeded the 40% control limit as outlined above were therefore disregarded on

this basis with the exception of Zinc in sample D6. The Zinc RPD exceedance recorded in sample D6 is likely to be attributed to the uneven distribution of the contaminant within the fill. As such, this RPD is not considered to affect the useability of the result.

One rinsate sample (RINSATE1) was collected from the hand tools to assess the efficacy of the decontamination techniques. Analysis of the rinsate sample indicated that it was free of contaminants.

In addition to the field quality control procedures, the laboratory conducted internal quality control testing including surrogates, blanks, and laboratory duplicate samples. The results are presented with the laboratory test results in Appendix B.

All laboratory quality control data is within acceptable limits for the tests carried out. Therefore, on the basis of the results of the field and laboratory quality control procedures and testing, the data is considered to reasonably represent the concentrations of contaminants in the soils at the sample locations at the time of sampling and the results can be adopted for this assessment.

6.2 Groundwater

Samples were obtained using industry accepted protocols for sample treatment, preservation, and equipment decontamination. Sampling and monitoring equipment were decontaminated between sample locations and a clean pair of nitrile gloves used for the collection of each sample into laboratory supplied sample bottles.

Samples were placed on ice on-site and maintained on ice during transport to the testing laboratories.

One intra-laboratory duplicate sample identified as D101 (duplicate of primary sample MW1) was submitted to the laboratory for analysis for quality control purposes.

Comparison between the primary and duplicate samples are presented in the results summary tables in Appendix B.

The Relative Percent Differences (RPDs) were calculated for the duplicate sample and presented in the results summary table in Appendix B. The RPDs were within the control limit of 40% and indicated good correlation between the primary and duplicate samples.

In addition to the field quality control procedures, the laboratory conducted internal quality control testing including surrogates, blanks, and laboratory duplicate samples. The results are presented with the laboratory test results in Appendix B.

All laboratory quality control data is within acceptable limits for the tests carried out. Therefore, on the basis of the results of the field and laboratory quality control procedures and testing, the data is considered to reasonably represent the concentrations of contaminants in the groundwater at the sample locations at the time of sampling and the results can be adopted for this assessment.

7 CONTAMINATION ASSESSMENT – RESULTS

7.1 Subsurface Conditions

The soil types recorded in samples obtained from the test pits are summarised below in Table 5.

Table 5: Summary of Subsurface Conditions

Sample ID	Description
TP7 0.5 – 0.7m, TP12 0.1 – 0.3m, TP17 0.3 – 0.5m	Fill (Roadbase) – Sandy Gravelly CLAY, low plasticity, gravel, coarse grained, sand fine to medium grained, some roots
TP5 0.8 – 1.0m, TP6 0.7 – 0.9m, TP8 0.4 – 0.6m, TP13 0.5 – 0.7m, TP16 1.2 – 1.4m, TP18 0.0 – 0.2m, TP19 0.1 – 0.3m, TP23 0.2 – 0.4m, TP25 0.4 – 0.6m, TP38 0.2 – 0.4m, TP40 0.2 – 0.4m, TP47 0.3 – 0.5m	Fill - Sandy GRAVEL or Clayey Gravelly SAND, fine to coarse grained, sand, fine to medium grained, clay, low to medium plasticity, some cobbles, some roots
TP10 0.3 – 0.5m	Fill (Rock aggregate) - Sandy Gravel, fine to coarse grained, sand, fine to medium grained, lots of rock aggregate, some cobbles and boulders, trace roots
TP11 0.0 – 0.2m, TP15 0.2 – 0.4m, TP24 0.0 – 0.1m, TP28 0.1 – 0.3m, TP31 0.0 – 0.2m, TP33 0.1 – 0.3m, TP36 0.0 – 0.2m, TP37 0.1 – 0.3m, TP38 0.0 – 0.1m, TP42 0.0 – 0.2m, TP45 0.1 – 0.3m, SS101 0.0 – 0.2m, SS102 0.0 – 0.2m, SS103 0.0 – 0.2m, SS104 0.0 – 0.2m, SS105 0.0 – 0.2m, SS106 0.0 – 0.2m	Fill / Topsoil - SAND or Silty SAND, fine to coarse grained, some roots

Sample ID	Description
TP12 0.4 – 0.5m, TP14 0.9 – 1.1m	Fill (Asphalt) - Clayey Gravel, coarse grained, clay, low plasticity, lots of asphalt pieces
TP22 0.2 – 0.4m, TP24 0.3 – 0.5m, TP26 0.3 – 0.5m, TP27 0.2 – 0.4m, TP29 0.4 – 0.6m, TP30 0.4 – 0.5m, TP31 0.3 – 0.5m, TP32 0.4 – 0.6m, TP34 0.6 – 0.8m, TP35 0.8 – 1.0m, TP39 0.3 – 0.5m, TP41 0.0 – 0.2m, TP43 0.3 – 0.5m, TP44 0.3 – 0.5m	Fill (Dredged sand) – SAND, fine to medium grained, some shells
TP1 0.0 – 0.2m, TP2 0.0 – 0.2m, TP3 0.0 – 0.2m, TP4 0.0 – 0.2m, TP7 1.1 – 1.3m, TP9 0.0 – 0.1m, TP20 0.0 – 0.2m, TP21 0.0 – 0.2m, TP46 0.0 – 0.1m, TP48 0.0 – 0.2m, TP49 0.0 – 0.2m, TP50 0.0 – 0.2m, TP51 0.0 – 0.2m, TP52 0.0 – 0.2m, TP53 0.0 – 0.2m, TP54 0.0 – 0.2m, TP55 0.0 – 0.2m	Topsoil – Clayey SAND, fine to medium grained, clay, low plasticity, some roots

7.2 Field Observations – Groundwater

Qualitative observations of extracted groundwater quality were made in the field during groundwater sampling (including water colour, turbidity, odour and sheen, if any). Groundwater sampling was undertaken by an engineer from RGS on 12 October 2022.

A summary of the observations is outlined below. Further information of the groundwater qualitative observations is shown on the sampling field sheets in Appendix C.

- Depth to groundwater in the wells prior to purging was 0.1m, 0.2m, 0.1m and 0.5m below ground surface in wells MW1, MW2, MW3 and MW4 respectively;

- The groundwater was brown to dark brown in colour with turbidity increasing during purging;
- A slight to moderate sulfuric odour was detected on extracted groundwater from each well; and
- No hydrocarbon odour or sheening was observed on extracted groundwater from each well during sampling.

7.3 Laboratory Test Results

7.3.1 Soil

An appraisal of the laboratory test results presented in Appendix B is provided below with reference to the adopted soil investigation and screening levels discussed in Section 5.

- Concentrations of heavy metals were either below the laboratory limit of reporting or below the adopted health investigation criteria for a Residential (A) site in each of the samples analysed;
- Concentrations of BTEX, PCB and OC/OP pesticides were below the laboratory limit of reporting in each of the samples analysed;
- Concentrations of Total PAH were either below the laboratory limit of reporting or below the adopted health investigation criteria for a Residential (A) site in each of the samples analysed;
- Concentrations of Benzo-a-pyrene (B-a-p) were either below the laboratory limit of reporting or below the adopted health investigation criteria for a Residential (A) site in each of the samples analysed;
- Concentrations of TRH were either below the laboratory limit of reporting or below the adopted health investigation criteria for a Residential (A) site in each of the samples analysed; and
- Asbestos was not detected in each of the soil samples analysed;

7.3.2 Groundwater

An appraisal of the groundwater laboratory test results presented in Appendix B is provided below with reference to the adopted groundwater investigation and screening levels discussed in Section 5:

- Concentrations of TRH, PAH and BTEX were below the laboratory limit of reporting in each of the samples analysed;
- Concentrations of PCB and OC/OP Pesticides were below the laboratory limit of reporting in each of the samples analysed;
- Concentrations of Arsenic exceeded the adopted recreational screening level sample MW1, MW2 and MW4. The remaining sample recorded concentrations of Arsenic which were below the adopted recreational screening level;

- Concentrations of Copper were below the laboratory limit of reporting in each of the samples analysed with the exception of sample MW3 which exceeded the adopted ecological investigation and screening levels;
- Concentrations of Nickel were either below the laboratory limit of reporting or below the adopted investigation and screening levels in each of the samples analysed with the exception of sample MW3 which exceeded the adopted investigation and screening levels;
- Concentrations of Zinc were below the adopted investigation and screening levels in samples MW2 and MW4 and exceeded the ecological adopted investigation and screening levels in samples MW1 and MW3; and
- Concentrations of Cadmium, Chromium, Lead and Mercury were either below the laboratory limit of reporting or below the adopted investigation and screening levels in each of the samples analysed.

7.4 Conceptual Site Model

Based on the site observations and knowledge obtained about site activities as outlined above, an updated conceptual site model (CSM) has been developed.

7.4.1 Potential Sources of Contamination

Potential Areas of Environmental Concern (AECs) and Chemicals of Concern (COCs) identified for the assessment are outlined in Table 6.

Table 6: Potential AECs and COCs

AEC	Mode of Potential Contamination	Potential COCs	Likelihood of Contamination
AEC1: Soils in vicinity of old sheds/structures	Potential spillage or leaks of chemicals from stored containers including cleaning fluids, fuels/oils, herbicides/pesticides. Potential hazardous building materials.	Heavy Metals, TPH, BTEX, PAH, PCB, OC/OPP, and asbestos	Moderate
AEC2: Stored concrete pipes and bollards	Potential hazardous building materials.	Asbestos and lead	Low
AEC3: Stored roof sheeting	Potential hazardous building materials.	Heavy Metals, and asbestos	Low

AEC4: Stored pontoons and vegetation	Potential runoff of fuels/oils and herbicides/pesticides into site soils	Heavy Metals, TPH, BTEX, PAH, and OC/OPP	Low
AEC5: Stored treated pine	Potential runoff of timber preservative contaminants into site soils	CCA and OC/OPP	Low to moderate
AEC6: Fill stockpiles	Presence of stockpiles of imported fill of unknown origin	Heavy Metals, TPH, BTEX, PAH, PCB, OC/OPP and asbestos	Low
AEC7: Former abattoir	Suggestion from Midcoast Council that the site or part thereof may have been used as an abattoir or slaughterhouse. Presence of contaminated soils from vehicles, machinery, livestock, facility washdowns, waste products etc.	Heavy Metals, TPH, BTEX, PAH, Pathogens	Low to very low

The approximate locations of the AEC's are shown on Figure 3.

The presence of measurable concentrations of chemical substances does not automatically imply that the site will cause harm. In order for this to be the case, an exposure route must be present allowing a source to adversely affect a receptor.

7.4.2 Potential Exposure Pathways and Receptors

Based on the site observations and knowledge obtained about site activities as outlined above, potential exposure pathways and receptors identified for the assessment are summarised in Table 7.

Table 7: Potential Exposure Pathways and Receptors

Chemicals of Concern	Key Pathways	Key Receptors
Asbestos, heavy metals, pathogens	Generation of dust during earthworks which is inhaled	Onsite - Construction and site workers Offsite – Humans on adjacent sites
Asbestos, heavy metals, TPH, BTEX, PAH, PCB, OC/OPP, CCA, pathogens	Skin contact / ingestion, inhalation, plant uptake	Onsite - Construction and site workers, future site users, vegetation in landscaped areas
Heavy metals, TPH, BTEX, PAH, PCB, OC/OPP, CCA, pathogens	Surface runoff and leaching of soils	Offsite - Surface water ecosystems and users
<i>Heavy Metals - Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc</i> <i>BTEX - Benzene, Toluene, Ethylbenzene and Xylene</i> <i>TPH - Total Petroleum Hydrocarbons</i> <i>PAH – Polycyclic Aromatic Hydrocarbons</i> <i>PCB – Polychlorinated Biphenyls</i> <i>OC/OPP – Organochlorine and Organophosphorus Pesticides</i> <i>CCA – Copper Chrome Arsenate</i>		

7.5 Discussion

A DSI was required to assess the site's suitability for future residential land use from a contamination perspective and address items outlined on a RFI from Midcoast Council.

Historical information presented in the preliminary contamination assessment undertaken by RGS suggests that the majority of the imported fill which has been placed in the central part of the site comprises dredged sand from Wallis Lake. More recently, it appears that the site has been used by Council for storage of fill materials for road construction and equipment associated with parks and lake side infrastructure such as picnic tables, pontoons and a gangway. A number of the old sheds remain on the site in a state of disrepair which are located on the western side of the access road along with stored concrete pipes and bollards, treated pine and some felled vegetation.

An additional site history review was undertaken during the DSI due to the assertion from Council that the land may have been used as an abattoir or slaughterhouse. The additional review indicates that whilst it is likely that there was an abattoir or slaughterhouse present nearby during the late 1800's it was located approximately 500m to the west of the site on the bank of the Wallamba River and there was no evidence to suggest such activities occurred on the subject site.

On the basis of the previous and additional site history review, an updated CSM was prepared which included the identified AEC's (soils in the vicinity of the existing and former structures, stored equipment and materials, imported fill from unknown origin, and possible abattoir usage).

A review of relevant and available previous reports was also undertaken. The review supports the information as the imported sand having originated from Wallis Lake as dredged material, and that a previous RAE assessment of stockpiled material present near the site entrance which indicated that those materials would meet current RAE criteria and that report conclusions remain valid.

Fifty-five test pits were excavated across the site (including the stockpiles) and four groundwater monitoring wells were installed during the DSI. Soil samples were collected from the test pits and surface sample locations and a groundwater sample was collected from each well for subsequent laboratory analysis.

The results of the laboratory analysis of soil samples revealed concentrations of the chemicals of concern were either below the laboratory limit of reporting, or below the adopted health investigation criteria for a Residential A in each of the samples submitted for analysis.

The results of the laboratory analysis of groundwater samples collected from the four groundwater monitoring wells (MW1 to MW4) revealed concentrations of chemicals of concern exceeded the guideline criteria for Arsenic in MW1, Copper in MW3, Nickel in MW3 and Zinc in MW1 and MW4.

The groundwater quality results outlined above indicated that there are elevated concentrations of heavy metals at the site. Given the absence of potential sources of groundwater contamination, it is likely that the elevated heavy metals results are due to naturally occurring processes associated with the underlying hydrogeology and hydrogeological conditions.

With exception of clearing works at the far eastern and western ends, the site was in a similar state as to when the preliminary contamination assessment was undertaken. It is noted that a fragment of vinyl tile collected from the floor of one of the old sheds near the site entrance during the preliminary contamination assessment contained Chrysotile (white) asbestos.

On this basis, the conclusions and recommendations made during the preliminary assessment remain valid and are outlined in the section below.

7.6 Site Assessment Conclusions and Recommendations

The results indicate that the site soils and stockpiles of fill are suitable to remain onsite from a contamination perspective.

It is recommended that an Asbestos Management Plan be prepared by a suitably qualified person in accordance with the NSW WorkCover Code of Practice (How to Manage and Control Asbestos in the Workplace), to facilitate the removal of the identified ACM. This is likely to involve visual identification and removal of asbestos fragments from the site by licensed asbestos removal contractors. Additional sampling may be required if a significant proportion of fine asbestos material is detected during the removal works.

It is also recommended that the concrete pipes and bollards, roof sheeting, gangway, pontoons and treated pine logs be removed and disposed of at a licenced landfill or recycling facility; or stored at an alternative location.

On the basis of the elevated heavy metals present in groundwater, it is recommended that some ongoing periodic groundwater monitoring be undertaken to identify trend changes in groundwater quality.

Should any materials suspected of being contaminated (by way of visual or olfactory evidence) be encountered during development of the site, particularly in the vicinity of the former structures and stockpiled materials, it is recommended that advice from a suitable qualified and experienced environmental consultant be sought without delay.

Should any of the fill materials present onsite require removal off site, it is recommended that advice from a suitable qualified and experienced environmental consultant be sought to evaluate

whether additional sampling and testing is required in accordance with the *Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Excavated Natural Material (ENM) Order 2014* or alternatively, in accordance with *NSW EPA 2014 Waste Classification Guidelines*.

Material imported to the site for filling should be accompanied by either Virgin Excavated Natural Material (VENM) or ENM documentation.

Based on the results obtained in this investigation and the NEPM 2013 guidelines, it is considered that the site can be made suitable for the proposed residential land use with regard to the presence of soil contamination, provided the recommendations and advice of this report are adopted, and site preparation works are conducted in accordance with appropriate site management protocols and legislative requirements. In view of the findings of this DSI it is not considered necessary to prepare a remedial action plan (RAP) at this stage.

8 DISPOSAL OF MATERIALS

8.1 Waste Classification

It is understood that the site will be filled using the existing stockpiled materials. As discussed above the stockpiled materials present are suitable to remain on-site for re-use as fill from a contamination perspective. However, should some of the materials be deemed geotechnically or otherwise unsuitable, a waste classification to facilitate off-site disposal to a licensed landfill in accordance with *NSW EPA (2014) Waste Classification Guidelines* is presented below.

Table 2 of the '*Waste Classification Guidelines (2014)*' nominates a suite of analytes to be tested (Column 1) and also provides the maximum concentration (CT1) allowable within the soil for classification without the need for additional toxicity characteristics leaching procedure (TCLP) testing for both general solid waste (Column 2) and restricted solid waste (Column 3) for each analyte. Should the CT1 values be exceeded, the guidelines provide a Specific Contaminant Concentration (SCC) value to allow further evaluation of contaminant concentrations in conjunction with TCLP testing.

An evaluation of the laboratory test results for sampled soils against the waste classification guidelines outlined above are presented in the summary table in Appendix B.

Waste classification results indicate that the fill materials present on-site would classify as General Solid Waste and could be disposed of to a landfill licensed to accept to General Solid Waste.

Natural soils present below fill would classify as VENM.

9 LIMITATIONS

This report comprises the results of an investigation carried out for a specific purpose and client as defined in the document. The report should not be used by other parties or for purposes or projects other than those assumed and stated within the report, as it may not contain adequate or appropriate information for applications other than those assumed or advised at the time of its preparation. The contents of the report are for the sole use of the client and no responsibility or liability will be accepted to any third party. The report should not be reproduced either in part or in full, without the express permission of Regional Geotechnical Solutions Pty Ltd.

Contaminated site investigations are based on data collection, judgment, experience, and opinion. By nature, these investigations are less exact than other engineering disciplines. The findings presented in this report and used as the basis for the recommendations presented herein were obtained using normal, industry accepted practises and standards. To our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

Recommendations regarding ground conditions referred to in this report are estimates based on the information available at the time of its writing. Estimates are influenced and limited by the fieldwork method and testing carried out in the site investigation, and other relevant information as has been made available. In cases where information has been provided to Regional Geotechnical Solutions for the purposes of preparing this report it has been assumed that the information is accurate and appropriate for such use. No responsibility is accepted by Regional Geotechnical Solutions for inaccuracies within any data supplied by others.

If site conditions encountered during construction vary significantly from those discussed in this report, Regional Geotechnical Solutions Pty Ltd should be contacted for further advice.

This report alone should not be used by contractors as the basis for preparation of tender documents or project estimates. Contractors using this report as a basis for preparation of tender documents should avail themselves of all relevant background information regarding the site before deciding on selection of construction materials and equipment.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of

Regional Geotechnical Solutions Pty Ltd

Prepared by



Andrew Hills

Senior Environmental Engineer

Reviewed by



Steven Morton

Principal Geotechnical Engineer

Figures

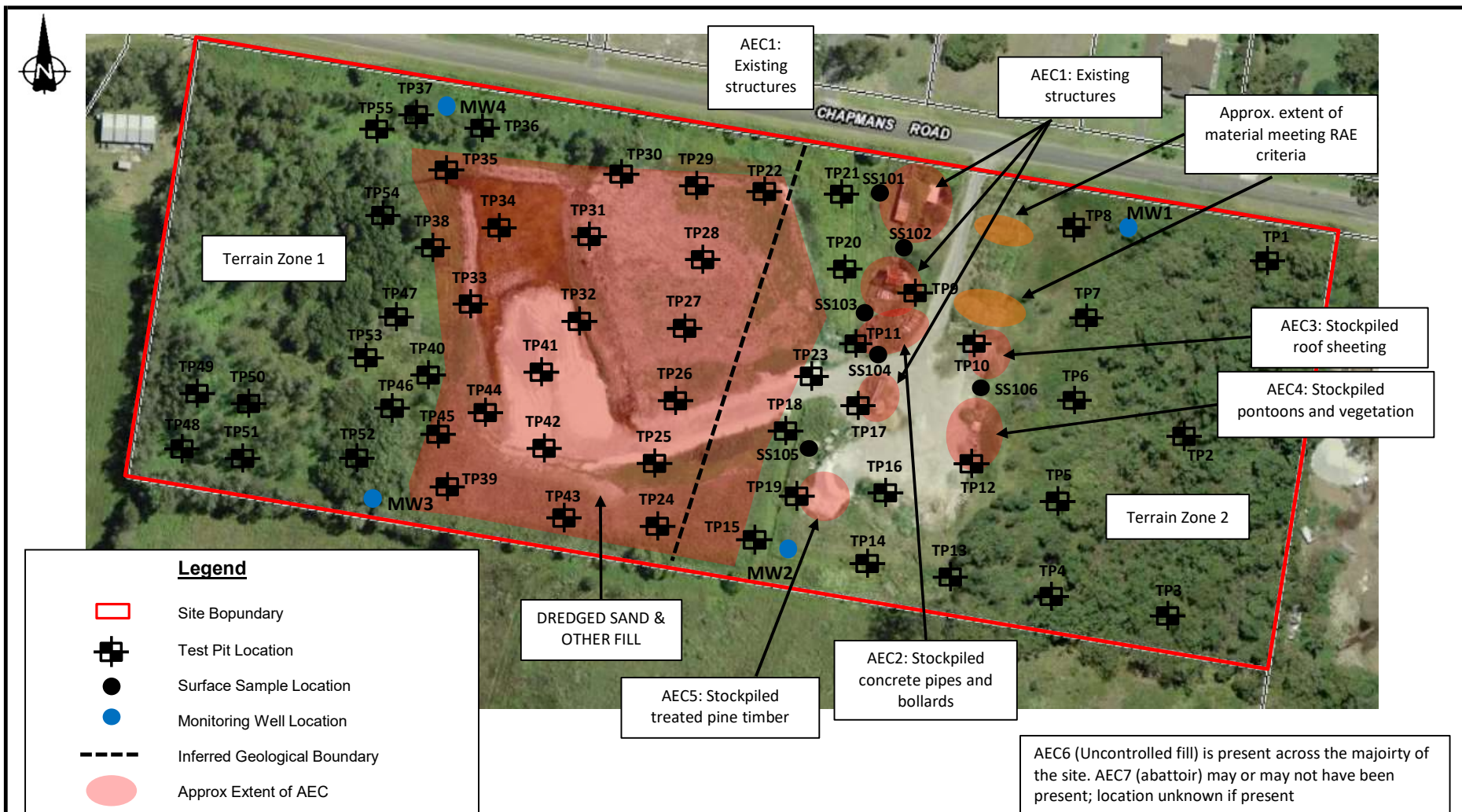


Site location

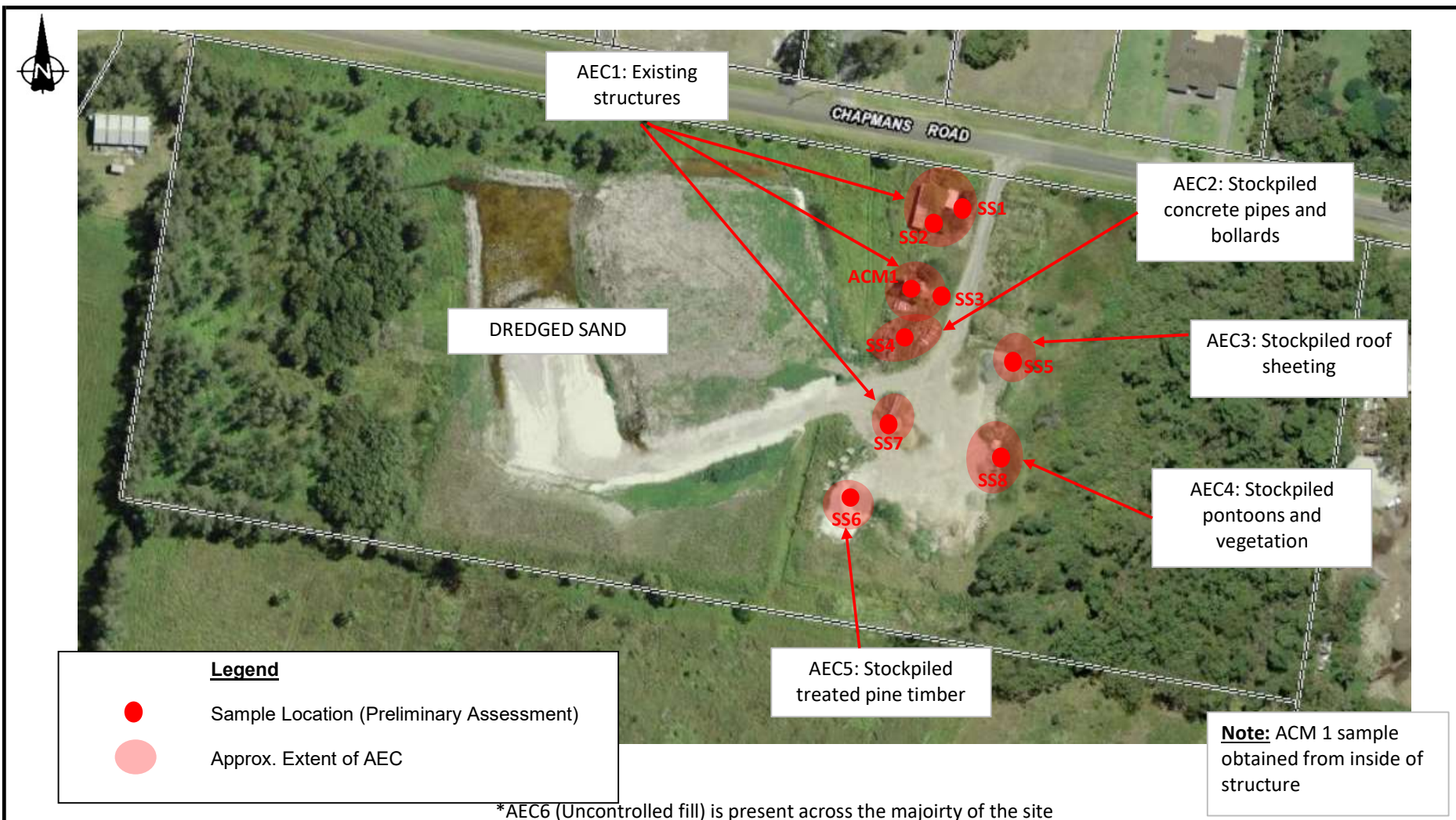


**REGIONAL
GEOTECHNICAL
SOLUTIONS**

Client:	Allam Property Group	Job No.	RGS03137.1
Project:	Proposed Manufactured Home Estate 40-80 Chapmans Road, Tuncurry	Drawn By:	APH
		Scale:	As Shown
		Date:	10-Nov-21
Title:	Site Location Plan	Drawing No.	Figure 1



 REGIONAL GEOTECHNICAL SOLUTIONS	Client:	Allam Property Group	Job No.	RGS03137.1
	Project:	Proposed Manufactured Home Estate	Drawn By:	APH
		40-80 Chapmans Road, Tuncurry	Scale:	As Shown
	Title:	Sample Location Plan - DSI	Date:	10-Nov-22
			Drawing No.	Figure 3



 REGIONAL GEOTECHNICAL SOLUTIONS	Client:	Allam Property Group	Job No.	RGS03137.1
	Project:	Proposed Manufactured Home Estate	Drawn By:	APH
		40-80 Chapmans Road, Tuncurry	Scale:	As Shown
	Title:	Sample Location Plan - Preliminary Contamination Assessment	Date:	10-Nov-22
			Drawing No.	Figure 4

Appendix A

Results of Field Investigations

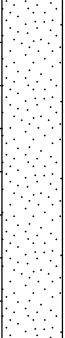


ENGINEERING LOG - TEST PIT

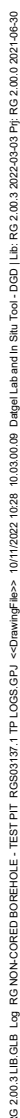
CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP1
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.5 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	4/10/2022	ES 0.20m				SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity, some roots	M				TOPSOIL
						SP	SAND: Fine to coarse grained, grey/pale grey					AEOLIAN
				0.5								
				1.0								
				1.00m			Hole Terminated at 1.00 m					
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
 Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
 Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
 Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
 Gradational or transitional strata		Field Tests		H	Hard	>400		
 Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



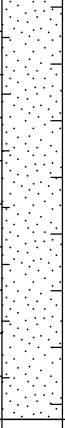


ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP3
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.5 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	 4/10/2022	ES 0.20m				SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity, some roots	M				TOPSOIL
						SC	Clayey SAND: Fine to coarse grained, brown/dark brown, clay, low plasticity, moderate sulfuric odour					LIGHTLY INDURATED SAND
							Hole Terminated at 1.20 m					

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
 Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
 Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
 Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
 Gradational or transitional strata		Field Tests		H	Hard	>400		
 Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

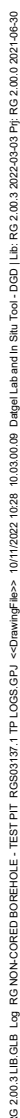
CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP4
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.5 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	4/10/2022	ES 0.20m				SC	TOPSOIL: Clayey SAND, dark grey/black, clay, low plasticity, some roots	M				TOPSOIL
						SC	Clayey SAND: Fine to coarse grained, brown/dark brown, clay, low plasticity, moderate sulfuric odour					LIGHTLY INDURATED SAND
				1.0			Hole Terminated at 1.00 m					
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
 Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
 Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
 Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
 Gradational or transitional strata		Field Tests		H	Hard	>400		
 Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	





ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP6
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered					SC	FILL: Clayey SAND, fine to medium grained, brown/pale brown, clay, low plasticity, some roots	M				FILL/TOPSOIL
		0.70m				GP	FILL: Sandy GRAVEL, coarse grained, brown/dark brown, sand, fine to medium grained, trace clay, low plasticity, some geo-fabric, some wire, some concrete pieces, some cobbles, some plastic					FILL
		ES 0.90m				SC	Clayey SAND: Fine to medium grained, dark grey/black, clay, low plasticity, some roots					TOPSOIL
						SC	Clayey SAND: Fine to coarse grained, brown/dark brown, clay, low plasticity					LIGHTLY INDURATED SAND
							Hole Terminated at 1.50 m					
				2.0								
				2.5								

LEGEND:

Water

- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes

- Gradational or transitional strata
- Definitive or distinct strata change

Notes, Samples and Tests

- U₅₀ 50mm Diameter tube sample
- CBR Bulk sample for CBR testing
- E Environmental sample
- ASS Acid Sulfate Soil Sample
- B Bulk Sample

Field Tests

- PID Photoionisation detector reading (ppm)
- DCP(x-y) Dynamic penetrometer test (test depth interval shown)
- HP Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)	Moisture Condition
VS	Very Soft	<25	D Dry
S	Soft	25 - 50	M Moist
F	Firm	50 - 100	W Wet
St	Stiff	100 - 200	W _p Plastic Limit
VSt	Very Stiff	200 - 400	W _L Liquid Limit
H	Hard	>400	
Fb	Friable		

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP7
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered					CL	FILL: Sandy Gravelly CLAY, low plasticity, orange/brown/dark brown, gravel, coarse grained, sand, fine to medium grained, lots of asphalt pieces, some roots	M				FILL-ROAD BASE
		0.50m		0.5								
		ES 0.70m										
				1.0								
		1.10m				SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity					TOPSOIL
		ES 1.30m										
				1.5			Hole Terminated at 1.40 m					
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

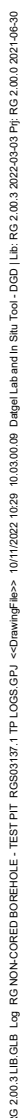
CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP8
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.9 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	4/10/2022											
		0.40m										
		ES										
		0.60m										
				0.5		SP	FILL: Clayey Gravelly SAND, fine to medium grained, brown/dark brown, gravel, coarse grained, clay, low plasticity, some asphalt, some plastic bunting, some geo-fabric, some cobbles	M				FILL
				0.70m		SP	FILL: SAND, fine to coarse grained, pale brown/orange					FILL-DREDGED SAND
				1.0								
				1.10m		SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity, some roots	W				TOPSOIL
				1.30m			Hole Terminated at 1.30 m					
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	





ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: **TP10**
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m WIDTH: 0.7 m
EASTING: SURFACE RL: AHD
NORTHING: DATUM:

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered					SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown/grey, clay, low plasticity, some gravel, coarse grained, some roots	M				FILL
		0.30m				GP	FILL: Sandy GRAVEL, fine to coarse grained, brown/dark brown, sand, fine to coarse grained, lots of rock aggregate, some cobbles and boulders, some shells, some glass, some metal fragments, trace roots					FILL-ROCK AGGREGATE
		ES		0.5								
		0.50m										
				1.0								
				1.5		CL	FILL: Sandy Gravelly CLAY, low plasticity, brown/dark brown/orange, gravel, coarse grained, sand, fine to medium grained					FILL-ROAD BASE
				1.80m								
				2.0			Hole Terminated at 1.80 m Practical Refusal					
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	

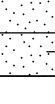


ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP11
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.4 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information						Field Test		Structure and additional observations	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result			
E	 4/10/2022	ES 0.20m				SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some gravel, coarse grained, some roots	M				FILL/TOPSOIL		
						SC	0.25m TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity	TOPSOIL						
						SP	0.50m SAND: Fine to medium grained, grey/pale grey	AEOLIAN						
						SC	0.80m 0.90m Clayey SAND: Fine to medium grained, brown/dark brown, clay, low plasticity	W				LIGHTLY INDURATED SAND		
					Hole Terminated at 0.90 m									
LEGEND: <u>Water</u>  Water Level (Date and time shown)  Water Inflow  Water Outflow <u>Strata Changes</u>  Gradational or transitional strata  Definitive or distinct strata change					<u>Notes, Samples and Tests</u> U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample ASS Acid Sulfate Soil Sample B Bulk Sample <u>Field Tests</u> PID Photoionisation detector reading (ppm) DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)					<u>Consistency</u> VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable <u>Density</u> V Very Loose L Loose MD Medium Dense D Dense VD Very Dense			<u>UCS (kPa)</u> <25 25 - 50 50 - 100 100 - 200 200 - 400 >400 <u>Moisture Condition</u> D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%	

RG 2.00.3 LIB GLB Loc RG NON-CORED BOREHOLE - TEST PIT RGS03137.1 TP LOGS GPJ <<DrawingFile>> 10/11/2022 10:29 10.03.00.09 Datcel Lab and In Situ Tool - DGD I Lib: RG 2.00.3 2022-03-03 Pri: RG 2.00.0 2021-06-30



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP13
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered					SP	FILL: Clayey Gravelly SAND, fine to medium grained, grey/brown, gravel, coarse grained, clay, low plasticity, some roots	M				FILL
		0.50m		0.5		CL	FILL: Sandy Gravelly CLAY, low plasticity, brown/dark brown/orange, gravel, coarse grained, sand, fine to medium grained, some asphalt pieces					FILL-ROAD BASE
		ES 0.70m				SP	FILL: Clayey Gravelly SAND, fine to medium grained, dark grey/dark brown, gravel coarse grained, clay, low plasticity, some asphalt pieces					FILL
				1.0		SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/dark brown, clay, low plasticity, some roots, very strong sulfuric odour					TOPSOIL
							Hole Terminated at 1.00 m					
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP14
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered			0.5		SC	FILL: Clayey SAND, fine to medium grained, grey/dark grey, clay, low plasticity, some gravel, coarse grained, some large concrete fragments	M				FILL/TOPSOIL
		0.90m		1.0		SC	FILL: Clayey Gravelly SAND, fine to medium grained, dark grey/dark brown/black, gravel, coarse grained, clay, low plasticity, lots of asphalt pieces, some geo-fabric					FILL-ASPHALT
		ES 1.10m		1.5		SC	TOPSOIL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some roots, moderate sulfuric odour					TOPSOIL
				2.0			Hole Terminated at 1.50 m					
				2.5								

LEGEND:

Water

- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes

- Gradational or transitional strata
- Definitive or distinct strata change

Notes, Samples and Tests

U₅₀ 50mm Diameter tube sample
CBR Bulk sample for CBR testing
E Environmental sample
ASS Acid Sulfate Soil Sample
B Bulk Sample

Field Tests

PID Photoionisation detector reading (ppm)
DCP(x-y) Dynamic penetrometer test (test depth interval shown)
HP Hand Penetrometer test (UCS kPa)

Consistency

VS Very Soft <25
S Soft 25 - 50
F Firm 50 - 100
St Stiff 100 - 200
VSt Very Stiff 200 - 400
H Hard >400
Fb Friable

UCS (kPa)

V Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Moisture Condition

D Dry
M Moist
W Wet
W_p Plastic Limit
W_L Liquid Limit

Density Index <15%
Density Index 15 - 35%
Density Index 35 - 65%
Density Index 65 - 85%
Density Index 85 - 100%



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP15
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.1 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	4/10/2022	0.20m	ES 0.40m	0.5		SC	FILL: Clayey SAND, fine to medium grained, grey/dark grey, clay, low plasticity, some gravel, coarse grained, some roots	M				FILL/TOPSOIL
		0.40m										
				1.0		SC	FILL: Clayey Gravelly SAND, fine to medium grained, dark grey/dark brown/black, gravel, coarse grained, clay, low plasticity, lots of asphalt pieces up to 500mmx400mmx200mm, some shells					FILL-ASPHALT
				1.5		SC	TOPSOIL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some roots, moderate sulfuric odour					TOPSOIL
				2.0			Hole Terminated at 1.50 m					
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP16
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result			
E	Not Encountered					SC	FILL: Clayey SAND, fine to medium grained, grey/dark grey, clay, low plasticity, some gravel, coarse grained, some roots	M				FILL/TOPSOIL		
		1.20m		0.5										
				0.80m		SP	FILL: Gravelly SAND, fine to medium grained, brown, gravel, coarse grained					FILL		
				1.0		SP	FILL: Clayey Gravelly SAND, fine to medium grained, dark grey/black, gravel, coarse grained, clay, low plasticity, lots of asphalt pieces, some shells					FILL-ASPHALT		
		ES		1.20m		CL	FILL: Gravelly CLAY, low plasticity, dark grey/dark green/black, gravel, coarse grained					FILL		
		1.40m		1.40m		SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity					TOPSOIL		
				1.5										
				1.60m										
							Hole Terminated at 1.60 m							
				2.0										
				2.5										
LEGEND: Water Water Level (Date and time shown) Water Inflow Water Outflow Strata Changes Gradational or transitional strata Definitive or distinct strata change					Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample ASS Acid Sulfate Soil Sample B Bulk Sample Field Tests PID Photoionisation detector reading (ppm) DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)					Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable Density V Very Loose L Loose MD Medium Dense D Dense VD Very Dense			UCS (kPa) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP17
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered					SC	FILL: Clayey SAND, fine to medium grained, pale brown/pale orange, clay, low plasticity, some gravel, coarse grained, some roots	M				FILL
		0.30m				CL	FILL: Sandy Gravelly CLAY, low plasticity, brown/dark brown/grey, gravel, coarse grained, sand, fine to medium grained, lots of cobbles, some shells					FILL-ROAD BASE
		ES 0.50m		0.5								
						SC	TOPSOIL: Clayey SAND, fine to medium grained, grey/dark grey/black, some roots					TOPSOIL
				1.0			Hole Terminated at 1.00 m					
				1.5								
				2.0								
				2.5								

LEGEND:

Water

- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes

- Gradational or transitional strata
- Definitive or distinct strata change

Notes, Samples and Tests

U₅₀ 50mm Diameter tube sample
CBR Bulk sample for CBR testing
E Environmental sample
ASS Acid Sulfate Soil Sample
B Bulk Sample

Field Tests

PID Photoionisation detector reading (ppm)
DCP(x-y) Dynamic penetrometer test (test depth interval shown)
HP Hand Penetrometer test (UCS kPa)

Consistency

VS Very Soft <25
S Soft 25 - 50
F Firm 50 - 100
St Stiff 100 - 200
VSt Very Stiff 200 - 400
H Hard >400
Fb Friable

UCS (kPa)

V Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Moisture Condition

D Dry
M Moist
W Wet
W_p Plastic Limit
W_L Liquid Limit

Density Index <15%
Density Index 15 - 35%
Density Index 35 - 65%
Density Index 65 - 85%
Density Index 85 - 100%

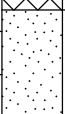


ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP18
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	ES 0.20m				SC	FILL: Clayey SAND, fine to medium grained, grey/brown, some bricks, some cobbles, some roots	M				FILL
						SP	SAND: Fine to coarse grained, pale grey/brown/pale brown					AEOLIAN
				0.5			Hole Terminated at 0.50 m					
				1.0								
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
 Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
 Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
 Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
 Gradational or transitional strata		Field Tests		H	Hard	>400		
 Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP19
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result		
E	Not Encountered	0.10m				SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some gravel, coarse grained, some asphalt, some roots	M				FILL	
		ES 0.30m											
				0.5									
						SP	SAND: Fine to coarse grained, pale brown/pale grey					AEOLIAN	
				1.0									
							Hole Terminated at 1.00 m						
				1.5									
				2.0									
				2.5									
LEGEND: Water  Water Level (Date and time shown)  Water Inflow  Water Outflow Strata Changes  Gradational or transitional strata  Definitive or distinct strata change				Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample ASS Acid Sulfate Soil Sample B Bulk Sample Field Tests PID Photoionisation detector reading (ppm) DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)				Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable Density V Very Loose L Loose MD Medium Dense D Dense VD Very Dense		UCS (kPa) <25 25 - 50 50 - 100 100 - 200 200 - 400 >400	Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%		



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP20
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	4/10/2022	ES 0.20m				SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, some roots	M				TOPSOIL
				0.5		SC	Clayey SAND: Fine to coarse grained, brown/dark brown, clay, low plasticity, strong sulfuric odour					LIGHTLY INDURATED SAND
							Hole Terminated at 0.60 m					
				1.0								
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP21
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.4 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	4/10/2022	ES 0.20m				SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, some roots	M				TOPSOIL
				0.25m		SC	Clayey SAND: Fine to coarse grained, brown/pale brown, clay, low plasticity	W				LIGHTLY INDURATED SAND
				0.5			Hole Terminated at 0.50 m					
				1.0								
				1.5								
				2.0								
				2.5								

LEGEND:

Water

- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes

- Gradational or transitional strata
- Definitive or distinct strata change

Notes, Samples and Tests

U₅₀ 50mm Diameter tube sample
CBR Bulk sample for CBR testing
E Environmental sample
ASS Acid Sulfate Soil Sample
B Bulk Sample

Field Tests

PID Photoionisation detector reading (ppm)
DCP(x-y) Dynamic penetrometer test (test depth interval shown)
HP Hand Penetrometer test (UCS kPa)

Consistency

VS Very Soft <25
S Soft 25 - 50
F Firm 50 - 100
St Stiff 100 - 200
VSt Very Stiff 200 - 400
H Hard >400
Fb Friable

UCS (kPa)

V Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Moisture Condition

D Dry
M Moist
W Wet
W_p Plastic Limit
W_L Liquid Limit

Density Index <15%
Density Index 15 - 35%
Density Index 35 - 65%
Density Index 65 - 85%
Density Index 85 - 100%



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP22
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.6 m
WIDTH: 0.5 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result		
E	Not Encountered					SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some roots	M				FILL/TOPSOIL	
		0.20m				SP	SAND: Fine to coarse grained, pale brown/pale grey					FILL-DREDGED SAND	
		ES											
		0.40m											
				0.5									
						SC	Clayey SAND: Fine to medium grained, dark grey/black, clay, low plasticity					TOPSOIL	
				1.0									
							Hole Terminated at 1.00 m						
				1.5									
				2.0									
				2.5									
LEGEND: Water  Water Level (Date and time shown)  Water Inflow  Water Outflow Strata Changes  Gradational or transitional strata  Definitive or distinct strata change				Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample ASS Acid Sulfate Soil Sample B Bulk Sample Field Tests PID Photoionisation detector reading (ppm) DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)				Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable Density V Very Loose L Loose MD Medium Dense D Dense VD Very Dense		UCS (kPa) <25 25 - 50 50 - 100 100 - 200 200 - 400 >400	Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%		



ENGINEERING LOG - TEST PIT

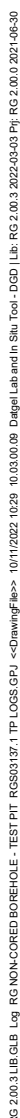
CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP23
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E		0.20m				SC	FILL: Clayey SAND, fine to medium grained, grey/pale grey/black, clay, low plasticity	M				FILL/TOPSOIL
		ES 0.40m				SC	FILL: Clayey SAND, fine to medium grained, grey/pale grey/brown, clay, low plasticity					FILL
						SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black					TOPSOIL
				1.5			Hole Terminated at 1.50 m					

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	





ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP25
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	ES 0.10m				SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some cobbles and boulders, some wood pieces, some roots	M				FILL
							Hole Terminated at 1.80 m Excavation collapsing					

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water Water Level (Date and time shown) Water Inflow Water Outflow		U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample ASS Acid Sulfate Soil Sample B Bulk Sample		VS Very Soft	<25		D Dry	
Strata Changes --- Gradational or transitional strata — Definitive or distinct strata change		Field Tests PID Photoionisation detector reading (ppm) DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)		S Soft	25 - 50		M Moist	
				F Firm	50 - 100		W Wet	
				St Stiff	100 - 200		W _p Plastic Limit	
				VSt Very Stiff	200 - 400		W _L Liquid Limit	
				H Hard	>400			
				Fb Friable				
				Density	V Very Loose	Density Index <15%		
					L Loose	Density Index 15 - 35%		
					MD Medium Dense	Density Index 35 - 65%		
					D Dense	Density Index 65 - 85%		
					VD Very Dense	Density Index 85 - 100%		



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP26
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	0.30m		0.5		SP	FILL: SAND, fine to coarse grained, pale grey/pale brown, lots of shells, some roots	M				FILL-DREDGED SAND
		ES 0.50m										
				1.0								
				1.20m								
						SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity					TOPSOIL
				1.5								
							Hole Terminated at 1.50 m					
				2.0								
				2.5								
LEGEND: Water  Water Level (Date and time shown)  Water Inflow  Water Outflow Strata Changes  Gradational or transitional strata  Definitive or distinct strata change				Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample ASS Acid Sulfate Soil Sample B Bulk Sample Field Tests PID Photoionisation detector reading (ppm) DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)					Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable Density V Very Loose L Loose MD Medium Dense D Dense VD Very Dense		UCS (kPa) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: **TP27**
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.7 m WIDTH: 0.6 m EASTING: SURFACE RL: AHD
NORTHING: DATUM:

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	 4/10/2022	0.20m				SP	FILL: SAND, fine to coarse grained, pale grey/pale brown, lots of shells, some roots	M				FILL-DREDGED SAND
		ES 0.40m				SC	TOPSOIL: Clayey SAND, fine to medium grained, dark brown/black, clay, low plasticity					TOPSOIL
				0.5		SC	Clayey SAND: Fine to medium grained, brown/dark brown, clay, low plasticity					LIGHTLY INDURATED SAND
				1.0			Hole Terminated at 1.00 m Excavation collapsing					
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
 Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
 Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
 Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
 Gradational or transitional strata		Field Tests		H	Hard	>400		
 Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP28
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.7 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	0.10m				SP	FILL: SAND, fine to coarse grained, grey/dark grey, trace of gravel, coarse grained, some roots	M				FILL/TOPSOIL
		ES 0.30m										
				0.5		SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown/dark grey, clay, low plasticity					FILL
				0.60m		SP	FILL: SAND, fine to coarse grained, pale grey/pale brown, lots of shells					FILL-DREDGED SAND
				1.0								
				1.30m			Hole Terminated at 1.30 m Excavation collapsing					
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP29
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 4/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.6 m
WIDTH: 0.5 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E						SC	FILL: Clayey SAND, fine to medium grained, dark grey/dark brown/black, clay, low plasticity, lots of roots	M				FILL/TOPSOIL
		0.40m			SP	FILL: SAND, fine to coarse grained, pale brown/pale grey, lots of shells	FILL-DREDGED SAND					
		ES		0.5								
		0.60m										
				1.0								
				1.5								
				2.0								
						SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black					TOPSOIL
				2.5			Hole Terminated at 2.40 m Excavation collapsing					

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

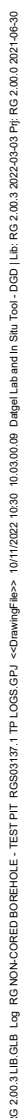
CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP30
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.7 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered					SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some roots	M				FILL/TOPSOIL
		0.40m ES 0.60m		0.25m 0.5 1.0 1.5 2.0		SP	FILL: SAND, fine to coarse grained, pale brown/pale grey, some shells					FILL-DREDGED SAND
							Hole Terminated at 2.00 m Excavation collapsing					

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	





ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP32
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	0.30m				SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some roots	M				FILL/TOPSOIL
		ES 0.50m		0.5		SP	FILL: SAND, fine to coarse grained, pale grey/pale brown					FILL-DREDGED SAND
				1.0								
				1.5								
				2.0								
				2.5								
							Hole Terminated at 2.50 m Excavation collapsing					

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

TEST PIT NO: **TP33**

CLIENT: Allam Property Group

PAGE: 1 of 1

PROJECT NAME: Proposed MHE

JOB NO: RGS03137.1

SITE LOCATION: 40-80 Chapmans Road, Tuncurry

LOGGED BY: APH

TEST LOCATION: See Figure 2

DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator

EASTING:

SURFACE RL:

TEST PIT LENGTH: 2.0 m

WIDTH: 0.7 m

NORTHING:

DATUM: AHD

Excavation and Sampling

Material description and profile information

Field Test

METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E		0.10m				SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some roots	M				FILL/TOPSOIL
		ES 0.30m				SP	FILL: SAND, fine to coarse grained, pale brown/pale grey, lots of shells					FILL-DREDGED SAND
				0.5								
				1.0								
				1.5								
				2.0								
				2.5		SC	TOPSOIL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some roots					TOPSOIL
				2.60m			Hole Terminated at 2.60 m Excavation collapsing					

LEGEND:

Water

- Water Level
(Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes

- Gradational or transitional strata
- Definitive or distinct strata change

Notes, Samples and Tests

- U₅₀ 50mm Diameter tube sample
- CBR Bulk sample for CBR testing
- E Environmental sample
- ASS Acid Sulfate Soil Sample
- B Bulk Sample

Field Tests

- PID Photoionisation detector reading (ppm)
- DCP(x-y) Dynamic penetrometer test (test depth interval shown)
- HP Hand Penetrometer test (UCS kPa)

Consistency

- VS Very Soft
- S Soft
- F Firm
- St Stiff
- VSt Very Stiff
- H Hard
- Fb Friable

UCS (kPa)

- <25
- 25 - 50
- 50 - 100
- 100 - 200
- 200 - 400
- >400

Moisture Condition

- D Dry
- M Moist
- W Wet
- W_p Plastic Limit
- W_L Liquid Limit

Density

- V Very Loose
- L Loose
- MD Medium Dense
- D Dense
- VD Very Dense

- Density Index <15%
- Density Index 15 - 35%
- Density Index 35 - 65%
- Density Index 65 - 85%
- Density Index 85 - 100%



ENGINEERING LOG - TEST PIT

TEST PIT NO: **TP34**

CLIENT: Allam Property Group

PAGE: 1 of 1

PROJECT NAME: Proposed MHE

JOB NO: RGS03137.1

SITE LOCATION: 40-80 Chapmans Road, Tuncurry

LOGGED BY: APH

TEST LOCATION: See Figure 2

DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator

EASTING:

SURFACE RL:

TEST PIT LENGTH: 2.0 m

WIDTH: 0.8 m

NORTHING:

DATUM: AHD

Excavation and Sampling

Material description and profile information

Field Test

METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered					SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, some roots	M				FILL/TOPSOIL
		0.60m				SP	FILL: SAND, fine to coarse grained, pale grey/pale brown					FILL-DREDGED SAND
		ES 0.80m										
				0.5								
				1.0								
				1.5								
				2.0								
				2.5								
							Hole Terminated at 2.50 m Excavation collapsing					

LEGEND:

Water

- Water Level
(Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes

- Gradational or transitional strata
- Definitive or distinct strata change

Notes, Samples and Tests

- U₅₀ 50mm Diameter tube sample
- CBR Bulk sample for CBR testing
- E Environmental sample
- ASS Acid Sulfate Soil Sample
- B Bulk Sample

Field Tests

- PID Photoionisation detector reading (ppm)
- DCP(x-y) Dynamic penetrometer test (test depth interval shown)
- HP Hand Penetrometer test (UCS kPa)

Consistency

- VS Very Soft
- S Soft
- F Firm
- St Stiff
- VSt Very Stiff
- H Hard
- Fb Friable

UCS (kPa)

- <25
- 25 - 50
- 50 - 100
- 100 - 200
- 200 - 400
- >400

Moisture Condition

- D Dry
- M Moist
- W Wet
- W_p Plastic Limit
- W_L Liquid Limit

Density

- V Very Loose
 - L Loose
 - MD Medium Dense
 - D Dense
 - VD Very Dense
- Density Index <15%
Density Index 15 - 35%
Density Index 35 - 65%
Density Index 65 - 85%
Density Index 85 - 100%



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP35
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.9 m
WIDTH: 0.8 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered					SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some roots	M				FILL/TOPSOIL
						SP	FILL: SAND, fine to coarse grained, pale grey/pale brown, lots of shells, some roots					FILL-DREDGED SAND
		0.80m		0.5								
		ES 1.00m		1.0								
				1.5								
				1.80m								
				2.0			Hole Terminated at 1.80 m Excavation collapsing					
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP36
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.8 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	ES				SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown/grey, clay, low plasticity, some roots	M				FILL/TOPSOIL
		0.20m										
				0.5		SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity, some roots					TOPSOIL
				0.65m		SC	Clayey SAND: Fine to coarse grained, brown/dark brown, clay, low plasticity, moderate sulfuric odour					LIGHTLY INDURATED SAND
				1.0			Hole Terminated at 1.00 m					
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP37
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.5 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result		
E	5/10/2022	0.10m				SC	FILL: Clayey SAND, fine to medium grained, grey/brown, clay, low plasticity, some roots	M				FILL/TOPSOIL	
		ES 0.30m											
		0.5					0.50m					TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, some roots	TOPSOIL
		0.70m					Clayey SAND: Fine to coarse grained, brown/pale brown, clay, low plasticity, very strong sulfuric odour					LIGHTLY INDURATED SAND	
				1.0		1.00m	Hole Terminated at 1.00 m						
				1.5									
				2.0									
				2.5									

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP38
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.7 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information							Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result		
E	Not Encountered	ES 0.10m				SC	FILL: Clayey SAND, fine to medium grained, brown/grey, clay, low plasticity, some gravel, coarse grained	M				FILL/TOPSOIL	
		0.20m				SP	FILL: SAND, fine to coarse grained, brown/orange					FILL	
		ES 0.40m											
				0.5			SC					FILL: Clayey SAND, fine to medium grained, grey/dark grained, clay, low plasticity	
							SC					TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay low plasticity	TOPSOIL
				1.0		1.00m	Hole Terminated at 1.00 m						
				1.5									
				2.0									
				2.5									
LEGEND: Water  Water Level (Date and time shown)  Water Inflow  Water Outflow Strata Changes  Gradational or transitional strata  Definitive or distinct strata change				Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample ASS Acid Sulfate Soil Sample B Bulk Sample Field Tests PID Photoionisation detector reading (ppm) DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)				Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable Density V Very Loose L Loose MD Medium Dense D Dense VD Very Dense		UCS (kPa) <25 25 - 50 50 - 100 100 - 200 200 - 400 >400 Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%			



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP39
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E		0.20m				SC	FILL: Clayey SAND, fine to medium grained, pale grey/black, clay, low plasticity, some roots	M				FILL/TOPSOIL
		ES 0.40m				SP	FILL: SAND, fine to coarse grained, lots of shells					FILL-DREDGED SAND
				0.5								
				1.0								
				1.5								
				2.0		SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay low plasticity, some roots	W				TOPSOIL
				2.5								
							Hole Terminated at 2.50 m					

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP40
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	0.20m		0.5		SC	FILL: Clayey SAND, fine to medium grained, grey/brown, clay, low plasticity, some gravel, coarse grained, some shells, some roots	M				FILL
		ES										
		0.40m										
				1.0		SC	TOPSOIL: Clayey SAND, fine to medium grained, dark brown/dark grey, clay low plasticity, some roots					TOPSOIL
				1.10m		SP	SAND: Fine to coarse grained, grey	W				AEOLIAN
				1.40m			Hole Terminated at 1.40 m Excavation collapsing					
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)		Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25		D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50		M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100		W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200		W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400		W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400			
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable				
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density		V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)		L		L	Loose	Density Index 15 - 35%	
				MD		MD	Medium Dense	Density Index 35 - 65%	
				D		D	Dense	Density Index 65 - 85%	
				VD		VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP41
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	ES 0.20m		0.5		SP	FILL: SAND, fine to coarse grained, pale grey, some shells, trace roots	M				FILL-DREDGED SAND
				0.70m		SP	SAND: Fine to coarse grained, pale brown/pale grey	W				AEOLIAN
				0.80m			Hole Terminated at 0.80 m Excavation collapsing					
				1.0								
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP42
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	ES				SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some roots	M				FILL/TOPSOIL
		0.20m				SP	FILL: SAND, fine to coarse grained, pale grey, pale brown, lots of shells					FILL-DREDGED SAND
						SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity, some roots					TOPSOIL
							Hole Terminated at 2.60 m Excavation collapsing					

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP43
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	0.30m				SC	FILL: Clayey SAND, fine to medium grained, dark brown/dark grey, clay, low plasticity, some roots	M				FILL/TOPSOIL
		ES		0.5		SP	FILL: SAND, fine to coarse grained, pale brown/pale grey, lots of shells					FILL-DREDGED SAND
		0.50m		2.0		SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity, some roots					TOPSOIL
				2.5			Hole Terminated at 2.10 m Excavation collapsing					

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP44
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered					SC	FILL: Clayey SAND, fine to medium grained, pale grey/dark grey/brown, clay, low plasticity, some shells, some roots, clay, low plasticity, some roots	M				FILL/TOPSOIL
		0.30m				SP	FILL: SAND, fine to coarse grained, pale brown/pale grey, lots of shells					FILL-DREDGED SAND
		ES 0.50m										
				0.5								
				1.0								
				1.5								
				2.0								
				2.0		SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity					TOPSOIL
				2.10m			Hole Terminated at 2.10 m Excavation collapsing					
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP45
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.6 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	0.10m				SC	FILL: Clayey SAND, fine to medium grained, brown/dark brown, clay, low plasticity, some gravel, coarse grained, some plastic pipe, some roots	M				FILL/TOPSOIL
		ES 0.30m										
				0.5								
				1.0		SP	FILL: SAND, fine to coarse grained, pale brown/pale grey, lots of shells					FILL-DREDGED SAND
				1.5								
				2.0		SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity, strong sulfuric odour					TOPSOIL
				2.10m			Hole Terminated at 2.10 m Excavation collapsing					
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP46
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	ES 0.10m				SC	FILL: Clayey SAND, fine to medium grained, dark grey/dark brown, clay, low plasticity, some roots	M				FILL/TOPSOIL
				0.20m		SC	FILL: Clayey SAND, fine to coarse grained, pale brown/pale grey/grey, clay, low plasticity, lots of shells					FILL
				0.5								
				0.80m		SC	TOPSOIL: Clayey SAND, fine to medium grained, grey/dark grey, clay, low plasticity, some roots	W				TOPSOIL
				1.0			Hole Terminated at 1.00 m Excavation collapsing					
				1.5								
				2.0								
				2.5								

LEGEND:
Water
Water Level (Date and time shown)
Water Inflow
Water Outflow
Strata Changes
Gradational or transitional strata
Definitive or distinct strata change

Notes, Samples and Tests
U₅₀ 50mm Diameter tube sample
CBR Bulk sample for CBR testing
E Environmental sample
ASS Acid Sulfate Soil Sample
B Bulk Sample
Field Tests
PID Photoionisation detector reading (ppm)
DCP(x-y) Dynamic penetrometer test (test depth interval shown)
HP Hand Penetrometer test (UCS kPa)

Consistency
VS Very Soft <25
S Soft 25 - 50
F Firm 50 - 100
St Stiff 100 - 200
VSt Very Stiff 200 - 400
H Hard >400
Fb Friable
Density
V Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

UCS (kPa)
<25
25 - 50
50 - 100
100 - 200
200 - 400
>400
Density Index <15%
Density Index 15 - 35%
Density Index 35 - 65%
Density Index 65 - 85%
Density Index 85 - 100%

Moisture Condition
D Dry
M Moist
W Wet
W_p Plastic Limit
W_L Liquid Limit



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: **TP47**
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m WIDTH: 0.7 m
EASTING: SURFACE RL: AHD
NORTHING: DATUM:

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	0.30m		0.5		SC	FILL: Clayey SAND, fine to medium grained, pale brown/orange, clay, low plasticity, some gravel, coarse grained, some roots	M				FILL
		ES				SC	FILL: Clayey SAND, fine to coarse grained, grey/dark grey, clay, low plasticity, some roots					
		0.50m				SP	FILL: SAND, fine to coarse grained, grey/pale grey, lots of shells					
						SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey/black, clay, low plasticity	W				
				1.0		1.00m	Hole Terminated at 1.00 m					TOPSOIL
				1.5								
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

TEST PIT NO: **TP48**

CLIENT: Allam Property Group

PAGE: 1 of 1

PROJECT NAME: Proposed MHE

JOB NO: RGS03137.1

SITE LOCATION: 40-80 Chapmans Road, Tuncurry

LOGGED BY: APH

TEST LOCATION: See Figure 2

DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator

EASTING:

SURFACE RL:

TEST PIT LENGTH: 1.8 m

WIDTH: 0.7 m

NORTHING:

DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	ES				CL	TOPSOIL: Silty CLAY, low plasticity, dark grey/black, some sand, fine to medium grained, some roots	W				TOPSOIL
		0.20m										
		0.30m										
		AMAL										
		0.50m		0.5		SC	Clayey SAND: Fine to coarse grained, pale grey/pale brown, clay, low plasticity, strong sulfuric odour					ALLUVIAL SOIL
		0.80m										
		AMAL		1.0								
		1.00m										
		1.30m										
		AMAL		1.5								
		1.50m										
							Hole Terminated at 1.60 m Excavation collapsing					
				2.0								
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

TEST PIT NO: **TP49**

CLIENT: Allam Property Group

PAGE: 1 of 1

PROJECT NAME: Proposed MHE

JOB NO: RGS03137.1

SITE LOCATION: 40-80 Chapmans Road, Tuncurry

LOGGED BY: APH

TEST LOCATION: See Figure 2

DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator

EASTING:

SURFACE RL:

TEST PIT LENGTH: 1.7 m

WIDTH: 0.7 m

NORTHING:

DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	ES		0.20m		CL	TOPSOIL: Silty CLAY, low plasticity, dark grey/black, some sand, fine to medium grained, some roots	W				TOPSOIL
				0.30m		SC	Clayey SAND: Fine to coarse grained, pale grey/pale brown, clay, low plasticity, strong sulfuric odour					ALLUVIAL SOIL
		AMAL		0.50m								
				0.80m								
		AMAL		1.00m								
				1.30m								
		AMAL		1.50m								
							Hole Terminated at 1.60 m Excavation collapsing					
				2.0								
				2.5								

LEGEND:

Water

- Water Level
(Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes

- Gradational or transitional strata
- Definitive or distinct strata change

Notes, Samples and Tests

- U₅₀ 50mm Diameter tube sample
- CBR Bulk sample for CBR testing
- E Environmental sample
- ASS Acid Sulfate Soil Sample
- B Bulk Sample

Field Tests

- PID Photoionisation detector reading (ppm)
- DCP(x-y) Dynamic penetrometer test (test depth interval shown)
- HP Hand Penetrometer test (UCS kPa)

Consistency

- VS Very Soft
- S Soft
- F Firm
- St Stiff
- VSt Very Stiff
- H Hard
- Fb Friable

UCS (kPa)

- <25
- 25 - 50
- 50 - 100
- 100 - 200
- 200 - 400
- >400

Moisture Condition

- D Dry
- M Moist
- W Wet
- W_p Plastic Limit
- W_L Liquid Limit

Density

- V Very Loose
- L Loose
- MD Medium Dense
- D Dense
- VD Very Dense

- Density Index <15%
- Density Index 15 - 35%
- Density Index 35 - 65%
- Density Index 65 - 85%
- Density Index 85 - 100%



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP50
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	ES		0.20m		CL	TOPSOIL: Silty CLAY, low plasticity, dark grey/black, some sand, fine to medium grained, some roots	W				TOPSOIL
				0.30m								
		AMAL		0.50m		SC	Clayey SAND: Fine to coarse grained, pale grey/pale brown, clay, low plasticity, strong sulfuric odour					ALLUVIAL SOIL
				0.80m								
		AMAL		1.00m								
				1.30m								
		AMAL		1.50m								
				2.0			Hole Terminated at 1.60 m Excavation collapsing					
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP51
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.7 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	ES		0.20m		CL	TOPSOIL: Silty CLAY, low plasticity, dark grey/black, some sand, fine to medium grained, some roots	W				TOPSOIL
				0.30m								
		AMAL		0.50m		SC	Clayey SAND: Fine to coarse grained, pale brown/pale grey, clay, low plasticity, strong sulfuric odour					ALLUVIAL SOIL
				0.80m								
		AMAL		1.00m								
				1.30m								
		AMAL		1.50m								
				1.70m								
		AMAL		1.90m								
				2.0			Hole Terminated at 1.90 m Excavation collapsing					
				2.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density		V	Very Loose	Density Index <15%
		HP Hand Penetrometer test (UCS kPa)				L	Loose	Density Index 15 - 35%
						MD	Medium Dense	Density Index 35 - 65%
						D	Dense	Density Index 65 - 85%
						VD	Very Dense	Density Index 85 - 100%



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP52
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	ES		0.20m		CL	TOPSOIL: Silty CLAY, low plasticity, dark grey/black, some sand, fine to medium grained, some roots	W				TOPSOIL
		0.30m				SC	Clayey SAND: Fine to coarse grained, pale grey/pale brown, clay, low plasticity, strong sulfuric odour					ALLUVIAL SOIL
		AMAL		0.50m								
		0.80m										
		AMAL		1.00m								
		1.30m										
		AMAL		1.50m								
		1.80m										
		AMAL		2.00m								
							Hole Terminated at 2.10 m Excavation collapsing					

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	



ENGINEERING LOG - TEST PIT

TEST PIT NO: **TP53**

CLIENT: Allam Property Group

PAGE: 1 of 1

PROJECT NAME: Proposed MHE

JOB NO: RGS03137.1

SITE LOCATION: 40-80 Chapmans Road, Tuncurry

LOGGED BY: APH

TEST LOCATION: See Figure 2

DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator

EASTING:

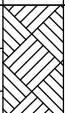
SURFACE RL:

TEST PIT LENGTH: 1.8 m

WIDTH: 0.8 m

NORTHING:

DATUM: AHD

Excavation and Sampling				Material description and profile information							Field Test		Structure and additional observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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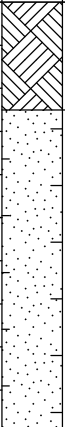


ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP54
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 2.0 m
WIDTH: 0.8 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling				Material description and profile information						Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	ES 0.20m				CL	TOPSOIL: Silty CLAY, low plasticity, dark grey/black, clay, low plasticity, some roots	W				TOPSOIL
						SC	Clayey SAND: Fine to coarse grained, pale brown/pale grey, clay, low plasticity, strong sulfuric odour					ALLUVIAL SOIL
							Hole Terminated at 1.00 m					

LEGEND:

Water

- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes

- Gradational or transitional strata
- Definitive or distinct strata change

Notes, Samples and Tests

U₅₀ 50mm Diameter tube sample
CBR Bulk sample for CBR testing
E Environmental sample
ASS Acid Sulfate Soil Sample
B Bulk Sample

Field Tests

PID Photoionisation detector reading (ppm)
DCP(x-y) Dynamic penetrometer test (test depth interval shown)
HP Hand Penetrometer test (UCS kPa)

Consistency

VS Very Soft <25
S Soft 25 - 50
F Firm 50 - 100
St Stiff 100 - 200
VSt Very Stiff 200 - 400
H Hard >400
Fb Friable

UCS (kPa)

V Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

Moisture Condition

D Dry
M Moist
W Wet
W_p Plastic Limit
W_L Liquid Limit

Density Index <15%
Density Index 15 - 35%
Density Index 35 - 65%
Density Index 65 - 85%
Density Index 85 - 100%



ENGINEERING LOG - TEST PIT

CLIENT: Allam Property Group
PROJECT NAME: Proposed MHE
SITE LOCATION: 40-80 Chapmans Road, Tuncurry
TEST LOCATION: See Figure 2

TEST PIT NO: TP55
PAGE: 1 of 1
JOB NO: RGS03137.1
LOGGED BY: APH
DATE: 5/10/22

EQUIPMENT TYPE: 6T Kubota Excavator
TEST PIT LENGTH: 1.8 m
WIDTH: 0.7 m
EASTING:
NORTHING:
SURFACE RL:
DATUM: AHD

Excavation and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics, colour, minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	5/10/2022	ES 0.20m		0.5 								

LEGEND:		Notes, Samples and Tests		Consistency		UCS (kPa)	Moisture Condition	
Water		U ₅₀ 50mm Diameter tube sample		VS	Very Soft	<25	D	Dry
Water Level (Date and time shown)		CBR Bulk sample for CBR testing		S	Soft	25 - 50	M	Moist
Water Inflow		E Environmental sample		F	Firm	50 - 100	W	Wet
Water Outflow		ASS Acid Sulfate Soil Sample		St	Stiff	100 - 200	W _p	Plastic Limit
Strata Changes		B Bulk Sample		VSt	Very Stiff	200 - 400	W _L	Liquid Limit
Gradational or transitional strata		Field Tests		H	Hard	>400		
Definitive or distinct strata change		PID Photoionisation detector reading (ppm)		Fb	Friable			
		DCP(x-y) Dynamic penetrometer test (test depth interval shown)		Density	V	Very Loose	Density Index <15%	
		HP Hand Penetrometer test (UCS kPa)			L	Loose	Density Index 15 - 35%	
					MD	Medium Dense	Density Index 35 - 65%	
					D	Dense	Density Index 65 - 85%	
					VD	Very Dense	Density Index 85 - 100%	

Appendix B

Laboratory Test Result Sheets

REGIONAL GEOTECHNICAL SOLUTIONS		Comparison of Contamination Analysis Results with Adopted Investigation Levels (Results in mg/kg)																						
		Client: Alarm Property Group Job No. RGS03137.1 Project: Proposed Manufactured Home Estate Location: 40-80 Chapmans Road, Tuncurry																						
SAMPLE	DEPTH (m)	MATERIAL	ASBESTOS	TOTAL RECOVERABLE HYDROCARBONS					TOTAL 16-40	PAH		Pesticides Total		BTEX		PCBs	Heavy Metals							
				C4-C10	C10-C14	C14-C18	C18-C20			Total	b-a-p	OCF	OPP	Sum	Naphthalene		As	Cd	Cr (total)#	Cu	Pb	Ni	Zn	Hg
TP1	0.0 - 0.2	Topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP2	0.0 - 0.2	Topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP3	0.0 - 0.2	Topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP4	0.0 - 0.2	Topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP5	0.8 - 1.0	Fill	No	<10	<50	<100	<100	<50	<50	1.6	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	2	13	10	3	38	<0.1
TP6	0.7 - 0.9	Fill	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	4	12	7	3	70	<0.1
TP7	0.5 - 0.7	Fill (roadbase)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	4	<5	<5	<2	<5	<0.1
TP7	1.1 - 1.3	Topsoil	---	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	6	19	6	5	60	<0.1
TP8	0.4 - 0.6	Fill	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	7	<1	6	16	7	6	57	<0.1
TP9	0.0 - 0.1	Topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	10	<0.1
TP10	0.3 - 0.5	Fill (rock aggregate)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	5	25	17	3	47	<0.1
TP11	0.0 - 0.2	Fill/topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	4	11	24	3	66	<0.1
TP12	0.1 - 0.3	Fill (roadbase)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	5	<1	8	28	11	7	71	<0.1
TP12	0.4 - 0.5	Fill (asphalt)	---	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	5	15	8	4	47	<0.1
TP13	0.5 - 0.7	Fill	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	5	14	7	4	40	<0.1
TP14	0.9 - 1.1	Fill (asphalt)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	7	18	12	4	54	<0.1
TP15	0.2 - 0.4	Fill/topsoil	No	<10	<50	<100	<100	<50	<50	11.4	1.1	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	4	18	6	4	52	<0.1
TP16	1.2 - 1.4	Fill	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	2	13	<5	2	49	<0.1
TP17	0.3 - 0.5	Fill (roadbase)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	6	15	6	4	46	<0.1
TP18	0.0 - 0.2	Fill	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	6	16	<2	50	<0.1
TP19	0.1 - 0.3	Fill	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	6	13	16	4	51	<0.1
TP20	0.0 - 0.2	Topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	3	<5	21	<2	16	<0.1
TP21	0.0 - 0.2	Topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	7	<1	6	<5	<5	<2	7	<0.1
TP22	0.2 - 0.4	Fill (dredged sand)	No	<10	<50	<100	<100	<50	<50	13.1	1.1	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP23	0.2 - 0.4	Fill	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	4	<5	<5	<2	11	<0.1
TP24	0.0 - 0.1	Fill/topsoil	---	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	10	<1	7	<5	5	<2	26	<0.1
TP24	0.3 - 0.5	Fill (dredged sand)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP25	0.4 - 0.6	Fill	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	4	<5	11	<2	21	<0.1
TP26	0.3 - 0.5	Fill (dredged sand)	No	<10	<50	<100	<100	<50	<50	16.6	1.6	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP27	0.2 - 0.4	Fill (dredged sand)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP28	0.1 - 0.3	Fill/topsoil	No	<10	<50	<100	<100	<50	<50	1.3	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	2	<5	<5	<2	7	<0.1
TP29	0.4 - 0.6	Fill (dredged sand)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP30	0.4 - 0.5	Fill (dredged sand)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP31	0.0 - 0.2	Fill/topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	5	<5	<5	<2	5	<0.1
TP31	0.3 - 0.5	Fill (dredged sand)	---	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP32	0.4 - 0.6	Fill (dredged sand)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP33	0.1 - 0.3	Fill/topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	5	<5	<5	<2	<5	<0.1
TP34	0.6 - 0.8	Fill (dredged sand)	No	<10	<50	<100	<100	<50	<50	1.6	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP35	0.8 - 1.0	Fill (dredged sand)	No	<10	<50	<100	<100	<50	<50	4.8	0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP36	0.0 - 0.2	Fill/topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	10	<0.1
TP37	0.1 - 0.3	Fill/topsoil	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	12	<0.1
TP38	0.0 - 0.1	Fill/topsoil	---	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	5	<2	13	<0.1
TP38	0.2 - 0.4	Fill	---	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	9	<5	2	23	<0.1
TP39	0.3 - 0.5	Fill (dredged sand)	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5	<5	<2	<5	<0.1
TP40	0.2 - 0.4	Fill	No	<10	<50	<100	<100	<50	<50	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.1	<5	<1	<2	<5				

Summary Table - Comparison of Contamination Analysis Results With Waste Classification Threshold Limits (Results in mg/kg)																			
		Client: Land Dynamics Australia Job No. RGS02857.1 Project: Proposed Manufactured Home Estate Location: 70 Carmana Lane, Forster																	
SAMPLE	MATERIAL	DEPTH (m)	Asbestos	TOTAL PETROLEUM HYDROCARBONS					PAH	PCBs (Total)	OC/OP Pesticides	HEAVY METALS							
				C6-C9	C10-C14	C15-C28	C29-C36	TOTAL				Arsenic	TCLP	Cadmium	TCLP	Nickel	TCLP	Lead	TCLP
TP1	Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP2	Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP3	Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP4	Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP5	Fill	0.8 - 1.0	No	<10	<50	<100	<100	<50	1.6	<0.1	<0.2	<5		<1		3		10	<0.1
TP6	Fill	0.7 - 0.9	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		3		7	<0.1
TP7	Fill (roadbase)	0.5 - 0.7	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP7	Topsoil	1.1 - 1.3	----	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		5		6	<0.1
TP8	Fill	0.4 - 0.6	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	7		<1		6		7	<0.1
TP9	Topsoil	0.0 - 0.1	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP10	Fill (rock aggregate)	0.3 - 0.5	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		3		17	<0.1
TP11	Fill/Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		3		24	<0.1
TP12	Fill (roadbase)	0.1 - 0.3	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	5		<1		7		11	<0.1
TP12	Fill (asphalt)	0.4 - 0.5	----	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		4		8	<0.1
TP13	Fill	0.5 - 0.7	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		4		7	<0.1
TP14	Fill (asphalt)	0.9 - 1.1	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		4		12	<0.1
TP15	Fill/Topsoil	0.2 - 0.4	No	<10	<50	<100	<100	<50	11.4	<0.1	<0.2	<5		<1		4		6	<0.1
TP16	Fill	1.2 - 1.4	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		2		<5	<0.1
TP17	Fill (roadbase)	0.3 - 0.5	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		4		6	<0.1
TP18	Fill	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		16	<0.1
TP19	Fill	0.1 - 0.3	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		4		16	<0.1
TP20	Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		21	<0.1
TP21	Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	7		<1		<2		<5	<0.1
TP22	Fill (dredged sand)	0.2 - 0.4	No	<10	<50	<100	<100	<50	13.1	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP23	Fill	0.2 - 0.4	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP24	Fill/Topsoil	0.0 - 0.1	----	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	10		<1		<2		5	<0.1
TP24	Fill (dredged sand)	0.3 - 0.5	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP25	Fill	0.4 - 0.6	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		11	<0.1
TP26	Fill (dredged sand)	0.3 - 0.5	No	<10	<50	<100	<100	<50	16.6	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP27	Fill (dredged sand)	0.2 - 0.4	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP28	Fill/Topsoil	0.1 - 0.3	No	<10	<50	<100	<100	<50	1.3	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP29	Fill (dredged sand)	0.4 - 0.6	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP30	Fill (dredged sand)	0.4 - 0.5	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP31	Fill/Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP31	Fill (dredged sand)	0.3 - 0.5	----	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP32	Fill (dredged sand)	0.4 - 0.6	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP33	Fill/Topsoil	0.1 - 0.3	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP34	Fill (dredged sand)	0.6 - 0.8	No	<10	<50	<100	<100	<50	1.6	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP35	Fill (dredged sand)	0.8 - 1.0	No	<10	<50	<100	<100	<50	4.8	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP36	Fill/Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP37	Fill/Topsoil	0.1 - 0.3	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP38	Fill/Topsoil	0.0 - 0.1	----	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		5	<0.1
TP38	Fill	0.2 - 0.4	----	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		2		<5	<0.1
TP39	Fill (dredged sand)	0.3 - 0.5	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP40	Fill	0.2 - 0.4	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP41	Fill (dredged sand)	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP42	Fill/Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		17	<0.1
TP43	Fill (dredged sand)	0.3 - 0.5	No	<10	<50	<100	<100	<50	2.3	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP44	Fill (dredged sand)	0.3 - 0.5	No	<10	<50	<100	<100	<50	3.3	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP45	Fill/Topsoil	0.1 - 0.3	No	<10	<50	<100	<100	<50	25	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP46	Topsoil	0.0 - 0.1	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		8	<0.1
TP47	Fill	0.3 - 0.5	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP48	Topsoil	0.0 - 0.2	No	<10	<50	140	160	300	<0.5	<0.1	<0.2	<5		<1		2		<5	<0.1
TP49	Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		2		<5	<0.1
TP50	Topsoil	0.0 - 0.2	No	<10	<50	140	180	320	<0.5	<0.1	<0.2	<5		<1		2		<5	<0.1
TP51	Topsoil	0.0 - 0.2	No	<10	<50	230	270	500	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP52	Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP53	Topsoil	0.0 - 0.2	No	<10	<50	310	320	630	<0.5	<0.1	<0.2	<5		<1		2		6	<0.1
TP54	Topsoil	0.0 - 0.2	No	<10	<50	200	250	450	<0.5	<0.1	<0.2	<5		<1		<2		<5	<0.1
TP55	Topsoil	0.0 - 0.2	No	<10	<50	220	280	500	<0.5	<0.1	<0.2	<5		<1		2		9	<0.1
SS101	Fill/Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<50	<0.1	<0.2	<5		<1		<2		<5	<0.1
SS102	Fill/Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<50	<0.1	<0.2	<5		<1		<2		16	<0.1
SS103	Fill/Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<50	<0.1	<0.2	<5		<1		<2		26	<0.1
SS104	Fill/Topsoil	0.0 - 0.2	No	<10	<50	<100	<100	<50	<50	<0.1	<0.2	<5		<1		4		18	<0.1
SS105	Fill/Topsoil	0.0 - 0.2	No	<10	<50	<													



Client: Allam Property Group
Job No: RGS03137.1
Project: Proposed MHE
Location: 40-80 Chapmans Road, Tuncurry

Summary Table - Comparison of Groundwater Chemical Analysis Results (concentrations in ug/L) for 'Aquatic Ecosystems'

Location	TOTAL RECOVERABLE HYDROCARBONS					Total PAH	Naphthalene (PAH)	PESTICIDES		PCB	BTEX				DISSOLVED HEAVY METALS (mg/L)								PHYSICAL PARAMETERS			
	C6-C10	C10-C16	C16-C34	C34-C40	TOTAL 10-40			OC	OP		Benzene	Toluene	Ethyl- benzene	Xylenes (Total)	As	Cd	Cr**	Cu	Pb	Ni	Zn	Hg	pH	EC (µS/cm)	TSS (mg/L)	DO (mg/L)
MW1	<20	<100	<100	<100	<100	<0.5	<1.0	<LOR	<LOR	<1	<1	<2	<2	<2	0.013	<0.0001	0.002	<0.001	<0.001	<0.001	0.018	<0.0001	5.18	818	3190	4
MW2	<20	<100	<100	<100	<100	<0.5	<1.0	<LOR	<LOR	<1	<1	<2	<2	<2	0.055	<0.0001	0.002	<0.001	<0.001	0.002	0.01	<0.0001	5.59	114	7950	4.2
MW3	<20	<100	<100	<100	<100	<0.5	<1.0	<LOR	<LOR	<1	<1	<2	<2	<2	0.003	0.0002	0.003	0.002	0.015	0.037	<0.0001	5.98	518	5430	3.5	
MW4	<20	<100	<100	<100	<100	<0.5	<1.0	<LOR	<LOR	<1	<1	<2	<2	<2	0.049	<0.0001	0.003	<0.001	<0.001	0.002	0.012	<0.0001	6.14	326	13200	2.1
D101 (Duplicate of MW1)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.014	<0.0001	0.002	<0.001	<0.001	<0.001	0.017	<0.0001	--	--	--	--
D101 - RPD%	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.4	0.0	0.0	0.0	0.0	0.0	5.7	0.0	--	--	--	--
CRITERIA (ANZECC 2000) - 95% Protection of Species for Aquatic Ecosystems - Marine Water	NL	NL	NL	NL	NL	NL	16	0.005	0.05	NL	700	NL	NL	550	NL	0.0055	0.027	0.0013	0.0044	0.07	0.015	0.0006				
Recreational Human Health Screening Criteria (NHMRC 2008)	NL	NL	NL	NL	NL	NL	NL	--	--	0.1	10	8000	3000	6000	0.007	0.002	0.05	2.0	0.01	0.02	NL	0.001				
Health Screening Level (HSL)*	NL	NL	NL	NL	NL	NL	50	--	--	--	500	NL	NL	NL	NL	0.0007	0.027	0.0013	0.0044	0.007	0.015	0.0001				
Dutch Intervention Level					600									350												
NSW Clean Waters Act					10,000*																					

NOTES:

Denotes concentration exceeds adopted guideline criteria

NLNo Limit available

*TRH Criteria based on NSW Clean Waters Act criteria for oil and grease entering waters

LORLimit of Reporting

** Guideline for CrIII

N/DNot Detected

[^]Health Screening Level (F2) for Residential A land use and coarse grained soil (sand), 0 - 1m depth

CERTIFICATE OF ANALYSIS

Work Order : **ES2236154**
Client : **REGIONAL GEOTECHNICAL SOLUTION**
Contact : Andrew Hills
Address : 44 BENT STREET
 WINGHAM NSW, AUSTRALIA 2429
Telephone : +61 02 6553 5641
Project : RGS03137.1 Proposed MHE
Order number : ----
C-O-C number : ----
Sampler : ----
Site : 40-80 Chapmans Road, Tuncurry
Quote number : EN/222
No. of samples received : 66
No. of samples analysed : 66

Page : 1 of 60
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 10-Oct-2022 08:16
Date Analysis Commenced : 11-Oct-2022
Issue Date : 17-Oct-2022 18:14



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alana Smylie	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP075(SIM): LOR for samples raised due to high amount of moisture content.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- ED007 and ED008: When Exchangeable AI is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H⁺ + Al³⁺).
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP1 0.0-0.2	TP2 0.0-0.2	TP3 0.0-0.2	TP4 0.0-0.2	TP5 0.8-1.0
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-001	ES2236154-002	ES2236154-003	ES2236154-005	ES2236154-006
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		----	4.8	----	----	----
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		----	13	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.8	10.2	21.6	14.7	8.3
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	No	No
Organic Fibre	----	0.1	g/kg		No	No	No	No	No
Sample weight (dry)	----	0.01	g		427	579	414	461	596
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		----	0.2	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g		----	0.5	----	----	----
Exchangeable Potassium	----	0.1	meq/100g		----	<0.1	----	----	----
Exchangeable Sodium	----	0.1	meq/100g		----	<0.1	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g		----	0.8	----	----	----
Exchangeable Sodium Percent	----	0.1	%		----	4.8	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		<2	<2	<2	<2	2
Copper	7440-50-8	5	mg/kg		<5	<5	<5	<5	13
Lead	7439-92-1	5	mg/kg		<5	<5	<5	<5	10
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	<2	3
Zinc	7440-66-6	5	mg/kg		<5	<5	<5	<5	38
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP004: Organic Matter									
Total Organic Carbon	----	0.5	%		----	0.8	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP1 0.0-0.2	TP2 0.0-0.2	TP3 0.0-0.2	TP4 0.0-0.2	TP5 0.8-1.0
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-001	ES2236154-002	ES2236154-003	ES2236154-005	ES2236154-006
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP1 0.0-0.2	TP2 0.0-0.2	TP3 0.0-0.2	TP4 0.0-0.2	TP5 0.8-1.0
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-001	ES2236154-002	ES2236154-003	ES2236154-005	ES2236154-006
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.8
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.8
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.6
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP1 0.0-0.2	TP2 0.0-0.2	TP3 0.0-0.2	TP4 0.0-0.2	TP5 0.8-1.0
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	
Compound	CAS Number	LOR	Unit	ES2236154-001	ES2236154-002	ES2236154-003	ES2236154-005	ES2236154-006	
				Result	Result	Result	Result	Result	
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	89.9	93.0	86.0	97.2	92.4	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	100	92.2	87.4	86.0	106	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	97.7	53.0	69.0	66.9	54.3	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	82.5	80.5	87.2	86.4	80.2	
2-Chlorophenol-D4	93951-73-6	0.5	%	89.8	89.1	93.8	92.0	89.6	
2,4,6-Tribromophenol	118-79-6	0.5	%	77.2	75.2	80.5	80.4	72.4	
EP075(SIM)T: PAH Surrogates									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP1 0.0-0.2	TP2 0.0-0.2	TP3 0.0-0.2	TP4 0.0-0.2	TP5 0.8-1.0
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-001	ES2236154-002	ES2236154-003	ES2236154-005	ES2236154-006
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.5	%		89.1	88.2	92.1	93.3	87.8
Anthracene-d10	1719-06-8	0.5	%		79.0	85.6	84.9	87.6	81.3
4-Terphenyl-d14	1718-51-0	0.5	%		92.9	93.8	97.6	99.4	93.1
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		88.1	88.7	78.5	79.3	84.3
Toluene-D8	2037-26-5	0.2	%		84.6	90.0	80.5	81.7	86.9
4-Bromofluorobenzene	460-00-4	0.2	%		94.3	107	97.1	97.4	104



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP6 0.7-0.9	TP7 0.5-0.7	TP8 0.4-0.6	TP9 0.0-0.1	TP10 0.3-0.5
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-007	ES2236154-008	ES2236154-009	ES2236154-010	ES2236154-011
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		6.8	18.7	14.6	5.1	12.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	No	No
Organic Fibre	----	0.1	g/kg		No	No	No	No	No
Sample weight (dry)	----	0.01	g		500	487	556	348	641
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	7	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		4	4	6	<2	5
Copper	7440-50-8	5	mg/kg		12	<5	16	<5	25
Lead	7439-92-1	5	mg/kg		7	<5	7	<5	17
Nickel	7440-02-0	2	mg/kg		3	<2	6	<2	3
Zinc	7440-66-6	5	mg/kg		70	<5	57	10	47
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP6 0.7-0.9	TP7 0.5-0.7	TP8 0.4-0.6	TP9 0.0-0.1	TP10 0.3-0.5
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	06-Oct-2022 00:00	
Compound	CAS Number	LOR	Unit	ES2236154-007	ES2236154-008	ES2236154-009	ES2236154-010	ES2236154-011	
				Result	Result	Result	Result	Result	
EP068A: Organochlorine Pesticides (OC) - Continued									
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP6 0.7-0.9	TP7 0.5-0.7	TP8 0.4-0.6	TP9 0.0-0.1	TP10 0.3-0.5
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-007	ES2236154-008	ES2236154-009	ES2236154-010	ES2236154-011
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP6 0.7-0.9	TP7 0.5-0.7	TP8 0.4-0.6	TP9 0.0-0.1	TP10 0.3-0.5
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-007	ES2236154-008	ES2236154-009	ES2236154-010	ES2236154-011
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		90.9	81.0	115	99.0	105
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		99.3	87.6	115	108	103
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		78.5	52.6	71.4	89.6	55.5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		85.2	80.7	81.1	83.3	81.2
2-Chlorophenol-D4	93951-73-6	0.5	%		95.5	88.4	88.9	91.6	91.3
2,4,6-Tribromophenol	118-79-6	0.5	%		71.9	71.0	72.5	71.6	66.0
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		94.4	86.7	90.4	93.2	88.8
Anthracene-d10	1719-06-8	0.5	%		89.4	81.3	85.0	88.8	81.4
4-Terphenyl-d14	1718-51-0	0.5	%		101	93.0	97.3	101	102
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		82.6	78.8	83.9	84.0	83.6
Toluene-D8	2037-26-5	0.2	%		83.8	74.2	82.0	83.4	79.9
4-Bromofluorobenzene	460-00-4	0.2	%		105	95.0	102	103	99.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP11 0.0-0.2	TP12 0.1-0.3	TP12 0.4-0.5	TP13 0.5-0.7	TP14 0.9-1.1
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-012	ES2236154-013	ES2236154-014	ES2236154-015	ES2236154-016
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		10.5	7.6	10.5	10.0	12.8
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	----	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	----	No	No
Asbestos Type	1332-21-4	-	--		-	-	----	-	-
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	----	No	No
Organic Fibre	----	0.1	g/kg		No	No	----	No	No
Sample weight (dry)	----	0.01	g		852	577	----	675	738
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	----	A. SMYLIE	A. SMYLIE
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		4	8	5	5	7
Copper	7440-50-8	5	mg/kg		11	28	15	14	18
Lead	7439-92-1	5	mg/kg		24	11	8	7	12
Nickel	7440-02-0	2	mg/kg		3	7	4	4	4
Zinc	7440-66-6	5	mg/kg		66	71	47	40	54
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP11 0.0-0.2	TP12 0.1-0.3	TP12 0.4-0.5	TP13 0.5-0.7	TP14 0.9-1.1
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-012	ES2236154-013	ES2236154-014	ES2236154-015	ES2236154-016
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP11 0.0-0.2	TP12 0.1-0.3	TP12 0.4-0.5	TP13 0.5-0.7	TP14 0.9-1.1
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-012	ES2236154-013	ES2236154-014	ES2236154-015	ES2236154-016
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP11 0.0-0.2	TP12 0.1-0.3	TP12 0.4-0.5	TP13 0.5-0.7	TP14 0.9-1.1
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-012	ES2236154-013	ES2236154-014	ES2236154-015	ES2236154-016
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		83.8	82.7	89.6	80.1	73.0
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		94.6	91.3	88.2	86.7	79.7
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		67.1	62.0	62.0	52.5	59.1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		86.8	80.1	81.1	83.4	86.9
2-Chlorophenol-D4	93951-73-6	0.5	%		88.6	88.1	88.7	90.3	92.3
2,4,6-Tribromophenol	118-79-6	0.5	%		66.0	67.3	71.4	70.5	67.0
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		87.5	96.1	98.0	91.5	87.1
Anthracene-d10	1719-06-8	0.5	%		81.6	84.8	82.4	86.9	81.3
4-Terphenyl-d14	1718-51-0	0.5	%		87.6	104	96.8	98.4	94.2
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		80.1	80.4	77.7	84.7	90.2
Toluene-D8	2037-26-5	0.2	%		74.6	80.3	77.2	82.7	86.1
4-Bromofluorobenzene	460-00-4	0.2	%		101	99.5	96.6	106	93.0



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP15 0.2-0.4	TP16 1.2-1.4	TP17 0.3-0.5	TP18 0.0-0.2	TP19 0.1-0.3
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-017	ES2236154-018	ES2236154-019	ES2236154-020	ES2236154-021
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	8.3	9.3	11.3	6.0	7.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Synthetic Mineral Fibre	----	0.1	g/kg	No	No	No	No	No
Organic Fibre	----	0.1	g/kg	No	No	No	No	No
Sample weight (dry)	----	0.01	g	614	425	522	580	762
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	4	2	6	<2	6
Copper	7440-50-8	5	mg/kg	18	13	15	6	13
Lead	7439-92-1	5	mg/kg	6	<5	6	16	16
Nickel	7440-02-0	2	mg/kg	4	2	4	<2	4
Zinc	7440-66-6	5	mg/kg	52	49	46	50	51
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP15 0.2-0.4	TP16 1.2-1.4	TP17 0.3-0.5	TP18 0.0-0.2	TP19 0.1-0.3
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-017	ES2236154-018	ES2236154-019	ES2236154-020	ES2236154-021
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP15 0.2-0.4	TP16 1.2-1.4	TP17 0.3-0.5	TP18 0.0-0.2	TP19 0.1-0.3
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-017	ES2236154-018	ES2236154-019	ES2236154-020	ES2236154-021
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	1.2	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	2.7	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	2.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	0.8	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	0.8	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	1.2	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	1.1	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	11.4	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.4	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	1.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.9	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP15 0.2-0.4	TP16 1.2-1.4	TP17 0.3-0.5	TP18 0.0-0.2	TP19 0.1-0.3
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-017	ES2236154-018	ES2236154-019	ES2236154-020	ES2236154-021
				Result	Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		91.1	104	93.9	104	93.2
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		88.2	106	101	108	92.1
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		55.8	80.3	70.7	68.6	61.4
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		83.1	80.4	81.7	80.9	81.8
2-Chlorophenol-D4	93951-73-6	0.5	%		91.3	90.0	92.8	89.2	83.8
2,4,6-Tribromophenol	118-79-6	0.5	%		69.2	67.5	65.6	64.0	58.2
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		90.6	83.6	94.9	91.2	84.9
Anthracene-d10	1719-06-8	0.5	%		86.4	88.4	88.8	86.6	82.0
4-Terphenyl-d14	1718-51-0	0.5	%		102	98.6	104	97.2	84.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		93.4	96.3	94.8	99.9	87.4
Toluene-D8	2037-26-5	0.2	%		104	103	99.6	108	90.8
4-Bromofluorobenzene	460-00-4	0.2	%		114	113	109	110	104



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP20 0.0-0.2	TP21 0.0-0.2	TP22 0.2-0.4	TP23 0.2-0.4	TP24 0.0-0.1
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-022	ES2236154-023	ES2236154-025	ES2236154-026	ES2236154-027
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		31.0	34.8	2.6	15.0	19.9
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	----
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	----
Asbestos Type	1332-21-4	-	--		-	-	-	-	----
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	No	----
Organic Fibre	----	0.1	g/kg		No	No	No	No	----
Sample weight (dry)	----	0.01	g		366	367	534	352	----
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	7	<5	<5	10
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		3	6	<2	4	7
Copper	7440-50-8	5	mg/kg		<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg		21	<5	<5	<5	5
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg		16	7	<5	11	26
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP20 0.0-0.2	TP21 0.0-0.2	TP22 0.2-0.4	TP23 0.2-0.4	TP24 0.0-0.1
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-022	ES2236154-023	ES2236154-025	ES2236154-026	ES2236154-027
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP20 0.0-0.2	TP21 0.0-0.2	TP22 0.2-0.4	TP23 0.2-0.4	TP24 0.0-0.1
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-022	ES2236154-023	ES2236154-025	ES2236154-026	ES2236154-027
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	0.7	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	3.2	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	2.6	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	1.2	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	1.1	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	1.4	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	1.1	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	0.6	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	0.7	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	13.1	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	1.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	1.7	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	2.0	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP20 0.0-0.2	TP21 0.0-0.2	TP22 0.2-0.4	TP23 0.2-0.4	TP24 0.0-0.1
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-022	ES2236154-023	ES2236154-025	ES2236154-026	ES2236154-027
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		89.0	98.7	91.0	79.3	83.9
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		106	109	104	98.8	93.9
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		82.9	87.5	94.4	74.4	78.7
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		68.2	70.5	73.8	82.3	71.1
2-Chlorophenol-D4	93951-73-6	0.5	%		79.9	81.7	88.4	101	84.0
2,4,6-Tribromophenol	118-79-6	0.5	%		73.2	78.1	79.0	81.2	80.1
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		101	98.7	107	122	103
Anthracene-d10	1719-06-8	0.5	%		91.0	88.6	99.6	113	91.2
4-Terphenyl-d14	1718-51-0	0.5	%		94.8	96.5	100	115	98.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		87.4	87.6	107	96.0	82.8
Toluene-D8	2037-26-5	0.2	%		92.6	92.2	114	107	86.5
4-Bromofluorobenzene	460-00-4	0.2	%		98.8	97.9	122	113	92.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP24 0.3-0.5	TP25 0.4-0.6	TP26 0.3-0.5	TP27 0.2-0.4	TP28 0.1-0.3
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-028	ES2236154-029	ES2236154-030	ES2236154-031	ES2236154-032
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		4.9	7.3	3.4	5.0	6.9
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	No	No
Organic Fibre	----	0.1	g/kg		No	No	No	No	No
Sample weight (dry)	----	0.01	g		371	568	586	538	498
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		<2	4	<2	<2	2
Copper	7440-50-8	5	mg/kg		<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg		<5	11	<5	<5	<5
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg		<5	21	<5	<5	7
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP24 0.3-0.5	TP25 0.4-0.6	TP26 0.3-0.5	TP27 0.2-0.4	TP28 0.1-0.3
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-028	ES2236154-029	ES2236154-030	ES2236154-031	ES2236154-032
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP24 0.3-0.5	TP25 0.4-0.6	TP26 0.3-0.5	TP27 0.2-0.4	TP28 0.1-0.3
Sampling date / time				04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-028	ES2236154-029	ES2236154-030	ES2236154-031	ES2236154-032
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.7	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	3.6	<0.5	0.7
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	3.0	<0.5	0.6
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	1.6	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	1.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	2.1	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	1.6	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.9	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	1.0	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	16.6	<0.5	1.3
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	2.1	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	2.4	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	2.6	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP24 0.3-0.5	TP25 0.4-0.6	TP26 0.3-0.5	TP27 0.2-0.4	TP28 0.1-0.3
Sampling date / time					04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00	04-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-028	ES2236154-029	ES2236154-030	ES2236154-031	ES2236154-032
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		81.2	120	78.4	81.4	101
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		94.7	130	98.0	85.4	103
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		81.9	102	83.0	63.7	80.3
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		73.6	71.5	70.6	68.4	71.0
2-Chlorophenol-D4	93951-73-6	0.5	%		86.0	82.9	84.8	84.0	86.8
2,4,6-Tribromophenol	118-79-6	0.5	%		78.8	76.2	74.7	75.0	77.5
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		106	100	104	102	107
Anthracene-d10	1719-06-8	0.5	%		97.8	91.8	92.7	95.5	98.9
4-Terphenyl-d14	1718-51-0	0.5	%		100.0	94.6	97.6	96.6	100
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		95.2	103	97.5	97.1	100
Toluene-D8	2037-26-5	0.2	%		99.3	115	103	100	106
4-Bromofluorobenzene	460-00-4	0.2	%		110	118	109	109	110



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP29 0.4-0.6	TP30 0.4-0.5	TP31 0.0-0.2	TP31 0.3-0.5	TP32 0.4-0.6
Sampling date / time					04-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-033	ES2236154-034	ES2236154-035	ES2236154-036	ES2236154-037
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		3.7	7.0	13.2	3.0	3.1
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	----	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	----	No
Asbestos Type	1332-21-4	-	--		-	-	-	----	-
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	----	No
Organic Fibre	----	0.1	g/kg		No	No	No	----	No
Sample weight (dry)	----	0.01	g		593	464	284	----	484
APPROVED IDENTIFIER:	----	-	--		A. SMYLLIE	A. SMYLLIE	A. SMYLLIE	----	A. SMYLLIE
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		<2	<2	5	<2	<2
Copper	7440-50-8	5	mg/kg		<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg		<5	<5	<5	<5	<5
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg		<5	<5	5	<5	<5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP29 0.4-0.6	TP30 0.4-0.5	TP31 0.0-0.2	TP31 0.3-0.5	TP32 0.4-0.6
Sampling date / time				04-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-033	ES2236154-034	ES2236154-035	ES2236154-036	ES2236154-037	
				Result	Result	Result	Result	Result	
EP068A: Organochlorine Pesticides (OC) - Continued									
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP29 0.4-0.6	TP30 0.4-0.5	TP31 0.0-0.2	TP31 0.3-0.5	TP32 0.4-0.6
Sampling date / time				04-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-033	ES2236154-034	ES2236154-035	ES2236154-036	ES2236154-037
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP29 0.4-0.6	TP30 0.4-0.5	TP31 0.0-0.2	TP31 0.3-0.5	TP32 0.4-0.6
Sampling date / time					04-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-033	ES2236154-034	ES2236154-035	ES2236154-036	ES2236154-037
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		81.4	83.5	85.7	83.6	105
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		88.6	98.3	94.3	97.7	128
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		72.6	70.0	74.4	76.8	93.3
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		69.5	64.1	69.5	68.5	68.0
2-Chlorophenol-D4	93951-73-6	0.5	%		83.6	79.6	83.1	84.0	82.3
2,4,6-Tribromophenol	118-79-6	0.5	%		70.8	66.4	75.3	71.6	66.2
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		101	99.6	102	103	99.8
Anthracene-d10	1719-06-8	0.5	%		95.4	90.7	90.2	94.0	88.4
4-Terphenyl-d14	1718-51-0	0.5	%		95.2	94.2	95.0	97.4	94.0
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		99.6	96.4	89.4	92.7	83.1
Toluene-D8	2037-26-5	0.2	%		106	104	91.5	97.4	82.7
4-Bromofluorobenzene	460-00-4	0.2	%		112	110	99.4	106	93.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP33 0.1-0.3	TP34 0.6-0.8	TP35 0.8-1.0	TP36 0.0-0.2	TP37 0.1-0.3
Sampling date / time					05-Oct-2022 00:00	06-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-038	ES2236154-039	ES2236154-040	ES2236154-041	ES2236154-042
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.0	3.6	3.3	2.9	8.6
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	No	No
Organic Fibre	----	0.1	g/kg		No	No	No	No	No
Sample weight (dry)	----	0.01	g		281	455	487	408	493
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		5	<2	<2	<2	<2
Copper	7440-50-8	5	mg/kg		<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg		<5	<5	<5	<5	<5
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg		<5	<5	<5	10	12
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP33 0.1-0.3	TP34 0.6-0.8	TP35 0.8-1.0	TP36 0.0-0.2	TP37 0.1-0.3
Sampling date / time				05-Oct-2022 00:00	06-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-038	ES2236154-039	ES2236154-040	ES2236154-041	ES2236154-042
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP33 0.1-0.3	TP34 0.6-0.8	TP35 0.8-1.0	TP36 0.0-0.2	TP37 0.1-0.3
Sampling date / time				05-Oct-2022 00:00	06-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-038	ES2236154-039	ES2236154-040	ES2236154-041	ES2236154-042
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	0.9	1.4	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	0.7	1.2	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.7	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	1.6	4.8	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.9	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP33 0.1-0.3	TP34 0.6-0.8	TP35 0.8-1.0	TP36 0.0-0.2	TP37 0.1-0.3
Sampling date / time					05-Oct-2022 00:00	06-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-038	ES2236154-039	ES2236154-040	ES2236154-041	ES2236154-042
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		94.8	94.7	92.1	125	96.8
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		109	113	115	143	112
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		88.5	89.1	93.5	98.1	82.0
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		70.1	69.0	72.0	66.8	67.6
2-Chlorophenol-D4	93951-73-6	0.5	%		84.2	83.0	86.7	81.4	82.4
2,4,6-Tribromophenol	118-79-6	0.5	%		74.7	65.6	68.1	63.5	69.4
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		103	100	105	101	102
Anthracene-d10	1719-06-8	0.5	%		92.1	93.8	98.4	92.1	92.9
4-Terphenyl-d14	1718-51-0	0.5	%		98.0	96.1	99.0	98.6	97.2
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		90.8	103	104	102	101
Toluene-D8	2037-26-5	0.2	%		87.8	100	102	92.3	94.4
4-Bromofluorobenzene	460-00-4	0.2	%		96.2	108	110	102	106



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP38 0.0-0.1	TP38 0.2-0.4	TP39 0.3-0.5	TP40 0.2-0.4	TP41 0.0-0.2
Sampling date / time					05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-043	ES2236154-044	ES2236154-045	ES2236154-046	ES2236154-047
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		4.3	7.3	9.6	5.2	7.4
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		----	----	No	No	No
Asbestos Type	1332-21-4	-	--		----	----	-	-	-
Synthetic Mineral Fibre	----	0.1	g/kg		----	----	No	No	No
Organic Fibre	----	0.1	g/kg		----	----	No	No	No
Sample weight (dry)	----	0.01	g		----	----	480	525	458
APPROVED IDENTIFIER:	----	-	--		----	----	A. SMYLYE	A. SMYLYE	A. SMYLYE
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		<2	<2	<2	<2	<2
Copper	7440-50-8	5	mg/kg		<5	9	<5	<5	<5
Lead	7439-92-1	5	mg/kg		5	<5	<5	<5	<5
Nickel	7440-02-0	2	mg/kg		<2	2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg		13	23	<5	6	<5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP38 0.0-0.1	TP38 0.2-0.4	TP39 0.3-0.5	TP40 0.2-0.4	TP41 0.0-0.2
Sampling date / time				05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	
Compound	CAS Number	LOR	Unit	ES2236154-043	ES2236154-044	ES2236154-045	ES2236154-046	ES2236154-047	
				Result	Result	Result	Result	Result	
EP068A: Organochlorine Pesticides (OC) - Continued									
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP38 0.0-0.1	TP38 0.2-0.4	TP39 0.3-0.5	TP40 0.2-0.4	TP41 0.0-0.2
Sampling date / time				05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-043	ES2236154-044	ES2236154-045	ES2236154-046	ES2236154-047
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP38 0.0-0.1	TP38 0.2-0.4	TP39 0.3-0.5	TP40 0.2-0.4	TP41 0.0-0.2
Sampling date / time					05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-043	ES2236154-044	ES2236154-045	ES2236154-046	ES2236154-047
				Result	Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		75.7	72.0	88.3	85.6	71.2
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		87.3	84.8	98.7	97.6	66.3
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		66.6	68.8	73.2	56.8	71.7
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		72.5	69.4	69.8	71.9	83.9
2-Chlorophenol-D4	93951-73-6	0.5	%		74.5	71.1	71.7	75.5	84.9
2,4,6-Tribromophenol	118-79-6	0.5	%		58.3	55.4	53.9	49.2	74.0
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		95.1	89.7	90.2	97.8	97.4
Anthracene-d10	1719-06-8	0.5	%		95.4	91.3	91.3	96.7	100
4-Terphenyl-d14	1718-51-0	0.5	%		89.4	84.0	84.0	95.2	105
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		99.8	101	101	106	91.6
Toluene-D8	2037-26-5	0.2	%		92.4	101	93.8	103	84.0
4-Bromofluorobenzene	460-00-4	0.2	%		104	107	104	110	98.0



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP42 0.0-0.2	TP43 0.3-0.5	TP44 0.3-0.5	TP45 0.1-0.3	TP46 0.0-0.1
Sampling date / time					05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-048	ES2236154-049	ES2236154-050	ES2236154-051	ES2236154-052
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		11.6	3.9	4.7	5.2	11.0
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	No	No
Organic Fibre	----	0.1	g/kg		No	No	No	No	No
Sample weight (dry)	----	0.01	g		358	503	496	515	453
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		4	<2	<2	<2	<2
Copper	7440-50-8	5	mg/kg		<5	<5	<5	<5	5
Lead	7439-92-1	5	mg/kg		17	<5	<5	<5	8
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg		18	<5	<5	<5	13
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP42 0.0-0.2	TP43 0.3-0.5	TP44 0.3-0.5	TP45 0.1-0.3	TP46 0.0-0.1
Sampling date / time				05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-048	ES2236154-049	ES2236154-050	ES2236154-051	ES2236154-052
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP42 0.0-0.2	TP43 0.3-0.5	TP44 0.3-0.5	TP45 0.1-0.3	TP46 0.0-0.1
Sampling date / time				05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-048	ES2236154-049	ES2236154-050	ES2236154-051	ES2236154-052
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.5	2.6	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	0.8	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.0	1.2	5.6	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	0.8	1.0	4.3	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	2.3	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	2.1	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	0.5	0.6	2.6	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	0.8	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	1.8	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	1.0	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	1.1	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	2.3	3.3	25.0	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	2.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	2.8	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	3.0	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP42 0.0-0.2	TP43 0.3-0.5	TP44 0.3-0.5	TP45 0.1-0.3	TP46 0.0-0.1
Sampling date / time					05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-048	ES2236154-049	ES2236154-050	ES2236154-051	ES2236154-052
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		62.4	64.1	75.0	61.8	63.5
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		71.6	67.6	89.3	64.7	68.9
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		67.6	73.9	93.6	56.6	75.2
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		82.4	85.6	82.6	82.3	80.0
2-Chlorophenol-D4	93951-73-6	0.5	%		82.4	84.9	82.8	84.7	80.0
2,4,6-Tribromophenol	118-79-6	0.5	%		72.2	76.4	71.9	71.9	71.5
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		92.4	96.2	93.9	93.6	88.8
Anthracene-d10	1719-06-8	0.5	%		93.6	102	98.9	96.6	92.3
4-Terphenyl-d14	1718-51-0	0.5	%		98.8	104	100	98.8	93.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		99.1	101	95.1	107	110
Toluene-D8	2037-26-5	0.2	%		93.1	95.9	87.1	101	102
4-Bromofluorobenzene	460-00-4	0.2	%		106	106	101	101	102



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP47 0.3-0.5	TP48 0.0-0.2	TP49 0.0-0.2	TP50 0.0-0.2	TP51 0.0-0.2
Sampling date / time					05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-053	ES2236154-054	ES2236154-055	ES2236154-056	ES2236154-057
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		11.3	52.8	35.1	49.9	48.3
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	No	No
Organic Fibre	----	0.1	g/kg		No	No	No	No	No
Sample weight (dry)	----	0.01	g		513	176	308	145	125
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		<2	8	8	8	8
Copper	7440-50-8	5	mg/kg		<5	<5	<5	6	<5
Lead	7439-92-1	5	mg/kg		<5	<5	<5	<5	<5
Nickel	7440-02-0	2	mg/kg		<2	2	2	2	<2
Zinc	7440-66-6	5	mg/kg		6	8	6	<5	6
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP47 0.3-0.5	TP48 0.0-0.2	TP49 0.0-0.2	TP50 0.0-0.2	TP51 0.0-0.2
Sampling date / time				05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-053	ES2236154-054	ES2236154-055	ES2236154-056	ES2236154-057
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP47 0.3-0.5	TP48 0.0-0.2	TP49 0.0-0.2	TP50 0.0-0.2	TP51 0.0-0.2
Sampling date / time				05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-053	ES2236154-054	ES2236154-055	ES2236154-056	ES2236154-057
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.8	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	1.0	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.9	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	140	<100	140	230
C29 - C36 Fraction	----	100	mg/kg	<100	160	<100	180	270
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	300	<50	320	500
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	240	120	250	430
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	130	130
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	240	120	380	560



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP47 0.3-0.5	TP48 0.0-0.2	TP49 0.0-0.2	TP50 0.0-0.2	TP51 0.0-0.2
Sampling date / time					05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-053	ES2236154-054	ES2236154-055	ES2236154-056	ES2236154-057
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		80.8	74.2	81.6	70.0	86.4
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		73.5	80.4	85.8	78.6	83.2
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		86.5	87.3	103	90.8	98.1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		86.3	89.7	82.6	88.2	82.7
2-Chlorophenol-D4	93951-73-6	0.5	%		85.3	88.3	82.7	87.8	82.0
2,4,6-Tribromophenol	118-79-6	0.5	%		76.3	86.9	85.2	89.7	90.1
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		96.6	94.2	90.6	95.7	90.6
Anthracene-d10	1719-06-8	0.5	%		103	98.2	94.5	99.3	95.0
4-Terphenyl-d14	1718-51-0	0.5	%		104	99.8	94.7	100	97.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		105	79.5	98.4	91.2	89.6
Toluene-D8	2037-26-5	0.2	%		97.0	81.2	88.8	80.9	86.8
4-Bromofluorobenzene	460-00-4	0.2	%		98.7	80.6	90.0	73.0	87.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP52 0.0-0.2	TP53 0.0-0.2	TP54 0.0-0.2	TP55 0.0-0.2	D1
Sampling date / time					05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-058	ES2236154-059	ES2236154-060	ES2236154-061	ES2236154-062
				Result	Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		5.8	----	----	----	----
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		148	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		40.5	42.9	55.5	38.4	7.8
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	----
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	----
Asbestos Type	1332-21-4	-	--		-	-	-	-	----
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	No	----
Organic Fibre	----	0.1	g/kg		No	No	No	No	----
Sample weight (dry)	----	0.01	g		167	287	144	184	----
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	----
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		3.6	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g		1.5	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g		0.4	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g		0.4	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g		5.9	----	----	----	----
Exchangeable Sodium Percent	----	0.1	%		6.6	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		11	14	9	7	<2
Copper	7440-50-8	5	mg/kg		<5	<5	<5	7	10
Lead	7439-92-1	5	mg/kg		<5	6	<5	9	8
Nickel	7440-02-0	2	mg/kg		<2	2	<2	2	2
Zinc	7440-66-6	5	mg/kg		<5	<5	8	18	30
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP004: Organic Matter									
Total Organic Carbon	----	0.5	%		4.6	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP52 0.0-0.2	TP53 0.0-0.2	TP54 0.0-0.2	TP55 0.0-0.2	D1
Sampling date / time				05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-058	ES2236154-059	ES2236154-060	ES2236154-061	ES2236154-062
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP52 0.0-0.2	TP53 0.0-0.2	TP54 0.0-0.2	TP55 0.0-0.2	D1
Sampling date / time				05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2236154-058	ES2236154-059	ES2236154-060	ES2236154-061	ES2236154-062
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	1.2
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	1.1
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	0.6
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	0.6
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.8	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	-----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	3.5
^ Benzo(a)pyrene TEQ (zero)	-----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.7
^ Benzo(a)pyrene TEQ (half LOR)	-----	0.5	mg/kg	0.6	0.6	1.0	0.6	1.0
^ Benzo(a)pyrene TEQ (LOR)	-----	0.5	mg/kg	1.2	1.2	1.9	1.2	1.3
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	-----	10	mg/kg	<10	<10	<10	<10	<10

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP52 0.0-0.2	TP53 0.0-0.2	TP54 0.0-0.2	TP55 0.0-0.2	D1
Sampling date / time				05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	06-Oct-2022 00:00	
Compound	CAS Number	LOR	Unit	ES2236154-058	ES2236154-059	ES2236154-060	ES2236154-061	ES2236154-062	
				Result	Result	Result	Result	Result	
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	310	200	220	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	320	250	280	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	630	450	500	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	150	500	380	380	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	240	150	210	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	150	740	530	590	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	73.0	61.6	83.7	87.5	85.6	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	85.5	76.9	83.3	84.7	85.0	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	91.1	81.6	91.4	87.9	80.0	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	85.3	82.4	84.4	81.0	76.6	
2-Chlorophenol-D4	93951-73-6	0.5	%	85.0	80.6	84.1	80.6	79.1	
2,4,6-Tribromophenol	118-79-6	0.5	%	85.6	86.4	88.3	85.5	66.4	
EP075(SIM)T: PAH Surrogates									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP52 0.0-0.2	TP53 0.0-0.2	TP54 0.0-0.2	TP55 0.0-0.2	D1
Sampling date / time					05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	05-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-058	ES2236154-059	ES2236154-060	ES2236154-061	ES2236154-062
				Result	Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.5	%		93.4	89.2	92.6	90.4	94.2
Anthracene-d10	1719-06-8	0.5	%		94.1	91.9	95.4	92.7	107
4-Terphenyl-d14	1718-51-0	0.5	%		101	95.1	96.8	95.3	101
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		81.9	85.9	73.6	81.1	81.2
Toluene-D8	2037-26-5	0.2	%		82.1	95.0	85.7	81.5	87.0
4-Bromofluorobenzene	460-00-4	0.2	%		100	83.5	80.2	86.0	112



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D2	D3	D4	D5	TP7 1.1-1.3
Sampling date / time					06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-063	ES2236154-064	ES2236154-065	ES2236154-066	ES2236154-068
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		9.4	17.4	14.7	41.0	10.6
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		4	4	4	9	6
Copper	7440-50-8	5	mg/kg		18	<5	<5	<5	19
Lead	7439-92-1	5	mg/kg		8	<5	13	<5	6
Nickel	7440-02-0	2	mg/kg		5	<2	<2	<2	5
Zinc	7440-66-6	5	mg/kg		54	9	15	<5	60
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D2	D3	D4	D5	TP7 1.1-1.3
Sampling date / time					06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-063	ES2236154-064	ES2236154-065	ES2236154-066	ES2236154-068
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
4,4'-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D2	D3	D4	D5	TP7 1.1-1.3
Sampling date / time					06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-063	ES2236154-064	ES2236154-065	ES2236154-066	ES2236154-068
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		180	<100	240	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		180	<50	240	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		200	<100	170	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		210	<100	260	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		410	<50	430	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D2	D3	D4	D5	TP7 1.1-1.3
Sampling date / time					06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00	06-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2236154-063	ES2236154-064	ES2236154-065	ES2236154-066	ES2236154-068
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		76.6	101	76.1	97.0	63.0
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		87.1	93.6	82.0	108	64.6
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		81.3	78.4	78.8	91.9	62.9
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		77.9	80.9	79.0	83.7	70.6
2-Chlorophenol-D4	93951-73-6	0.5	%		78.9	83.8	82.5	84.6	73.0
2,4,6-Tribromophenol	118-79-6	0.5	%		73.2	83.0	87.9	90.1	55.3
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		92.0	99.7	97.2	94.1	94.9
Anthracene-d10	1719-06-8	0.5	%		99.2	108	107	99.6	95.6
4-Terphenyl-d14	1718-51-0	0.5	%		95.8	113	107	99.3	87.2
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		85.1	87.1	76.9	75.1	106
Toluene-D8	2037-26-5	0.2	%		93.9	95.2	93.3	83.0	107
4-Bromofluorobenzene	460-00-4	0.2	%		115	111	90.3	100	113



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	RINSATE1	----	----	----	----
Sampling date / time					06-Oct-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2236154-067	-----	-----	-----	-----
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		95.6	----	----	----	----
Toluene-D8	2037-26-5	2	%		99.5	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		100	----	----	----	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	TP1 0.0-0.2 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP2 0.0-0.2 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP3 0.0-0.2 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP4 0.0-0.2 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP5 0.8-1.0 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP6 0.7-0.9 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP7 0.5-0.7 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP8 0.4-0.6 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP9 0.0-0.1 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP10 0.3-0.5 - 06-Oct-2022 00:00	Soil sample.
EA200: Description	TP11 0.0-0.2 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP12 0.1-0.3 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP13 0.5-0.7 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP14 0.9-1.1 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP15 0.2-0.4 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP16 1.2-1.4 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP17 0.3-0.5 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP18 0.0-0.2 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP19 0.1-0.3 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP20 0.0-0.2 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP21 0.0-0.2 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP22 0.2-0.4 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP23 0.2-0.4 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP24 0.3-0.5 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP25 0.4-0.6 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP26 0.3-0.5 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP27 0.2-0.4 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP28 0.1-0.3 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP29 0.4-0.6 - 04-Oct-2022 00:00	Soil sample.
EA200: Description	TP30 0.4-0.5 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP31 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP32 0.4-0.6 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP33 0.1-0.3 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP34 0.6-0.8 - 06-Oct-2022 00:00	Soil sample.
EA200: Description	TP35 0.8-1.0 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP36 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP37 0.1-0.3 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP39 0.3-0.5 - 05-Oct-2022 00:00	Soil sample.



Sub-Matrix: **SOIL**

<i>Method: Compound</i>	<i>Sample ID - Sampling date / time</i>	<i>Analytical Results</i>
EA200: Description	TP40 0.2-0.4 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP41 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP42 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP43 0.3-0.5 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP44 0.3-0.5 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP45 0.1-0.3 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP46 0.0-0.1 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP47 0.3-0.5 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP48 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP49 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP50 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP51 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP52 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP53 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP54 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.
EA200: Description	TP55 0.0-0.2 - 05-Oct-2022 00:00	Soil sample.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

CERTIFICATE OF ANALYSIS

Work Order : **ES2237088**
Client : **REGIONAL GEOTECHNICAL SOLUTION**
Contact : Andrew Hills
Address : 44 BENT STREET
 WINGHAM NSW, AUSTRALIA 2429
Telephone : +61 02 6553 5641
Project : RGS03137.1 Proposed MHE
Order number : ----
C-O-C number : ----
Sampler : ----
Site : 40-48 Chapmans Road, Tuncurry
Quote number : EN/222
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 8
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555
Date Samples Received : 17-Oct-2022 08:25
Date Analysis Commenced : 18-Oct-2022
Issue Date : 24-Oct-2022 12:31



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MW1 0.0-0.2	MW2 0.0-0.2	MW3 0.2-0.4	MW4 0.2-0.4	D101 0.0-0.1
Sampling date / time				13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2237088-001	ES2237088-002	ES2237088-003	ES2237088-004	ES2237088-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.18	5.59	5.98	6.14	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	818	114	518	326	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	3190	7950	5430	13200	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.013	0.055	0.003	0.049	0.014
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0002	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.003	0.003	0.002
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.002	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	0.002	0.015	0.002	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.002	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	0.018	0.010	0.037	0.012	0.017
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP025: Oxygen - Dissolved (DO)								
Dissolved Oxygen	----	0.1	mg/L	4.0	4.2	3.5	2.1	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	<1	<1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MW1 0.0-0.2	MW2 0.0-0.2	MW3 0.2-0.4	MW4 0.2-0.4	D101 0.0-0.1
Sampling date / time				13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2237088-001	ES2237088-002	ES2237088-003	ES2237088-004	ES2237088-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MW1 0.0-0.2	MW2 0.0-0.2	MW3 0.2-0.4	MW4 0.2-0.4	D101 0.0-0.1
Sampling date / time				13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2237088-001	ES2237088-002	ES2237088-003	ES2237088-004	ES2237088-005
				Result	Result	Result	Result	Result

EP075(SIM)A: Phenolic Compounds - Continued

3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MW1 0.0-0.2	MW2 0.0-0.2	MW3 0.2-0.4	MW4 0.2-0.4	D101 0.0-0.1
Sampling date / time				13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2237088-001	ES2237088-002	ES2237088-003	ES2237088-004	ES2237088-005
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	84.5	75.3	73.3	79.4	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	74.3	66.1	63.1	62.6	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	74.2	63.7	66.6	64.2	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	30.2	31.1	26.3	22.0	----
2-Chlorophenol-D4	93951-73-6	1.0	%	57.9	51.6	47.2	43.4	----
2,4,6-Tribromophenol	118-79-6	1.0	%	67.4	47.9	49.9	62.6	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	61.9	56.4	52.4	52.5	----
Anthracene-d10	1719-06-8	1.0	%	88.6	76.7	61.5	68.8	----
4-Terphenyl-d14	1718-51-0	1.0	%	74.8	63.9	60.4	55.1	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	96.0	101	96.3	90.9	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	MW1 0.0-0.2	MW2 0.0-0.2	MW3 0.2-0.4	MW4 0.2-0.4	D101 0.0-0.1
Sampling date / time					13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2237088-001	ES2237088-002	ES2237088-003	ES2237088-004	ES2237088-005
				Result	Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	2	%		96.4	102	96.1	88.2	----
4-Bromofluorobenzene	460-00-4	2	%		93.3	98.1	94.9	87.1	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	45	134
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

CERTIFICATE OF ANALYSIS

Work Order : **ES2237089**
Client : **REGIONAL GEOTECHNICAL SOLUTION**
Contact : Andrew Hills
Address : 44 BENT STREET
 WINGHAM NSW, AUSTRALIA 2429
Telephone : +61 02 6553 5641
Project : RGS03137.1 Proposed MHE
Order number : ----
C-O-C number : ----
Sampler : ----
Site : 40-48 Chapmans Road, Tuncurry
Quote number : EN/222
No. of samples received : 8
No. of samples analysed : 8

Page : 1 of 12
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555
Date Samples Received : 17-Oct-2022 08:25
Date Analysis Commenced : 18-Oct-2022
Issue Date : 24-Oct-2022 16:49



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alana Smylie	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS101 0.0-0.2	SS102 0.0-0.2	SS103 0.0-0.2	SS104 0.0-0.2	SS105 0.0-0.2
Sampling date / time					13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2237089-001	ES2237089-002	ES2237089-003	ES2237089-004	ES2237089-005
				Result	Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		24.9	16.4	21.6	8.2	14.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	No	No
Organic Fibre	----	0.1	g/kg		No	No	No	No	No
Sample weight (dry)	----	0.01	g		269	313	296	462	404
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		4	<2	<2	5	4
Copper	7440-50-8	5	mg/kg		<5	<5	8	9	10
Lead	7439-92-1	5	mg/kg		<5	16	26	18	7
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	4	2
Zinc	7440-66-6	5	mg/kg		59	60	34	51	28
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				SS101 0.0-0.2	SS102 0.0-0.2	SS103 0.0-0.2	SS104 0.0-0.2	SS105 0.0-0.2
Sampling date / time				13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2237089-001	ES2237089-002	ES2237089-003	ES2237089-004	ES2237089-005
				Result	Result	Result	Result	Result

EP068A: Organochlorine Pesticides (OC) - Continued

Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

EP068B: Organophosphorus Pesticides (OP)

Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				SS101 0.0-0.2	SS102 0.0-0.2	SS103 0.0-0.2	SS104 0.0-0.2	SS105 0.0-0.2
Sampling date / time				13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00
Compound	CAS Number	LOR	Unit	ES2237089-001	ES2237089-002	ES2237089-003	ES2237089-004	ES2237089-005
				Result	Result	Result	Result	Result

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.4
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.3
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.8
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.8
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.7
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	6.0
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.0
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	1.3
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.5

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS101 0.0-0.2	SS102 0.0-0.2	SS103 0.0-0.2	SS104 0.0-0.2	SS105 0.0-0.2
Sampling date / time					13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00
Compound	CAS Number	LOR	Unit		ES2237089-001	ES2237089-002	ES2237089-003	ES2237089-004	ES2237089-005
				Result	Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		71.0	88.6	78.6	75.2	77.3
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		67.1	90.8	89.3	74.9	79.0
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		81.3	83.5	75.4	70.0	73.5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		76.6	76.3	81.0	74.1	75.1
2-Chlorophenol-D4	93951-73-6	0.5	%		74.8	76.1	78.9	72.7	72.6
2,4,6-Tribromophenol	118-79-6	0.5	%		74.1	79.1	75.6	70.3	70.1
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		87.7	89.6	90.0	85.1	87.8
Anthracene-d10	1719-06-8	0.5	%		88.5	90.3	86.4	86.9	89.9
4-Terphenyl-d14	1718-51-0	0.5	%		91.6	92.7	100	89.5	91.0
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		87.2	90.8	97.2	116	102
Toluene-D8	2037-26-5	0.2	%		89.1	86.2	97.1	101	102
4-Bromofluorobenzene	460-00-4	0.2	%		87.4	88.1	94.7	107	99.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS106 0.0-0.2	D6 0.0-0.2	D7 0.0-0.2	----	----
Sampling date / time					13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2237089-006	ES2237089-007	ES2237089-008	-----	-----
				Result	Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		21.3	33.5	21.4	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		No	----	----	----	----
Asbestos Type	1332-21-4	-	--		-	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg		No	----	----	----	----
Organic Fibre	----	0.1	g/kg		No	----	----	----	----
Sample weight (dry)	----	0.01	g		349	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg		2	5	<2	----	----
Copper	7440-50-8	5	mg/kg		9	5	<5	----	----
Lead	7439-92-1	5	mg/kg		8	7	60	----	----
Nickel	7440-02-0	2	mg/kg		2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg		27	88	32	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS106 0.0-0.2	D6 0.0-0.2	D7 0.0-0.2	----	----
Sampling date / time				13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	----	----	
Compound	CAS Number	LOR	Unit	ES2237089-006	ES2237089-007	ES2237089-008	-----	-----	
				Result	Result	Result	----	----	
EP068A: Organochlorine Pesticides (OC) - Continued									
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	----	----	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	----	----	
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	----	----	
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS106 0.0-0.2	D6 0.0-0.2	D7 0.0-0.2	----	----
Sampling date / time					13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2237089-006	ES2237089-007	ES2237089-008	-----	-----
				Result	Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	0.8	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	0.7	<0.5	<0.5	<0.5	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	1.5	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS106 0.0-0.2	D6 0.0-0.2	D7 0.0-0.2	----	----
Sampling date / time					13-Oct-2022 00:00	13-Oct-2022 00:00	13-Oct-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2237089-006	ES2237089-007	ES2237089-008	-----	-----
				Result	Result	Result		----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C16 Fraction minus Naphthalene (F2)				50	mg/kg	<50	<50	<50	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of BTEX				0.2	mg/kg	<0.2	<0.2	----	----
^ Total Xylenes				0.5	mg/kg	<0.5	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		79.2	70.7	79.9	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		84.7	66.9	86.3	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		79.2	61.8	75.6	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		74.4	77.2	77.6	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		73.3	76.1	77.6	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		73.4	74.9	76.5	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		86.5	89.0	90.2	----	----
Anthracene-d10	1719-06-8	0.5	%		88.3	91.2	93.1	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		89.7	93.3	94.0	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		112	82.5	92.2	----	----
Toluene-D8	2037-26-5	0.2	%		93.8	78.6	96.0	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		100.0	82.3	98.0	----	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	SS101 0.0-0.2 - 13-Oct-2022 00:00	Soil sample.
EA200: Description	SS102 0.0-0.2 - 13-Oct-2022 00:00	Soil sample.
EA200: Description	SS103 0.0-0.2 - 13-Oct-2022 00:00	Soil sample.
EA200: Description	SS104 0.0-0.2 - 13-Oct-2022 00:00	Soil sample.
EA200: Description	SS105 0.0-0.2 - 13-Oct-2022 00:00	Soil sample.
EA200: Description	SS106 0.0-0.2 - 13-Oct-2022 00:00	Soil sample.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

Appendix C

Groundwater Sampling Field Sheets

**REGIONAL
GEOTECHNICAL
SOLUTIONS**

Date: 12/10/22

045

Job No: 1205
03/3

Sampler: *AT*

Top of Casing (TOC):	0.70	m	Top of Casing (TOC):	N/A	m AHD
Depth to Groundwater:	0.80	m (TOC)	Surface Elevation	↓	m AHD
Depth to Groundwater:	0.10	m (bgs)	Groundwater Elevation	↓	m AHD
Well Depth:	2.70	m (TOC)	Organic Vapours in well	N/A	ppm
Well Depth:	2.00	m (bgs)	Depth to Phase Separated Layer	↓	m
Thickness of Groudwater Column:	1.90	m	Thickness of Phase Separated Layer	↓	m

Purge Method: <i>Baiter</i>	Start Purge: <i>9:10 am</i>
Field Measurement Device:	End Purge: <i>9:15 am</i>
	Total Volume Purged: <i>25</i> L

[illegible]

Sampling Material: <i>Plastic Bottle</i>	Material:
Start Sampling: <i>9:15am</i>	Finish Sampling: <i>9:20am</i>

Well Head Integrity:	Good
Samples Filtered:	Yes
Weather Conditions:	Fine, recent rain fall.
Other:	Duplicate sample - D101 obtained.

**REGIONAL
GEOTECHNICAL
SOLUTIONS**

Allen Properties

Date: 12/10/27

Proposed MTE

Job No: 071371

40-80 Chapmans Road, Thruway
N1W2

Sampler: AT-

Top of Casing (TOC):	0.60	m	Top of Casing (TOC):	N/A	m AHD
Depth to Groundwater:	0.80	m (TOC)	Surface Elevation		m AHD
Depth to Groundwater:	0.20	m (bgs)	Groundwater Elevation		m AHD
Well Depth:	2.50	m (TOC)	Organic Vapours in well		ppm
Well Depth:	2.00	m (bgs)	Depth to Phase Separated Layer		m
Thickness of Groudwater Column:	1.80	m	Thickness of Phase Separated Layer		m

Purge Method:	Boiler	Start Purge:	9:30am
Field Measurement Device:		End Purge:	9:35am
		Total Volume Purged:	25 L

[illegible]

Sampling Material: <i>Master Garter</i>	Material:
Start Sampling: <i>9:30 AM</i>	Finish Sampling: <i>9:45 AM</i>

Well Head Integrity:	Good
Samples Filtered:	Yes
Weather Conditions:	Fine, recent rainfall.
Other:	

**REGIONAL
GEOTECHNICAL
SOLUTIONS**

Field Measurements

Well Purging

Well Sampling

Field Comments

Well Head Integrity:	Good Yes Fine, recent rainfall.
Samples Filtered:	
Weather Conditions:	
Other:	

**REGIONAL
GEOTECHNICAL
SOLUTIONS**

Atkins Properties

Date: 12/10/22

Proposed MHE

40-80 Chapmans Road, Turing
MW4

Job No: 03137.1

MW4

Sampler: Al

Top of Casing (TOC):	0.50	m	Top of Casing (TOC):		m AHD
Depth to Groundwater:	1.00	m (TOC)	Surface Elevation		m AHD
Depth to Groundwater:	0.50	m (bgs)	Groundwater Elevation		m AHD
Well Depth:	2.50	m (TOC)	Organic Vapours in well		ppm
Well Depth:	2.00	m (bgs)	Depth to Phase Separated Layer		m
Thickness of Groudwater Column:	1.50	m	Thickness of Phase Separated Layer		m

Purge Method: <i>Bailer</i>		Start Purge: <i>10:10am</i>
Field Measurement Device:		End Purge: <i>10:15am</i>
		Total Volume Purged: _____ L

[illegible]

Sampling Material: Plastic Bag	Material:
Start Sampling: 10:22am	Finish Sampling: 10:28am

Well Head Integrity:	Good
Samples Filtered:	Yes
Weather Conditions:	fine, recent rainfall.
Other:	

Appendix D

Previous Reports

Lidbury Summers and Whiteman

Proposed Subdivision, Lot 1 DP304132

Chapmans Road, Tuncurry

Geotechnical Investigation

Report No. RGS00319.1-AB

30 January 2012

REGIONAL
GEOTECHNICAL SOLUTIONS





Manning-Great Lakes

Port Macquarie

Coffs Harbour

RGS00319.1-AB

30 January 2012

Lidbury Summers & Whiteman
Level 1, 3 Wharf Street
FORSTER NSW 2428

Attention: Brian Lidbury

Dear Brian,

RE: Proposed Residential Subdivision, Lot 1 DP304132 Chapman Road Tuncurry
Geotechnical Assessment

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken an assessment of the geotechnical conditions at the site of the proposed subdivision at Chapman Road, Tuncurry.

This report provides recommendations on site preparation and foundation design using the materials available on site.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of

Regional Geotechnical Solutions Pty Ltd

A handwritten signature in black ink, appearing to read 'S Morton', is written over a horizontal line.

Steven Morton

Principal



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4	SURFACE CONDITIONS	1
5	GEOLOGICAL SETTING	2
6	ASSESSMENT OF PREVIOUSLY FILLED AREA	3
7	STOCKPILED MATERIALS	5
7.1	General.....	5
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8	ACCESS ROAD PAVEMENT DESIGN	6
9	REQUIREMENTS FOR FURTHER GEOTECHNICAL INPUT	7
10	LIMITATIONS	8

Figures

Figure 1

Appendices

Appendix A Results of Field Investigations

Appendix B Results of Laboratory Testing



1 INTRODUCTION

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a geotechnical assessment of the site of a proposed subdivision located at Lot 1 DP304132 on Chapmans Road, Tuncurry. The subdivision will take place over a low-lying area that has been used by Great Lakes Council for previous stockpiling of spoil materials. Part of the proposed development area has been filled with dredged sand. Stockpiles of various materials were also located on the site. The proposed development will involve further filling over a large proportion of the remainder of the site.

To assist with the further planning and development of the subdivision, the purpose of the work described herein was to:

- Assess the degree of stripping undertaken prior to placement of the existing sand fill;
- Assess the composition and degree of compaction of sand fill already placed on the site;
- Assess stockpiled materials for potential use in further lot filling;
- Assess stockpiled road aggregates for future use in access road construction at the site;
- Make recommendations on geotechnical aspects of future development of the subdivision.

2 FIELD WORK

Field work was carried out on the 16 December and 4 January 2012 and consisted of:

- 16 Dynamic Cone Penetrometer (DCP) tests and 7 hand augers in the previously filled area located at the southern end of the site;
- 12 test pits excavated in the access road area and stockpiles.

Engineering logs of the boreholes, test pits and DCP results are presented in Appendix A. The locations of the boreholes and test pits are shown on Figure 1.

3 LABORATORY TESTING

Samples of former road aggregate material encountered within the stockpiles were submitted to NATA accredited laboratories to be tested for compliance with the Protection of the Environment Operations (Waste) regulations, 2010 Recovered Aggregate Exemption. The results are presented in Appendix B.

4 SURFACE CONDITIONS

The site is situated on a broad, low lying aeolian, or wind-blown sand plain. Typically, surface elevations in the area are low, and some low-lying, poorly drained ground occurs in the vicinity of the site.



Lot 1 DP304132 outlined in red, located within low lying area on broad aeolian sand plain. Council access road and stockpiles visible.

The site is accessed from Chapmans Road by an unsealed access track constructed on a platform of fill of the order of 1m thick. In the southern part of the site, an area has been previously filled to proposed subdivision level, using sand fill that has subsequently been topsoiled and grassed. In the eastern part of the site, surrounding the access track, is a series of stockpiles of material that could potentially be used for further filling of the site. The approximate location and extent of the stockpiles and the previously filled area, are shown on Figure 1.

The northern and western parts of the site contain some localised filling, but are typically low-lying and contained scattered ponded surface water at the time of the field work. These areas are to be further filled prior to development.

5 GEOLOGICAL SETTING

The site is located on a transitional zone between coastal windblown sand plains and a Holocene floodplain and associated strandplain environment. As such, published geological information indicates the site to be within an area underlain by a combination of silt, fluvial sands, clays, marine sands, shells and gravel. Previous filling over this natural profile has occurred, using dredged material consisting of fine to medium grey silty sand.



6 ASSESSMENT OF PREVIOUSLY FILLED AREA

The extent of the previously filled area is shown shaded on Figure 1. The filling has been undertaken by Great Lakes Council. No stripping inspections or compaction testing was conducted at the time of the filling.

Great Lakes Council provided photographs of the stripping and filling process to RGS. A selection of photographs is shown below.



Site prior to stripping and filling. Route of east-west trending access road across site roughly delineated by existing track



Access road fill comprising imported crushed rock material, placed over geofabric placed directly over the existing surface.



Stripping of vegetation and topsoil from proposed lot fill area



Sand fill placed over lot fill area following stripping of topsoil



	
<i>Dredged sand fill paced to edge of lot fill area</i>	<i>Northern edge of lot fill area showing access road fill in foreground and sand lot fill beyond.</i>

The photographic evidence indicates the existing access road to comprise crushed rock materials placed over a geofabric placed directly over the pre-existing site surface. Discussions with Council personnel and the photographs provided indicate that in the area of filling for proposed residential lot construction the fill comprised dredged sand spoil, and the filling area was stripped to remove pre-existing vegetation and topsoil prior to fill placement.

To further assess the stripping and filling, a series of boreholes and penetrometer tests were conducted in the locations shown on Figure 1. Results are presented in Appendix A.

The boreholes encountered a profile comprising:

TOPSOIL FILL: Silty SAND, fine to medium grained, brown to grey; overlying

FILL: Silty SAND, fine to medium, with some gravel, grey; overlying

ALLUVIAL: Silty Sandy CLAY, medium to high plasticity, dark brown, sand fine to medium grained.

The boreholes did not encounter topsoil or organic material at the fill/natural interface, indicating the site was stripped prior to filling. Penetrometer test results indicate an increasing density index with depth, with the sands varying from medium dense to very dense below 400mm depth. Some loose sand was encountered in isolated locations within the upper 400mm, and this may require some minor additional compaction to improve densities in the upper part of the profile prior to final construction.

Based on the findings of this investigation the previously filled area, as delineated on Figure 1, is deemed appropriate for residential development.



7 STOCKPILED MATERIALS

7.1 General

Test pits were excavated into the stockpiles on the eastern side of the property to assess their contents with regard to use as fill within the subdivision development. The stockpiles predominantly comprised sand that appeared to have been won from dredging projects in the area, and this material is appropriate for re-use on the site.

Small proportions of topsoil material and silty sand with organics were encountered in isolated locations, and the stockpiles were predominantly vegetated by grass and weeds. This will require stripping of the upper surface of the stockpiles prior to re-use and selective removal of isolated minor pockets of unsuitable materials encountered during excavation.

7.2 Recovered road aggregates

The stockpiles contained a small proportion of recovered road aggregate materials. These materials should not be used on residential lots. Road aggregate materials excavated from roadworks are classified under the *Protection of the Environment Operations (Waste) Regulation 2005*, as a waste, but can be re-used for a range of pre-approved uses if testing indicates them to meet the requirements of *General Exemption Under Part 6, Clause 51 and 51A, The recovered aggregate exemption 2008 (RAE)*. Three samples were obtained from the stockpiles and were submitted to NATA accredited laboratories for analysis. The test results are attached in Appendix B.

For evaluation of the results, the RAE nominates a suite of analytes to be tested (RAE 2008 Table 2, Column 1), and provides Maximum Average Concentrations, and Absolute Maximum Concentrations for each analyte. To comply with the exemption the average concentration of all samples tested must not exceed the Maximum Average Concentration for each analyte, and all samples must be below the Absolute Maximum Concentration for each analyte. Table 1 below summarises the results against these evaluation criteria.

The results indicate the following:

- No results exceeded the Absolute Maximum Concentration for any analyte in any of the samples tested;
- The average concentration of all samples does not exceed the allowable Maximum Average Concentration specified by the guidelines.

On the basis of these results the stockpiled material complies with the recovered aggregate exemption criteria. As such the material can be re-used in accordance with the limitations and provisions of the Exemption, which allows for the material to be used for road making activities, building, landscaping, and construction works. The material could therefore be re-used in future road making activities in on the site.



Table 1. Evaluation of test results against exemption criteria (mg/kg unless otherwise shown)

Chemical/ attribute	Maximum Average Conc.	Absolute Maximum Conc.	TP10	TP11	TP12
Mercury	0.5	1	<0.1	<0.1	0.1
Cadmium	0.5	1	<0.4	<0.4	<0.4
Lead	50	100	16	17	6
Arsenic	15	30	5	<5	<5
Chromium	40	80	11	6	7
Copper	40	80	22	17	24
Nickel	25	50	2	3	4
Zinc	150	300	85	54	65
Electrical Conductivity	1 dS/m	2 dS/m	0.94	0.68	0.69
Metal	1%	2%	<0.1%	<0.1%	<0.1%
Plaster	0.25%	0.5%	<0.1%	<0.1%	<0.1%
Rubber	0.1%	0.2%	<0.1%	<0.1%	<0.1%
Plastic	0.1%	0.2%	<0.1%	<0.1%	<0.1%
Paper	0.1%	0.2%	<0.1%	<0.1%	<0.1%
Cloth	0.1%	0.2%	<0.1%	<0.1%	<0.1%
Paint	0.1%	0.2%	<0.1%	<0.1%	<0.1%
Wood & other vegetable matter	0.1%	0.2%	<0.1%	<0.1%	<0.1%

Should additional road material won from roadworks nearby be imported to the site, it should be stockpiled separately. To comply with the requirements of the exemption, testing must be undertaken every 4,000 tonnes of material produced or every 3 months, whichever occurs first.

8 ACCESS ROAD PAVEMENT DESIGN

The existing access road is constructed on granular materials overlying geofabric placed directly over the pre-existing ground surface. The proposed development will require temporary construction access road formation, which can then subsequently be incorporated into final subdivision road design.

For temporary construction access, the road aggregate available in the stockpiles can be utilised, however, there is only a small quantity of material available in the stockpiles and therefore additional material will need to be imported.



Temporary construction access roads can be formed over general sand fill using a minimum 200mm layer of ripped rock, recovered road aggregate or other select quality fill that has a CBR of not less than 15%, Plasticity Index not greater than 15, and maximum particle size not exceeding 150mm. Prior to placement of the temporary access road materials the footprint of the road should be proof rolled under geotechnical supervision to assess the need for specific additional measures such as use of geofabrics or specific subgrade replacement.

Permanent roads within the subdivision will have a range of design traffic loadings. Assuming that the roads will be constructed over sand fill, pavement thicknesses derived on the basis of AUSTROADS pavement thickness design procedures will be less than the Great Lakes Council minimum pavement thickness requirement of 300mm.

Pavements within the subdivision can therefore comprise a profile of:

- 40mm asphaltic concrete
- 110mm of DGB20 compliant base course compacted to 98% Modified Compaction
- 150mm of DGS40 compliant sub-base compacted to 95% Modified Compaction

To reduce overall costs, where temporary access roads are constructed along proposed road alignments, the temporary road can be constructed using a 200mm layer of DGS 40 material which can then be subsequently trimmed to a level 150mm below design road surface level and compacted to 95% Modified Compaction prior to placement of base and AC layers over.

9 REQUIREMENTS FOR FURTHER GEOTECHNICAL INPUT

Further filling will be required for the development of the subdivision. To allow construction of residential dwellings founded on high level footings over the fill, the fill will require placement and compaction compliant with AS2870-2011 requirements for Controlled Fill, under Level 1 supervision and testing as defined by AS3798-2007.

The fill will comprise sand from Council dredging operations and the like. The following procedure is recommended for placement and compaction of lot fill:

- Strip the area to be filled to remove all topsoil, vegetation, soft, loose, or compressible soils or other unsuitable material. Stripping should be observed and approved by an experienced geotechnical practitioner;
- Place geofabric over the exposed surface;
- Place approved sand fill in horizontal layers not exceeding 300mm thickness and compact to 65% Density Index;
- Undertake geotechnical testing progressively as sand is placed and compacted to ensure compaction meets the required standard.

On completion of the filling in this manner, a geotechnical report can then be provided that includes final site classification to AS2870-2011 for all lots, including recommendations on footing type and allowable bearing pressure, as well as final pavement designs and pavement thickness design sheets for all subdivision roads.



10 LIMITATIONS

The findings presented in the report and used as the basis for recommendations presented herein were obtained using normal, industry accepted geotechnical and pavement design practises and standards. To our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points. If site conditions encountered during construction vary significantly from those discussed in this report, Regional Geotechnical Solutions Pty Ltd should be contacted for further advice.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of

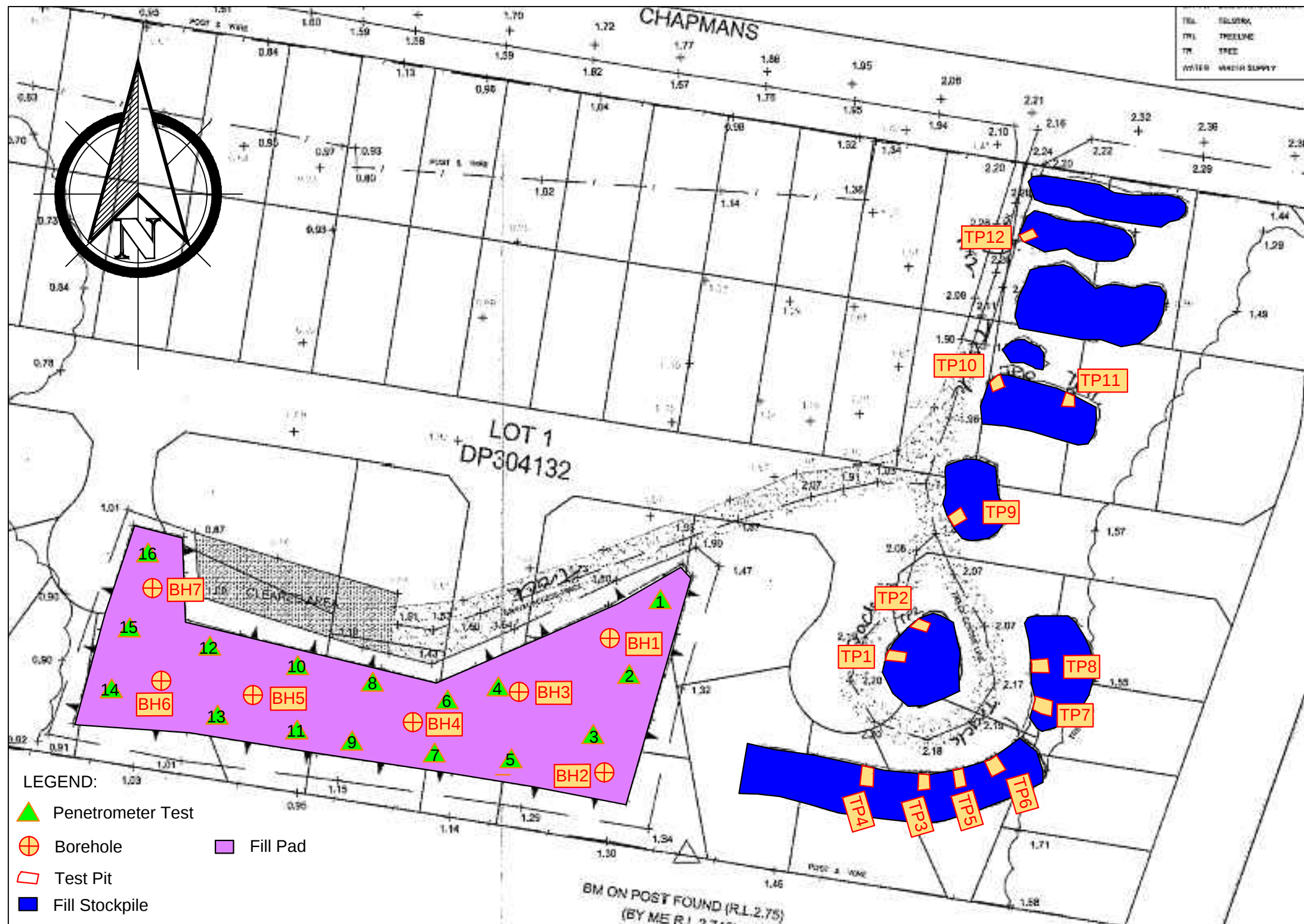
Regional Geotechnical Solutions Pty Ltd

Steven Morton

Principal



Figures



Client:	LIDBURY SUMMERS WHITEMAN	Job No:	RGS00319.1
Project:	LOT 1 DP304132 CHAPMANS ROAD TUNCURRY	Drawn By:	SN
		Date:	30 January 2012
Title:	LOCATION OF FIELD INVESTIGATIONS	Drawing No:	FIGURE 1



Appendix A

Results of Field Investigations

ENGINEERING LOG - BOREHOLE



Client: LIDBURY SUMMERS WHITEMAN
Project: PROPOSED SUBDIVISION

Location: CHAPMANS ROAD TUNCURRY
Logged By: WILL MLLS

BOREHOLE NUMBER:

BH 1

Job Number:

RGS00319.1

Date:

4/01/2012

Drill type: HAND AUGER					Surface RL:														
Hole diameter: 100MM					Slope:					Datum:									
Drilling and Sampling					Material description and profile information						Field test		Structure and additional observations						
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result								
Hand Auger	None Observed			0.2		SM	TOPSOIL/FILL: Silty SAND, fine to coarse grained, brown/grey, trace of Gravel, fine to coarse grained, some shells	D				TOPSOIL FILL							
				0.5		SP		M				MD/D	FILL						
				1.0				Becoming lighter with depth											
				1.5	SP									W/M	NATURAL				
									SM			Silty SAND, fine to medium, dark brown/grey/black, some clay							
				2.0			Loss of returns at 1.7m												
				2.5															
				3															
				3.5															
LEGEND:				Notes, Samples and Tests				Consistency				UCS(kPa)				Moisture Condition			
Water								VS Very Soft <25				D Dry							
Water Level (Date and time shown)				U ₅₀ 50mm Diameter tube sample				S Soft 25 - 50				M Moist							
Water Inflow				CBR Bulk sample for CBR testing				F Firm 50 - 100				W Wet							
Water Outflow				E Environmental sample (Glass jar, sealed and chilled on site)				St Stiff 100 - 200				W _p Plastic Limit							
Strata Changes				ASS Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)				VSt Very Stiff 200 - 400				W _L Liquid Limit							
Gradational or transitional change				B Bulk Sample				H Hard >400											
Definitive or distinct strata change				PID Photoionisation detector reading				Fb Friable											
				DCP (x-y) Dynamic penetrometer test (test depth interval shown)				Density				VL Very Loose Density Index <15%							
				VS Vane Shear test								L Loose Density Index 15 - 35%							
												MD Medium Dense Density Index 35 - 65%							
												D Dense Density Index 65 - 85%							
												VD Very Dense Density Index 85 - 100%							

REGIONAL
GEOTECHNICAL SOLUTIONS

4/01/2012

Drill type:		HAND AUGER		Surface RL:									
Hole diameter:		100mm		Datum:									
Slope:													
Drilling and Sampling				Material description and profile information				Field test		Structure and additional observations			
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency/density			Test Type	Result
Hand Auger	None Encountered			0.2		SM	TOPSOIL/FILL: Silty SAND, fine to medium grained, dark brown	D	L			TOPSOIL FILL	
				0.5		SM	FILL: Silty SAND, fine to medium grained, grey, some Shells	M	MD/D			FILL	
				1.0									
				1.5									
						SP	SAND, fine to medium, bluey grey, some silt					NATURAL	
				2.0			Loss of returns at 1.7m						
LEGEND:				Notes, Samples and Tests				Consistency		UCS(kPa)		Moisture Condition	
<u>Water</u>								VS Very Soft		<25		D Dry	
 Water Level				U ₅₀ 50mm Diameter tube sample				S Soft		25 - 50		M Moist	
(Date and time shown)				CBR Bulk sample for CBR testing				F Firm		50 - 100		W Wet	
 Water Inflow				E Environmental sample				St Stiff		100 - 200		W _p Plastic Limit	
 Water Outflow				(Glass jar, sealed and chilled on site)				VSt Very Stiff		200 - 400		W _L Liquid Limit	
<u>Strata Changes</u>				ASS Acid Sulfate Soil Sample				H Hard		>400			
 Gradational or transitional change				(Plastic bag, air expelled, chilled)				Fb Friable					
 Definitive or distinct strata change				B Bulk Sample				<u>Density</u>		VL Very Loose		Density Index <15%	
				PID Photoionisation detector reading				L Loose				Density Index 15 - 35%	
				DCP (x-y) Dynamic penetrometer test (test depth interval shown)				MD Medium Dense				Density Index 35 - 65%	
				VS Vane Shear test				D Dense				Density Index 65 - 85%	
								VD Very Dense				Density Index 85 - 100%	

ENGINEERING LOG - BOREHOLE



Client: LIDBURY SUMMERS WHITEMAN
Project: PROPOSED SUBDIVISION

Location: CHAPMANS ROAD TUNCURRY
Logged By: WILL MLLS

BOREHOLE NUMBER: BH 3
Job Number: RGS00319.1
Date: 4/01/2012

Drill type: HAND AUGER					Surface RL:										
Hole diameter: 100mm					Slope:					Datum:					
Drilling and Sampling					Material description and profile information						Field test		Structure and additional observations		
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result				
Hand Auger	None Encountered			0.2			TOPSOIL FILL: Silty SAND, fine to medium grained, brown/grey	D	L			TOPSOIL FILL			
						Silty SAND, grey, fine to medium grained, with some gravel	M	MD	FILL						
								D							
				1.0			SAND, fine to medium grained, bluey grey	M>Wp	St			NATURAL			
				1.5											
				2.0				Silty Sandy CLAY, medium to high plasticity, dark brown, Sand fine to medium grained							
				2.5		Borehole 3 terminated at 1.9m									
				3											
				3.5											
LEGEND: Water  Water Level (Date and time shown)  Water Inflow  Water Outflow Strata Changes  Gradational or transitional change  Definitive or distinct strata change					Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample (Glass jar, sealed and chilled on site) ASS Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled) B Bulk Sample PID Photoionisation detector reading DCP (x-y) Dynamic penetrometer test (test depth interval shown) VS Vane Shear test							Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable UCS(kPa) VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit			
							Density VL Very Loose Density Index <15% L Loose Density Index 15 - 35% MD Medium Dense Density Index 35 - 65% D Dense Density Index 65 - 85% VD Very Dense Density Index 85 - 100%								

ENGINEERING LOG - BOREHOLE



Client: LIDBURY SUMMERS WHITEMAN
Project: PROPOSED SUBDIVISION

Location: CHAPMANS ROAD TUNCURRY
Logged By: WILL MLLS

BOREHOLE NUMBER: BH 4
Job Number: RGS00319.1
Date: 4/01/2012

Drill type: HAND AUGER					Surface RL:				
Hole diameter: 100mm					Slope:				
Datum:									

Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result	
Hand Auger	None Encountered			0.2			TOPSOIL FILL: Silty SAND, fine to medium grained, brown	D	L			TOPSOIL FILL
				0.5		SM	FILL: Silty SAND, fine to medium grained, grey	M			FILL	
				1.0								
				1.5								
				1.7			SAND, fine to medium grained, grey with some Shell					NATURAL
				2.0			Loss of returns at 1.9m					
				2.5								
				3								
				3.5								

LEGEND:
 Water Level
 (Date and time shown)
 Water Inflow
 Water Outflow
Strata Changes
 - - - Gradational or transitional change
 — Definitive or distinct strata change

Notes, Samples and Tests
 U₅₀ 50mm Diameter tube sample
 CBR Bulk sample for CBR testing
 E Environmental sample
 (Glass jar, sealed and chilled on site)
 ASS Acid Sulfate Soil Sample
 (Plastic bag, air expelled, chilled)
 B Bulk Sample
 PID Photoionisation detector reading
 DCP (x-y) Dynamic penetrometer test (test depth interval shown)
 VS Vane Shear test

Consistency
 VS Very Soft <25
 S Soft 25 - 50
 F Firm 50 - 100
 St Stiff 100 - 200
 VSt Very Stiff 200 - 400
 H Hard >400
 Fb Friable

UCS(kPa)
 <25
 25 - 50
 50 - 100
 100 - 200
 200 - 400
 >400

Moisture Condition
 D Dry
 M Moist
 W Wet
 W_p Plastic Limit
 W_L Liquid Limit

Density
 VL Very Loose Density Index <15%
 L Loose Density Index 15 - 35%
 MD Medium Dense Density Index 35 - 65%
 D Dense Density Index 65 - 85%
 VD Very Dense Density Index 85 - 100%

ENGINEERING LOG - BOREHOLE



Client: LIDBURY SUMMERS WHITEMAN
Project: PROPOSED SUBDIVISION

Location: CHAPMANS ROAD TUNCURRY
Logged By: WILL MLLS

BOREHOLE NUMBER: BH 5
Job Number: RGS00319.1
Date: 4/01/2012

Drill type: HAND AUGER					Surface RL:				
Hole diameter: 100mm					Slope:				
Datum:									

Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result	
Hand Auger	None Encountered			0.5		SP	FILL: SAND, fine to medium grained, some silt, grey/white	D	L			FILL
				1.0								
				1.2								
				1.4								
				1.5								
				1.8								
				1.9								
				2.0								
				2.5								
				3								
3.5												
						CH	Silty sandy CLAY, medium to high plasticity, dark brown Borehole 5 terminated at 1.9m					NATURAL

LEGEND: Water Water Level (Date and time shown) Water Inflow Water Outflow Strata Changes Gradational or transitional change Definitive or distinct strata change				Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample (Glass jar, sealed and chilled on site) ASS Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled) B Bulk Sample PID Photoionisation detector reading DCP (x-y) Dynamic penetrometer test (test depth interval shown) VS Vane Shear test				Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable UCS(kPa) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit			
				Density VL Very Loose Density Index <15% L Loose Density Index 15 - 35% MD Medium Dense Density Index 35 - 65% D Dense Density Index 65 - 85% VD Very Dense Density Index 85 - 100%							

ENGINEERING LOG - BOREHOLE



Client: LIDBURY SUMMERS WHITEMAN
Project: PROPOSED SUBDIVISION

Location: CHAPMANS ROAD TUNCURRY
Logged By: WILL MLLS

BOREHOLE NUMBER:

BH 6

Job Number: RGS00319.1

Date: 4/01/2012

Drill type: HAND AUGER		Surface RL:	
Hole diameter: 100mm		Datum:	
Slope:			

Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result	
Hand Auger	None Encountered			0.5		SM	FILL: Silty SAND, fine to medium plasticity, grey	M				FILL
				1.0								
				1.2			As above but bluey grey	M				NATURAL
				1.5			Borehole 6 terminated at 1.5m					
				2.0								
				2.5								
				3								
				3.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS(kPa)	Moisture Condition
Water Water Level (Date and time shown) Water Inflow Water Outflow		U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample (Glass jar, sealed and chilled on site) ASS Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled) B Bulk Sample PID Photoionisation detector reading DCP (x-y) Dynamic penetrometer test (test depth interval shown) VS Vane Shear test		VS Very Soft S Soft F Firm St Stiff VSt Very Stiff H Hard Fb Friable		<25 25 - 50 50 - 100 100 - 200 200 - 400 >400	D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit
Strata Changes - - Gradational or transitional change — Definitive or distinct strata change				Density		VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%

ENGINEERING LOG - BOREHOLE



Client: LIDBURY SUMMERS WHITEMAN
Project: PROPOSED SUBDIVISION

Location: CHAPMANS ROAD TUNCURRY
Logged By: WILL MLLS

BOREHOLE NUMBER: BH 7
Job Number: RGS00319.1
Date: 4/01/2012

Drill type: HAND AUGER					Surface RL:				
Hole diameter: 100mm					Slope:				
Datum:									

Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result	
Hand Auger	None Encountered			0.2			TOPSOIL FILL: Silty SAND, fine to medium grained, brown	D	L			TOPSOIL FILL
				0.5			FILL: Silty SAND, fine to medium grained, becoming grey at 0.3m	M				FILL
				1.0								
				1.3								
				1.5			As above but bluey grey					NATURAL
				2.0			Loss of returns at 1.5m					
			2.5									
			3									
			3.5									

LEGEND:
 Water Level
 (Date and time shown)
 Water Inflow
 Water Outflow
Strata Changes
 - - - Gradational or transitional change
 — Definitive or distinct strata change

Notes, Samples and Tests
 U₅₀ 50mm Diameter tube sample
 CBR Bulk sample for CBR testing
 E Environmental sample
 (Glass jar, sealed and chilled on site)
 ASS Acid Sulfate Soil Sample
 (Plastic bag, air expelled, chilled)
 B Bulk Sample
 PID Photoionisation detector reading
 DCP (x-y) Dynamic penetrometer test (test depth interval shown)
 VS Vane Shear test

Consistency
 VS Very Soft <25
 S Soft 25 - 50
 F Firm 50 - 100
 St Stiff 100 - 200
 VSt Very Stiff 200 - 400
 H Hard >400
 Fb Friable

UCS(kPa)
 <25
 25 - 50
 50 - 100
 100 - 200
 200 - 400
 >400

Moisture Condition
 D Dry
 M Moist
 W Wet
 W_p Plastic Limit
 W_L Liquid Limit

Density
 VL Very Loose Density Index <15%
 L Loose Density Index 15 - 35%
 MD Medium Dense Density Index 35 - 65%
 D Dense Density Index 65 - 85%
 VD Very Dense Density Index 85 - 100%

ENGINEERING LOG - TEST PIT



Client: Lidbury Summers Whiteman
Project: Chapman Rd, Tuncurry

Location: Refer to Figure 1
Logged By: SN

TEST PIT NUMBER: TP1
Job Number: RGS00319.1
Date: 16/12/2011

Machine type:					Surface RL:					Datum:				
Test Pit Length:					Width:									
Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations		
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result			
				0.5			FILL: SAND , fine to coarse grained, with some Gravel and Clay inclusions, mottled pale brown to white	M/W	L/MD			STOCK PILE FILL		
				1.0										
				1.5										
		B		2.0										
				2.5										
				3			Terminated at 2.5m							
				3.5										

LEGEND: Water Water Level (Date and time shown) Water Inflow Water Outflow Strata Changes Gradational or transitional change Definitive or distinct strata change		Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample (Glass jar, sealed and chilled on site) ASS Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled) B Bulk Sample PID Photoionisation detector reading DCP (x-y) Dynamic penetrometer test (test depth interval shown) VS Vane Shear test		Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable Density VL Very Loose Density Index <15% L Loose Density Index 15 - 35% MD Medium Dense Density Index 35 - 65% D Dense Density Index 65 - 85% VD Very Dense Density Index 85 - 100%		Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit	
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ENGINEERING LOG - TEST PIT



Client: Lidbury Summers Whiteman
Project: Chapman Rd, Tuncurry

Location: Refer to Figure 1
Logged By: SN

TEST PIT NUMBER: TP2
Job Number: RGS00319.1
Date: 16/12/2011

Machine type:					Surface RL:									
Test Pit Length:					Width:					Datum:				
Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations		
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result			
				0.5			FILL: Sand, with some Silt also some Gravel to 200mm	M	L/MD			STOCK PILE FILL		
				1.0										
				1.5										
				2.0			Terminated at 1.5m							
				2.5										
				3										
				3.5										

LEGEND:		Notes, Samples and Tests		Consistency		UCS(kPa)	Moisture Condition
Water				VS Very Soft		<25	D Dry
Water Level		U ₅₀ 50mm Diameter tube sample		S Soft		25 - 50	M Moist
(Date and time shown)		CBR Bulk sample for CBR testing		F Firm		50 - 100	W Wet
Water Inflow		E Environmental sample		St Stiff		100 - 200	W _p Plastic Limit
Water Outflow		(Glass jar, sealed and chilled on site)		VSt Very Stiff		200 - 400	W _L Liquid Limit
		ASS Acid Sulfate Soil Sample		H Hard		>400	
		(Plastic bag, air expelled, chilled)		Fb Friable			
Strata Changes		B Bulk Sample		Density		VL Very Loose	Density Index <15%
Gradational or transitional change		PID Photoionisation detector reading		L Loose		Density Index 15 - 35%	
Definitive or distinct strata change		DCP (x-y) Dynamic penetrometer test (test depth interval shown)		MD Medium Dense		Density Index 35 - 65%	
		VS Vane Shear test		D Dense		Density Index 65 - 85%	
				VD Very Dense		Density Index 85 - 100%	

ENGINEERING LOG - TEST PIT



Client: Lidbury Summers Whiteman
Project: Chapman Rd, Tuncurry

Location: Refer to Figure 1
Logged By: SN

TEST PIT NUMBER: TP3
Job Number: RGS00319.1
Date: 16/12/2011

Machine type:					Surface RL:									
Test Pit Length:					Width:					Datum:				
Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations		
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result			
				0.5			FILL: SAND, with some Gravel, mottled pale brown to brown	M	L/MD			STOCK PILE FILL		
				1.0			Terminated at 0.9							
				1.5										
				2.0										
				2.5										
				3										
				3.5										
LEGEND: Water Water Level (Date and time shown) Water Inflow Water Outflow Strata Changes Gradational or transitional change Definitive or distinct strata change					Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample (Glass jar, sealed and chilled on site) ASS Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled) B Bulk Sample PID Photoionisation detector reading DCP (x-y) Dynamic penetrometer test (test depth interval shown) VS Vane Shear test					Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable UCS(kPa) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density VL Very Loose Density Index <15% L Loose Density Index 15 - 35% MD Medium Dense Density Index 35 - 65% D Dense Density Index 65 - 85% VD Very Dense Density Index 85 - 100%				

ENGINEERING LOG - TEST PIT



Client: Lidbury Summers Whiteman
Project: Chapman Rd, Tuncurry

Location: Refer to Figure 1
Logged By: SN

TEST PIT NUMBER: TP4
Job Number: RGS00319.1
Date: 16/12/2011

Machine type: Yanmar B50					Surface RL:				
Test Pit Length: 2m					Width: 0.45				
Datum:									

Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result	
				0.5			FILL: Silty SAND , fine to coarse grained, black/grey	M	L			FILL/ STOCK PILE ROOTS
				1.0			FILL: Sandy Gravelly CLAY , dark brown to black, medium plasticity, Sand fine to medium grained, Gravel	M	MD			FILL/ STOCK PILE
		B		1.5								
				2.0			Terminated at 1.5m					
				2.5								
				3								
				3.5								

LEGEND:		Notes, Samples and Tests		Consistency		UCS(kPa)	Moisture Condition
Water				VS Very Soft		<25	D Dry
Water Level		U ₅₀ 50mm Diameter tube sample		S Soft		25 - 50	M Moist
(Date and time shown)		CBR Bulk sample for CBR testing		F Firm		50 - 100	W Wet
Water Inflow		E Environmental sample		St Stiff		100 - 200	W _p Plastic Limit
Water Outflow		(Glass jar, sealed and chilled on site)		VSt Very Stiff		200 - 400	W _L Liquid Limit
		ASS Acid Sulfate Soil Sample		H Hard		>400	
		(Plastic bag, air expelled, chilled)		Fb Friable			
Strata Changes		B Bulk Sample		Density		VL Very Loose	Density Index <15%
Gradational or transitional change		PID Photoionisation detector reading		L Loose		Density Index 15 - 35%	
Definitive or distinct strata change		DCP (x-y) Dynamic penetrometer test (test depth interval shown)		MD Medium Dense		Density Index 35 - 65%	
		VS Vane Shear test		D Dense		Density Index 65 - 85%	
				VD Very Dense		Density Index 85 - 100%	

ENGINEERING LOG - TEST PIT



Client: Lidbury Summers Whiteman
Project: Chapman Rd, Tuncurry

Location: Refer to Figure 1
Logged By: SN

TEST PIT NUMBER: TP5
Job Number: RGS00319.1
Date: 16/12/2011

Machine type:					Surface RL:									
Test Pit Length:					Width:					Datum:				
Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations		
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result			
		B		0.5 1.0			FILL: Clayey Gravelly SAND , brown, fine to coarse grained, Gravel fine to coarse grained, Clay low plasticity	M	L/MD			STOCK PILE FILL		
				1.5 2.0 2.5 3 3.5										
LEGEND: Water Water Level (Date and time shown) Water Inflow Water Outflow Strata Changes Gradational or transitional change Definitive or distinct strata change					Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample (Glass jar, sealed and chilled on site) ASS Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled) B Bulk Sample PID Photoionisation detector reading DCP (x-y) Dynamic penetrometer test (test depth interval shown) VS Vane Shear test					Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable UCS(kPa) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density VL Very Loose Density Index <15% L Loose Density Index 15 - 35% MD Medium Dense Density Index 35 - 65% D Dense Density Index 65 - 85% VD Very Dense Density Index 85 - 100%				

ENGINEERING LOG - TEST PIT



Client: Lidbury Summers Whiteman
Project: Chapman Rd, Tuncurry

Location: Refer to Figure 1
Logged By: SN

TEST PIT NUMBER: TP6
Job Number: RGS00319.1
Date: 16/12/2011

Machine type:					Surface RL:									
Test Pit Length:					Width:					Datum:				
Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations		
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result			
				0.5			FILL: Sandy Clayey GRAVEL , fine to medium grained, brown with orange mottling, Sand fine to coarse grained, Clay low plasticity	D	MD			FILL		
				1.0			FILL: Sandy Gravel , dark brown, fine to medium grained, Sand fine to coarse grained	W	D			FILL		
							Sandy Gravelly CLAY , brown, medium plasticity, Gravel fine to medium grained, Sand fine to coarse grained	M	D			FILL		
							Sandy Gravelly SILT , dark brown/black, Gravel fine to medium grained, Sand fine grained	M	D			FILL		
				1.5			Terminated at 1.4m							
				2.0										
				2.5										
				3										
				3.5										

LEGEND:		Notes, Samples and Tests		Consistency		UCS(kPa)	Moisture Condition
Water				VS Very Soft		<25	D Dry
Water Level		U ₅₀ 50mm Diameter tube sample		S Soft		25 - 50	M Moist
(Date and time shown)		CBR Bulk sample for CBR testing		F Firm		50 - 100	W Wet
Water Inflow		E Environmental sample		St Stiff		100 - 200	W _p Plastic Limit
Water Outflow		(Glass jar, sealed and chilled on site)		VSt Very Stiff		200 - 400	W _L Liquid Limit
		ASS Acid Sulfate Soil Sample		H Hard		>400	
		(Plastic bag, air expelled, chilled)		Fb Friable			
Strata Changes		B Bulk Sample		Density		VL Very Loose	Density Index <15%
- - - Gradational or transitional change		PID Photoionisation detector reading		L Loose		Density Index 15 - 35%	
— Definitive or distinct strata change		DCP (x-y) Dynamic penetrometer test (test depth interval shown)		MD Medium Dense		Density Index 35 - 65%	
		VS Vane Shear test		D Dense		Density Index 65 - 85%	
				VD Very Dense		Density Index 85 - 100%	

ENGINEERING LOG - TEST PIT



Client: Lidbury Summers Whiteman
Project: Chapman Rd, Tuncurry

Location: Refer to Figure 1
Logged By: SN

TEST PIT NUMBER: TP7
Job Number: RGS00319.1
Date: 16/12/2011

Machine type:					Surface RL:									
Test Pit Length:					Width:					Datum:				
Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations		
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result			
				0.5			FILL: SAND, with some Silt and Gravel, dark brown, fine to medium grained	M	L/MD			STOCK PILE FILL		
				1.0										
				1.5			Terminated at 1.4m							
				2.0										
				2.5										
				3										
				3.5										
LEGEND: Water Water Level (Date and time shown) Water Inflow Water Outflow Strata Changes Gradational or transitional change Definitive or distinct strata change					Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample (Glass jar, sealed and chilled on site) ASS Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled) B Bulk Sample PID Photoionisation detector reading DCP (x-y) Dynamic penetrometer test (test depth interval shown) VS Vane Shear test					Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable UCS(kPa) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit				
					Density VL Very Loose Density Index <15% L Loose Density Index 15 - 35% MD Medium Dense Density Index 35 - 65% D Dense Density Index 65 - 85% VD Very Dense Density Index 85 - 100%									

ENGINEERING LOG - TEST PIT



Client: Lidbury Summers Whiteman
Project: Chapman Rd, Tuncurry

Location: Refer to Figure 1
Logged By: SN

TEST PIT NUMBER: TP8
Job Number: RGS00319.1
Date: 16/12/2011

Machine type:					Surface RL:									
Test Pit Length:					Width:					Datum:				
Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations		
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result			
				0.5			FILL: SAND , fine to medium grained, dark grey, with trace clay and Gravel	M	L/MD			STOCK PILE FILL CLAY, GRAVEL AND BRICK INCLUSIONS		
				1.0										
				1.5										
				2.0										
				2.5			Terminated at 2.1m							
				3										
				3.5										
LEGEND: Water Water Level (Date and time shown) Water Inflow Water Outflow Strata Changes Gradational or transitional change Definitive or distinct strata change					Notes, Samples and Tests U ₅₀ 50mm Diameter tube sample CBR Bulk sample for CBR testing E Environmental sample (Glass jar, sealed and chilled on site) ASS Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled) B Bulk Sample PID Photoionisation detector reading DCP (x-y) Dynamic penetrometer test (test depth interval shown) VS Vane Shear test					Consistency VS Very Soft <25 S Soft 25 - 50 F Firm 50 - 100 St Stiff 100 - 200 VSt Very Stiff 200 - 400 H Hard >400 Fb Friable UCS(kPa) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density VL Very Loose Density Index <15% L Loose Density Index 15 - 35% MD Medium Dense Density Index 35 - 65% D Dense Density Index 65 - 85% VD Very Dense Density Index 85 - 100%				

ENGINEERING LOG - TEST PIT



Client: Lidbury Summers Whiteman
Project: Chapman Rd, Tuncurry

Location: Refer to Figure 1
Logged By: SN

TEST PIT NUMBER: TP9
Job Number: RGS00319.1
Date: 16/12/2011

Machine type:					Surface RL:									
Test Pit Length:					Width:					Datum:				
Drilling and Sampling					Material description and profile information					Field test		Structure and additional observations		
Method	Water	Samples	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description: Soil type, plasticity/particle characteristics, colour, minor components	Moisture Condition	Consistency, density	Test Type	Result			
				0.5			FILL: SAND, pale brown to white, fine to medium grained	D/M	L/MD			FILL-DREDGED MATERIAL SHELL INCLUSIONS		
				1.0										
				1.5										
				2.0										
				2.5										
				3			Terminated at 2.5m							
				3.5										

LEGEND:		Notes, Samples and Tests		Consistency		UCS(kPa)	Moisture Condition
Water				VS	Very Soft	<25	D Dry
Water Level		U ₅₀ 50mm Diameter tube sample		S	Soft	25 - 50	M Moist
(Date and time shown)		CBR Bulk sample for CBR testing		F	Firm	50 - 100	W Wet
Water Inflow		E Environmental sample		St	Stiff	100 - 200	W _p Plastic Limit
Water Outflow		(Glass jar, sealed and chilled on site)		VSt	Very Stiff	200 - 400	W _L Liquid Limit
		ASS Acid Sulfate Soil Sample		H	Hard	>400	
		(Plastic bag, air expelled, chilled)		Fb	Friable		
Strata Changes		B Bulk Sample					
Gradational or transitional change		PID Photoionisation detector reading		Density			
Definitive or distinct strata change		DCP (x-y) Dynamic penetrometer test (test depth interval shown)		VL	Very Loose	Density Index <15%	
		VS Vane Shear test		L	Loose	Density Index 15 - 35%	
				MD	Medium Dense	Density Index 35 - 65%	
				D	Dense	Density Index 65 - 85%	
				VD	Very Dense	Density Index 85 - 100%	



Density Index from Sand Penetrometer Test

Job No.	RG00319.1
Date:	4/01/2012

Client	LIDBURY SUMMER WHITEMAN
Project	PROPOSED SUBDIVISION
Location	CHAPMANS ROAD TUNCURRY

Test Details: Hammer Mass: 9kg Rod diameter: 16mm
Hammer drop: 600mm Depth to groundwater(m): 5 (Use default value 5 if g.w. Not within test depth)
Method: AS1289 6.3.3

Depth to base of test section (mm)	TEST 1				TEST 2			
	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.
100	1	2	32%		1	2	32%	
200	2	4	44%		2	4	44%	
300	2	6	44%		2	6	44%	
400	5	8	68%		4	8	61%	
500	4	10	60%		5	10	67%	
600	5	12	67%		6	12	73%	
700	10	14	93%		6	14	72%	
800	10	16	92%		8	16	82%	
900	11	18	95%		10	18	91%	
1000	13	20	103%		10	20	90%	
1100	15	22	109%		12	22	97%	
1200					15	24	108%	
1300								
1400								
1500								
1600								
1700								
1800								
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								
3000								
3100								
3200								
3300								
3400								
3500								
3600								
3700								
3800								
3900								
4000								
4100								
4200								
4300								
4400								
4500								

Density Index from Sand Penetrometer Test

Job No.	RG00319.1
Date:	4/01/2012

Client	LIDBURY SUMMER WHITEMAN
Project	PROPOSED SUBDIVISION
Location	CHAPMANS ROAD TUNCURRY

Test Details: Hammer Mass: 9kg Rod diameter: 16mm
 Hammer drop: 600mm Depth to groundwater(m): 5 (Use default value 5 if g.w. Not within test depth)
 Method: AS1289 6.3.3

Depth to base of test section (mm)	TEST 3				TEST 4			
	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.
100	1	2	32%		1	2	32%	
200	3	4	54%		1	4	31%	
300	4	6	62%		1	6	31%	
400	5	8	68%		2	8	43%	
500	5	10	67%		5	10	67%	
600	5	12	67%		6	12	73%	
700	4	14	59%		8	14	83%	
800	3	16	50%		9	16	87%	
900	3	18	50%		10	18	91%	
1000	3	20	49%		10	20	90%	
1100	5	22	63%		10	22	89%	
1200	13	24	100%		10	24	88%	
1300								
1400								
1500								
1600								
1700								
1800								
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								
3000								
3100								
3200								
3300								
3400								
3500								
3600								
3700								
3800								
3900								
4000								
4100								
4200								
4300								
4400								
4500								

Density Index from Sand Penetrometer Test

Job No.	RG00319.1
Date:	4/01/2012

Client	LIDBURY SUMMER WHITEMAN
Project	PROPOSED SUBDIVISION
Location	CHAPMANS ROAD TUNCURRY

Test Details: Hammer Mass: 9kg Rod diameter: 16mm
 Hammer drop: 600mm Depth to groundwater(m): 5 (Use default value 5 if g.w. Not within test depth)
 Method: AS1289 6.3.3

Depth to base of test section (mm)	TEST 5				TEST 6			
	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.
100	1	2	32%		0	2	0%	
200	1	4	31%		1	4	31%	
300	1	6	31%		2	6	44%	
400	3	8	53%		3	8	53%	
500	4	10	60%		5	10	67%	
600	4	12	60%		5	12	67%	
700	3	14	51%		5	14	66%	
800	4	16	58%		5	16	65%	
900	3	18	50%		5	18	64%	
1000	3	20	49%		5	20	64%	
1100	5	22	63%		6	22	69%	
1200	8	24	79%		5	24	62%	
1300	10	26	87%		7	26	73%	
1400	9	28	82%		9	28	82%	
1500	10	30	85%		9	30	81%	
1600	11	32	89%		10	32	84%	
1700	10	34	84%		10	34	84%	
1800	10	36	83%		10	36	83%	
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								
3000								
3100								
3200								
3300								
3400								
3500								
3600								
3700								
3800								
3900								
4000								
4100								
4200								
4300								
4400								
4500								

Density Index from Sand Penetrometer Test

Job No.	RG00319.1
Date:	4/01/2012

Client	LIDBURY SUMMER WHITEMAN
Project	PROPOSED SUBDIVISION
Location	CHAPMANS ROAD TUNCURRY

Test Details: Hammer Mass: 9kg Rod diameter: 16mm
 Hammer drop: 600mm Depth to groundwater(m): 5 (Use default value 5 if g.w. Not within test depth)
 Method: AS1289 6.3.3

Depth to base of test section (mm)	TEST 7				TEST 8			
	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.
100	1	2	32%		1	2	32%	
200	1	4	31%		1	4	31%	
300	1	6	31%		3	6	54%	
400	2	8	43%		4	8	61%	
500	5	10	67%		5	10	67%	
600	6	12	73%		7	12	79%	
700	5	14	66%		8	14	83%	
800	5	16	65%		7	16	77%	
900	5	18	64%		9	18	86%	
1000	4	20	57%		7	20	75%	
1100	6	22	69%		8	22	80%	
1200	6	24	68%		8	24	79%	
1300	9	26	83%		9	26	83%	
1400	9	28	82%		9	28	82%	
1500	9	30	81%		14	30	101%	
1600	10	32	84%					
1700	10	34	84%					
1800	9	36	79%					
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								
3000								
3100								
3200								
3300								
3400								
3500								
3600								
3700								
3800								
3900								
4000								
4100								
4200								
4300								
4400								
4500								

Density Index from Sand Penetrometer Test

Job No.	RG00319.1
Date:	4/01/2012

Client	LIDBURY SUMMER WHITEMAN
Project	PROPOSED SUBDIVISION
Location	CHAPMANS ROAD TUNCURRY

Test Details: Hammer Mass: 9kg Rod diameter: 16mm
 Hammer drop: 600mm Depth to groundwater(m): 5 (Use default value 5 if g.w. Not within test depth)
 Method: AS1289 6.3.3

Depth to base of test section (mm)	TEST 9				TEST 10			
	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.
100	0	2	0%		1	2	32%	
200	1	4	31%		1	4	31%	
300	1	6	31%		2	6	44%	
400	1	8	31%		4	8	61%	
500	4	10	60%		5	10	67%	
600	6	12	73%		7	12	79%	
700	9	14	88%		9	14	88%	
800	10	16	92%		10	16	92%	
900	12	18	100%		13	18	104%	
1000								
1100								
1200								
1300								
1400								
1500								
1600								
1700								
1800								
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								
3000								
3100								
3200								
3300								
3400								
3500								
3600								
3700								
3800								
3900								
4000								
4100								
4200								
4300								
4400								
4500								

Density Index from Sand Penetrometer Test

Job No.	RG00319.1
Date:	4/01/2012

Client	LIDBURY SUMMER WHITEMAN
Project	PROPOSED SUBDIVISION
Location	CHAPMANS ROAD TUNCURRY

Test Details: Hammer Mass: 9kg Rod diameter: 16mm
 Hammer drop: 600mm Depth to groundwater(m): 5 (Use default value 5 if g.w. Not within test depth)
 Method: AS1289 6.3.3

Depth to base of test section (mm)	TEST 11				TEST 12			
	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.
100	1	2	32%		1	2	32%	
200	2	4	44%		2	4	44%	
300	3	6	54%		3	6	54%	
400	3	8	53%		3	8	53%	
500	5	10	67%		4	10	60%	
600	6	12	73%		4	12	60%	
700	5	14	66%		5	14	66%	
800	4	16	58%		5	16	65%	
900	4	18	58%		6	18	70%	
1000	4	20	57%		9	20	85%	
1100	3	22	49%		10	22	89%	
1200	3	24	48%		13	24	100%	
1300	6	26	67%					
1400	11	28	90%					
1500	13	30	97%					
1600								
1700								
1800								
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								
3000								
3100								
3200								
3300								
3400								
3500								
3600								
3700								
3800								
3900								
4000								
4100								
4200								
4300								
4400								
4500								

Density Index from Sand Penetrometer Test

Job No.	RG00319.1
Date:	4/01/2012

Client	LIDBURY SUMMER WHITEMAN
Project	PROPOSED SUBDIVISION
Location	CHAPMANS ROAD TUNCURRY

Test Details: Hammer Mass: 9kg Rod diameter: 16mm
 Hammer drop: 600mm Depth to groundwater(m): 5 (Use default value 5 if g.w. Not within test depth)
 Method: AS1289 6.3.3

Depth to base of test section (mm)	TEST 13				TEST 14			
	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.
100	1	2	32%		0	2	0%	
200	1	4	31%		1	4	31%	
300	2	6	44%		3	6	54%	
400	4	8	61%		5	8	68%	
500	5	10	67%		5	10	67%	
600	5	12	67%		6	12	73%	
700	5	14	66%		5	14	66%	
800	5	16	65%		5	16	65%	
900	6	18	70%		4	18	58%	
1000	6	20	70%		3	20	49%	
1100	7	22	74%		3	22	49%	
1200	7	24	74%		3	24	48%	
1300	8	26	78%		3	26	48%	
1400	9	28	82%		3	28	47%	
1500	9	30	81%		3	30	47%	
1600	10	32	84%		3	32	46%	
1700	12	34	92%		3	34	46%	
1800	15	36	101%		2	36	37%	
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								
3000								
3100								
3200								
3300								
3400								
3500								
3600								
3700								
3800								
3900								
4000								
4100								
4200								
4300								
4400								
4500								

Density Index from Sand Penetrometer Test

Job No.	RG00319.1
Date:	4/01/2012

Client	LIDBURY SUMMERS WHITEMAN
Project	PROPOSED SUBDIVISION
Location	CHAPMANS ROAD TUNCURRY

Test Details: Hammer Mass: 9kg Rod diameter: 16mm
 Hammer drop: 600mm Depth to groundwater(m): 5 (Use default value 5 if g.w. Not within test depth)
 Method: AS1289 6.3.3

Depth to base of test section (mm)	TEST 15				TEST 16			
	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.
100	1	2	32%		0	2	0%	
200	1	4	31%		1	4	31%	
300	3	6	54%		2	6	44%	
400	5	8	68%		3	8	53%	
500	6	10	74%		4	10	60%	
600	9	12	89%		5	12	67%	
700	9	14	88%		5	14	66%	
800	10	16	92%		5	16	65%	
900	13	18	104%		5	18	64%	
1000					4	20	57%	
1100					4	22	56%	
1200					3	24	48%	
1300					2	26	39%	
1400					3	28	47%	
1500					2	30	38%	
1600					2	32	38%	
1700					3	34	46%	
1800					2	36	37%	
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								
3000								
3100								
3200								
3300								
3400								
3500								
3600								
3700								
3800								
3900								
4000								
4100								
4200								
4300								
4400								
4500								

Density Index from Sand Penetrometer Test

Job No.	RG00319.1
Date:	4/01/2012

Client	LIDBURY SUMMER WHITEMAN
Project	PROPOSED SUBDIVISION
Location	CHAPMANS ROAD TUNCURRY

Test Details: Hammer Mass: 9kg Rod diameter: 16mm
 Hammer drop: 600mm Depth to groundwater(m): 5 (Use default value 5 if g.w. Not within test depth)
 Method: AS1289 6.3.3

Depth to base of test section (mm)	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.	Blows per 100mm	Effective o'burden pressure (kPa)	Density Index	Comments, notes, etc.
100		2	0%			2	0%	
200		4	0%			4	0%	
300		6	0%			6	0%	
400		8	0%			8	0%	
500		10	0%			10	0%	
600		12	0%			12	0%	
700		14	0%			14	0%	
800		16	0%			16	0%	
900		18	0%			18	0%	
1000		20	0%			20	0%	
1100		22	0%			22	0%	
1200		24	0%			24	0%	
1300		26	0%			26	0%	
1400		28	0%			28	0%	
1500		30	0%			30	0%	
1600		32	0%			32	0%	
1700		34	0%			34	0%	
1800		36	0%			36	0%	
1900		38	0%			38	0%	
2000		40	0%			40	0%	
2100		42	0%			42	0%	
2200		44	0%			44	0%	
2300		46	0%			46	0%	
2400		48	0%			48	0%	
2500		50	0%			50	0%	
2600		52	0%			52	0%	
2700		54	0%			54	0%	
2800		56	0%			56	0%	
2900		58	0%			58	0%	
3000		60	0%			60	0%	
3100		62	0%			62	0%	
3200		64	0%			64	0%	
3300		66	0%			66	0%	
3400		68	0%			68	0%	
3500		70	0%			70	0%	
3600		72	0%			72	0%	
3700		74	0%			74	0%	
3800		76	0%			76	0%	
3900		78	0%			78	0%	
4000		80	0%			80	0%	
4100		82	0%			82	0%	
4200		84	0%			84	0%	
4300		86	0%			86	0%	
4400		88	0%			88	0%	
4500		90	0%			90	0%	

Perth Sand Penetrometer Test

Project Number: RGS Date:

Client	
Project	
Location	

Test Details: Hammer Mass: 9kg Rod diameter: 16mm
 Hammer drop: 600mm Depth to groundwater: 2

Depth to base of test section (mm)	Test Number and blows recorded per 100mm						Comments (soil type, general information)
	Blows per 100mm	Effective o'burden pressure (kPa)	Equivalent N value	Correction factor	Corrected N	Density Index	
100		2	0	2.44857	0	0	
200		4	0	2.46857	0	0	
300		6	0	2.48857	0	0	
400		8	0	2.50857	0	0	
500		10	0	2.52857	0	0	
600		12	0	2.54857	0	0	
700		14	0	2.56857	0	0	
800		16	0	2.58857	0	0	
900		18	0	2.60857	0	0	
1000		20	0	2.62857	0	0	
1100		22	0	2.64857	0	0	
1200		24	0	2.66857	0	0	
1300		26	0	2.68857	0	0	
1400		28	0	2.70857	0	0	
1500		30	0	2.72857	0	0	
1600		32	0	2.74857	0	0	
1700		34	0	2.76857	0	0	
1800		36	0	2.78857	0	0	
1900		38	0	2.80857	0	0	
2000		20	0	2.62857	0	0	
2100		22	0	2.64857	0	0	
2200		24	0	2.66857	0	0	
2300		26	0	2.68857	0	0	
2400		28	0	2.70857	0	0	
2500		30	0	2.72857	0	0	
2600		32	0	2.74857	0	0	
2700		34	0	2.76857	0	0	
2800		36	0	2.78857	0	0	
2900		38	0	2.80857	0	0	
3000		40	0	2.82857	0	0	
3100		42	0	2.84857	0	0	
3200		44	0	2.86857	0	0	
3300		46	0	2.88857	0	0	
3400		48	0	2.90857	0	0	
3500		50	0	2.92857	0	0	
3600		52	0	2.94857	0	0	
3700		54	0	2.96857	0	0	
3800		56	0	2.98857	0	0	
3900		58	0	3.00857	0	0	
4000		60	0	3.02857	0	0	
4100		62	0	3.04857	0	0	
4200		64	0	3.06857	0	0	
4300		66	0	3.08857	0	0	
4400		68	0	3.10857	0	0	
4500		70	0	3.12857	0	0	



Appendix B

Laboratory Test results

CERTIFICATE OF ANALYSIS

Work Order	: ES1200761	Page	: 1 of 3
Client	: REGIONAL GEOTECHNICAL SOLUTION	Laboratory	: Environmental Division Sydney
Contact	: MR STEVE MORTON	Contact	: Client Services
Address	: 5/97 ISABELLA STREET WINGHAM NSW, AUSTRALIA 2429	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: steve.m@regionalgeotech.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 6553 5641	Telephone	: +61-2-8784 8555
Facsimile	: ---	Facsimile	: +61-2-8784 8500
Project	: RGS00319 1-CHAPMANS ROAD	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ---		
C-O-C number	: ---	Date Samples Received	: 17-JAN-2012
Sampler	: ---	Issue Date	: 24-JAN-2012
Site	: ---		
Quote number	: SY/395/10	No. of samples received	: 3
		No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Dianne Blane	Laboratory Supervisor	Newcastle
Evie Sidarta	Inorganic Chemist	Sydney Inorganics
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting



Analytical Results

Sub-Matrix: **SOIL**

Client sample ID

Client sampling date / time

				STOCLPILE5 TP10	STOCLPILE5 TP11	STOCLPILE7 TP12	----	----
				13-JAN-2012 15:00	13-JAN-2012 15:00	13-JAN-2012 15:00	----	----
Compound	CAS Number	LOR	Unit	ES1200761-001	ES1200761-002	ES1200761-003	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	94	68	69	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	9.7	5.9	7.0	----	----
EA155: Foreign Material - Type I								
Metal	----	0.10	%	<0.10	<0.10	<0.10	----	----
EA155: Foreign Material - Type II								
Plaster	----	0.10	%	<0.10	<0.10	<0.10	----	----
EA155: Foreign Material - Type III								
Rubber	----	0.10	%	<0.10	<0.10	<0.10	----	----
Plastic	----	0.10	%	<0.10	<0.10	<0.10	----	----
Paint	----	0.10	%	<0.10	<0.10	<0.10	----	----
Paper	----	0.10	%	<0.10	<0.10	<0.10	----	----
Cloth	----	0.10	%	<0.10	<0.10	<0.10	----	----
Wood and other Vegetable Matter	----	0.10	%	<0.10	<0.10	<0.10	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	5	<5	<5	----	----
Cadmium	7440-43-9	0.4	mg/kg	<0.4	<0.4	<0.4	----	----
Chromium	7440-47-3	2	mg/kg	11	6	7	----	----
Copper	7440-50-8	5	mg/kg	22	17	24	----	----
Lead	7439-92-1	5	mg/kg	16	17	6	----	----
Nickel	7440-02-0	2	mg/kg	8	5	11	----	----
Zinc	7440-66-6	5	mg/kg	85	54	65	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----

QUALITY CONTROL REPORT

Work Order	: ES1200761	Page	: 1 of 5
Client	: REGIONAL GEOTECHNICAL SOLUTION	Laboratory	: Environmental Division Sydney
Contact	: MR STEVE MORTON	Contact	: Client Services
Address	: 5/97 ISABELLA STREET WINGHAM NSW, AUSTRALIA 2429	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: steve.m@regionalgeotech.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 6553 5641	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: RGS00319 1-CHAPMANS ROAD	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 17-JAN-2012
C-O-C number	: ----	Issue Date	: 24-JAN-2012
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3
Quote number	: SY/395/10		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Dianne Blane	Laboratory Supervisor	Newcastle
Evie.Sidarta	Inorganic Chemist	Sydney Inorganics
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA010: Conductivity (QC Lot: 2132713)									
ES1200761-001	STOCLPILE5 TP10	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	94	94	0.0	0% - 20%
EA055: Moisture Content (QC Lot: 2132020)									
ES1200761-002	STOCLPILE5 TP11	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	5.9	5.3	9.8	No Limit
ES1200807-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	3.5	3.3	5.5	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 2138531)									
ES1200472-001	Anonymous	EG005T-MW: Cadmium	7440-43-9	0.4	mg/kg	<0.4	<0.4	0.0	No Limit
		EG005T-MW: Chromium	7440-47-3	2	mg/kg	23	27	13.8	0% - 50%
		EG005T-MW: Nickel	7440-02-0	2	mg/kg	3	3	0.0	No Limit
		EG005T-MW: Arsenic	7440-38-2	5	mg/kg	5	6	19.3	No Limit
		EG005T-MW: Copper	7440-50-8	5	mg/kg	11	11	0.0	No Limit
		EG005T-MW: Lead	7439-92-1	5	mg/kg	15	18	13.6	No Limit
		EG005T-MW: Zinc	7440-66-6	5	mg/kg	11	11	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2138530)									
ES1200472-001	Anonymous	EG035T-MW: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1200472-011	Anonymous	EG035T-MW: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EA010: Conductivity (QCLot: 2132713)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	101	70	130
EG005T: Total Metals by ICP-AES (QCLot: 2138531)								
EG005T-MW: Arsenic	7440-38-2	5	mg/kg	<5	13.11 mg/kg	124	70	130
EG005T-MW: Cadmium	7440-43-9	0.4	mg/kg	<0.4	2.76 mg/kg	102	70	130
EG005T-MW: Chromium	7440-47-3	2	mg/kg	<2	60.93 mg/kg	112	70	130
EG005T-MW: Copper	7440-50-8	5	mg/kg	<5	54.68 mg/kg	111	70	130
EG005T-MW: Lead	7439-92-1	5	mg/kg	<5	54.76 mg/kg	111	70	130
EG005T-MW: Nickel	7440-02-0	2	mg/kg	<2	55.23 mg/kg	112	70	130
EG005T-MW: Zinc	7440-66-6	5	mg/kg	<5	103.88 mg/kg	108	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2138530)								
EG035T-MW: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	83.0	70	130



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 2138531)							
ES1200472-001	Anonymous	EG005T-MW: Arsenic	7440-38-2	50 mg/kg	87.8	70	130
		EG005T-MW: Cadmium	7440-43-9	50 mg/kg	104	70	130
		EG005T-MW: Chromium	7440-47-3	50 mg/kg	110	70	130
		EG005T-MW: Copper	7440-50-8	250 mg/kg	112	70	130
		EG005T-MW: Lead	7439-92-1	250 mg/kg	100	70	130
		EG005T-MW: Nickel	7440-02-0	50 mg/kg	107	70	130
		EG005T-MW: Zinc	7440-66-6	250 mg/kg	106	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2138530)							
ES1200472-001	Anonymous	EG035T-MW: Mercury	7439-97-6	5 mg/kg	84.3	70	130

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1200761	Page	: 1 of 5
Client	: REGIONAL GEOTECHNICAL SOLUTION	Laboratory	: Environmental Division Sydney
Contact	: MR STEVE MORTON	Contact	: Client Services
Address	: 5/97 ISABELLA STREET WINGHAM NSW, AUSTRALIA 2429	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: steve.m@regionalgeotech.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 6553 5641	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: RGS00319 1-CHAPMANS ROAD	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 17-JAN-2012
C-O-C number	: ----	Issue Date	: 24-JAN-2012
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3
Quote number	: SY/395/10		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010: Conductivity								
Soil Glass Jar - Unpreserved (EA010) STOCLPILE5 - TP10, STOCLPILE7 - TP12	STOCLPILE5 - TP11,	13-JAN-2012	19-JAN-2012	20-JAN-2012	✓	19-JAN-2012	16-FEB-2012	✓
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) STOCLPILE5 - TP10, STOCLPILE7 - TP12	STOCLPILE5 - TP11,	13-JAN-2012	----	----	----	18-JAN-2012	27-JAN-2012	✓
EA155: Foreign Material - Type I								
Snap Lock Bag (EA155) STOCLPILE5 - TP10, STOCLPILE7 - TP12	STOCLPILE5 - TP11,	13-JAN-2012	----	----	----	20-JAN-2012	11-JUL-2012	✓
EA155: Foreign Material - Type II								
Snap Lock Bag (EA155) STOCLPILE5 - TP10, STOCLPILE7 - TP12	STOCLPILE5 - TP11,	13-JAN-2012	----	----	----	20-JAN-2012	11-JUL-2012	✓
EA155: Foreign Material - Type III								
Snap Lock Bag (EA155) STOCLPILE5 - TP10, STOCLPILE7 - TP12	STOCLPILE5 - TP11,	13-JAN-2012	----	----	----	20-JAN-2012	11-JUL-2012	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T-MW) STOCLPILE5 - TP10, STOCLPILE7 - TP12	STOCLPILE5 - TP11,	13-JAN-2012	24-JAN-2012	11-JUL-2012	✓	24-JAN-2012	11-JUL-2012	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T-MW) STOCLPILE5 - TP10, STOCLPILE7 - TP12	STOCLPILE5 - TP11,	13-JAN-2012	24-JAN-2012	11-JUL-2012	✓	24-JAN-2012	11-JUL-2012	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Electrical Conductivity (1:5)	EA010	1	3	33.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Microwave Digestion)	EG035T-MW	2	14	14.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICPAES (Microwave Digestion)	EG005T-MW	1	14	7.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Electrical Conductivity (1:5)	EA010	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Microwave Digestion)	EG035T-MW	1	14	7.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICPAES (Microwave Digestion)	EG005T-MW	1	14	7.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Electrical Conductivity (1:5)	EA010	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Microwave Digestion)	EG035T-MW	1	14	7.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICPAES (Microwave Digestion)	EG005T-MW	1	14	7.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS (Microwave Digestion)	EG035T-MW	1	14	7.1	5.0	✓	ALS QCS3 requirement
Total Metals by ICPAES (Microwave Digestion)	EG005T-MW	1	14	7.1	5.0	✓	ALS QCS3 requirement



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Electrical Conductivity (1:5)	EA010	SOIL	(APHA 21st ed., 2510) Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM (1999) Schedule B(3) (Method 104)
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Foreign Material Content	EA155	SOIL	Foreign Material Content (RTA T276)
Total Metals by ICPAES (Microwave Digestion)	EG005T-MW	SOIL	(USEPA SW846 - 3051 Microwave Digestion);(APHA 21st ed., 3120; USEPA SW846 - 6010) (ICPAES) Metals in solids are determined following a microwave digestion. The ICPAES technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS (Microwave Digestion)	EG035T-MW	SOIL	(USEPA SW846 - 3051 Microwave Digestion); AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following a microwave digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Microwave Digest for Metals in Soils, Sediments and Sludges	EN31	SOIL	USEPA SW 846 - 3051, Microwave Assisted Nitric Acid Digestion 1.0g of sample is mixed with 10 mL conc. Nitric acid in a closed, high pressure vessel, and heated using a specific program. Digest is appropriate for selected metals analysis in sludge, sediments, soils and oils. This method is compliant with NEPM (1999) Schedule B(3) (Method 203)
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



Manning-Great Lakes

Port Macquarie

Coffs Harbour

RGS00319.1-AD

14 May 2013

Great Lakes Council
PO Box 450
FORSTER NSW 2428

Attention: Stuart Small

Dear Stuart

RE: Proposed Residential Subdivision, Lot 1 DP304132 Chapman Road Tuncurry

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken site observation and testing associated with the filling of a proposed residential subdivision site on Lot 1 DP304132, Chapmans Road, Tuncurry.

The site is being filled using sand won from dredging operations in nearby Wallis Lake. Issues such as acid sulphate soil potential in the dredged material have been dealt with separately, and the sand material being placed on the site is not acid sulphate soil.

Filling of the site commenced in early September 2012 and continued until late November of that year. It was understood that filling operations would re-commence in February/March 2013, however, the filling operations have now been ceased, and may re-commence at some later date. This report provides the results of site observation and testing undertaken to May 2013. Should further filling take place at a later date, further, similar testing should be undertaken.

Perth Sand Penetrometer testing at the proposed subdivision site at Chapman Road Tuncurry to help determine the level of compaction achieved on the sand fill deposited at the site obtained from dredging activities in the Wallis Lake.

The testing included six site visits at different stages of the operation. The visits were on

- 28 September 2012
- 4 October 2012
- 8 October 2012
- 15 October 2012



- 9 November 2012
- 22 November 2012

At each site visit testing was carried out in a grid pattern at up to 12 different locations and ranged in depths from 1.1m to 2.0m. The results were recorded and testing locations mapped.

The results show very loose to loose sands in the top 30cm which is to be expected underlain by medium dense to very dense sands at up to 2.0m.

Attached are figures of test locations and results from Perth Sand Penetrometer testing.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of

Regional Geotechnical Solutions Pty Ltd

Steven Morton

Principal



	Client	GREAT LAKES COUNCIL	Job No.	RGS00319.1
	Project:	CHAPMAN RD FILL IN TUNCURRY	Drawn By:	JD
			Date:	2-Oct-12
	Title:	DCP LOCATIONS 28/9/12	Drawing No.	Figure 1

Perth Sand Penetrometer Test

Project Number: RGS00319

Date: 28/9/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod diameter: 16mm blunt tip
Depth to groundwater:

Depth to base of test section (mm)	Test Number and blows recorded per 100mm					Comments (soil type, general information)
	1	2	3	4	5	
0-100	0	0	0	0	1	Dredged Sand
200	0	1	1	1	1	
300	1	0	2	1	1	
400	0	1	4	2	4	
500	2	3	2	3	4	
600	2	3	2	3	3	
700	4	3	2	3	1	
800	1	2	1	3	2	
900	2	2	1	3	1	
1000	2	3	2	3	3	
1100	2	3	2	3	3	
1800						
1950						
2100						
2250						
2400						
2550						
2700						
2850						
3000						
3150						
3300						
3450						
3600						
3750						
3900						
4050						
4200						
4350						

Perth Sand Penetrometer Test

Project Number: RGS00319

Date: 28/9/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod diameter: 16mm Blunt
Depth to groundwater:

Depth to base of test section (mm)	Test Number and blows recorded per 100mm					Comments (soil type, general information)
	6	7	8	9	10	
0 -100	0	0	0	0	0	
200	1	1	0	1	1	
300	2	2	1	2	1	
400	2	2	2	2	2	
500	3	3	3	1	2	
600	2	2	3	2	1	
700	2	3	3	1	1	
800	2	2	1	0	0	
900	3	2	1	1	1	
1000	3	2	1	1	0	
1100	4	2	2	1	1	
1200						
1300						
1400						
1500						
1600						
1700						
1800						
1900						
2000						
2100						
2200						
2300						
2400						
2500						
2600						
2700						
2800						
2900						

Perth Sand Penetrometer Test

Project Number: RGS00319

Date: 28/9/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod diameter: 16mm Blunt
Depth to groundwater:

Depth to base of test section (mm)	Test Number and blows recorded per 100mm					Comments (soil type, general information)
	11					
0-100	0					
200	1					
300	0					
400	2					
500	3					
600	2					
700	1					
800	1					
900	2					
1000	1					
1100	1					
1800						
1950						
2100						
2250						
2400						
2550						
2700						
2850						
3000						
3150						
3300						
3450						
3600						
3750						
3900						
4050						
4200						
4350						



Client	GREAT LAKES COUNCIL	Job No.	RG500319.1
Project:	SITE FILL	Drawn By:	JD
	CHAPMAN ROAD TUNCURRY	Date:	4-Oct-12
Title:	DCP LOCATIONS of 4 October 2012	Drawing No.	Figure 1

Sand Penetrometer

Project Number: RGS00319.1

Date: 4/10/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod Tip: 16mm Blunt
Depth to groundwater: 70cm

Depth to base of test section (mm)	Test Number and blows recorded per 100mm							Comments (soil type, general information)
	1	2	3	4	5	6	7	
0 - 100	0	0	1	1	0	1	1	Dredged Sand
200	1	1	2	0	1	1	0	
300	0	2	2	3	2	2	2	
400	2	2	4	3	3	4	3	
500	3	3	4	4	6	4	4	
600	3	4	4	4	6	4	6	
700	6	4	5	7	5	4	6	
800	5	5	7	8	7	5	6	
900	6	4	7	8	7	6	7	
1000	3	4	7	6	7	7	6	
1100	3	2	5	5	5	5	7	
1200	3							
1300								
1400								
1500								
1600								
1700								
1800								
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								

Sand Penetrometer

Project Number: RGS00319.1

Date: 4/10/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod Tip: 16mm
Depth to groundwater:

Depth to base of test section (mm)	Test Number and blows recorded per 100mm							Comments (soil type, general information)
	8	9	10	11	12			
0 - 100	0	0	0	0	0			Dredged Sand
200	1	1	1	1	1			
300	2	2	2	1	1			
400	3	2	2	2	2			
500	4	4	4	2	3			
600	5	4	5	3	3			
700	5	5	5	5	6			
800	6	4	7	6	4			
900	6	4	6	6	3			
1000	5	5	5	6	3			
1100	3	5	5	5	3			
1200								
1300								
1400								
1500								
1600								
1700								
1800								
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								



Client	GREAT LAKES COUNCIL	Job No.	RGS00319.1
Project:	SITE FILL IN	Drawn By:	JD
	CHAPMAN ROAD TUNCURRY	Date:	8-Oct-12
Title:	DCP LOCATIONS of 8 October 2012	Drawing No.	Figure 1

Sand Penetrometer

Project Number:	RGS00319.1
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Date: 8/10/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod Tip: Blunt
Depth to groundwater:

Test as per AS1289 6.3.3
Surface Level

Depth to base of test section (mm)	Test Number and blows recorded per 100mm							Comments (soil type, general information)
	1	2	3	4	5	6	7	
0 - 100	0	0	0	0	0	0	0	
200	2	1	1	1	1	1	1	
300	2	2	2	2	3	1	3	
400	4	4	2	2	4	2	4	
500	6	6	5	3	6	3	6	
600	8	9	5	5	10	4	7	
700	8	9	7	7	10	6	10	
800	10	7	7	7	14	7	11	
900	10	9	7	7	15	8	12	
1000	10	9	7	7	16	9	13	
1100	9	7	8	10	12	8	13	
1200								
1300								
1400								
1500								
1600								
1700								
1800								
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								

Sand Penetrometer

Project Number:	RGS00319.1
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Date: 8/10/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod Tip: Blunt
Depth to groundwater:

Test as per AS1289 6.3.3
Surface Level

Depth to base of test section (mm)	Test Number and blows recorded per 100mm							Comments (soil type, general information)
	8	9	10	11				
0 - 100	0	0	0	0				Please note that penetrometer tests on #9,10,11 were before the roller had compacted that row Rows 1-8 had been rolled
200	2	1	1	1				
300	2	1	1	1				
400	3	2	1	2				
500	5	4	2	4				
600	5	4	4	4				
700	8	6	4	4				
800	11	8	5	7				
900	11	6	5	5				
1000	10	8	5	5				
1100	12	6	4	4				
1200								
1300								
1400								
1500								
1600								
1700								
1800								
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								



	Client	GREAT LAKES COUNCIL	Job No.	RGS00319.1
	Project:	SITE FILL IN	Drawn By:	JD
		CHAPMAN ROAD TUNCURRY	Date:	15-Oct-12
	Title:	DCP LOCATIONS 15 October 2012	Drawing No.	Figure 1

Sand Penetrometer

Project Number: RGS00319.1

Date: 15/10/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod Tip: Blunt
Depth to groundwater:

Test as per AS1289 6.3.2
Surface Level

Depth to base of test section (mm)	Test Number and blows recorded per 100mm							Comments (soil type, general information)
	1	2	3	4	5	6	7	
0 - 100	0	0	0	0	0	0	0	DREDGED SAND ESTIMATED DEPTH VARIATION 1400 TO 1600MM
200	1	1	2	2	1	2	2	
300	2	1	1	2	4	3	3	
400	4	2	2	3	5	4	6	
500	7	2	3	7	7	7	7	
600	8	4	6	9	11	11	13	
700	10	6	7	11	12	12	13	
800	12	6	8	12	14	12	12	
900	17	7	10	13	15	13	12	
1000	15	9	12	14	14	12	13	
1100	16	11	10	14	10	14	16	
1200	16	10	10	15	20	12	17	
1300	16	10	12	13	15	12	14	
1400	15	7	14	12	12	11	10	
1500	13	7	12	8	10	8	10	
1600	9	6	12	11	10	9	10	
1700	7	5	8	8	10	7	10	
1800	6	4	5	9	11	8	7	
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								

Sand Penetrometer

Project Number: RGS00319.1

Date: 15/10/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod Tip: Blunt
Depth to groundwater:

Test as per AS1289 6.3.2
Surface Level

Depth to base of test section (mm)	Test Number and blows recorded per 100mm							Comments (soil type, general information)
	8	9	10	11	12			
0 - 100	0	0	0	0	0			
200	2	2	2	3	2			
300	3	4	3	4	5			
400	4	5	5	6	6			
500	5	7	9	7	8			
600	8	9	11	8	11			
700	13	10	11	11	14			
800	11	10	12	15	15			
900	12	10	12	17	15			
1000	9	11	16	18	16			
1100	7	6	12	17	16			
1200	14	12	15	18	16			
1300	9	12	12	15	17			
1400	14	11	12	13	11			
1500	8	10	10	9	10			
1600	8	11	8	9	10			
1700	6	9	8	9	9			
1800	6	7	9	9	8			
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								



	Client	GREAT LAKES COUNCIL	Job No.	RGS00319.1
	Project:	SITE FILL IN	Drawn By:	JD
		CHAPMAN ROAD TUNCURRY	Date:	9-Nov-12
	Title:	DCP LOCATIONS 9 November 2012	Drawing No.	Figure 1

Sand Penetrometer

Project Number:	RGS00319.1
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Date: 9/11/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod Tip: Blunt
Depth to groundwater:

Test as per AS1289 6.3.2
Surface Level

Depth to base of test section (mm)	Test Number and blows recorded per 100mm							Comments (soil type, general information)
	1	2	3	4	5	6	7	
0 - 100	1	1	1	1	1	1	1	Sand
200	2	3	2	1	1	1	2	
300	3	4	4	3	4	3	4	
400	6	6	5	3	4	5	5	
500	8	6	6	5	9	6	5	
600	8	7	8	5	10	9	7	
700	11	10	10	7	13	11	10	
800	13	11	10	13	13	13	12	
900	15	13	11	16	16	13	12	
1000	16	15	12	14	18	17	14	
1100	20	18	15	15	17	18	15	
1200	22	22	15	20	24	21	19	
1300	19	18	17	25/8	14	12	18	
1400	16	17	19		25/9	10	16	
1500	13	16	18			14	16	
1600	10	14	18			16	14	
1700	10	14	14			12	10	
1800	9	9	16			10	9	
1900	8	9	14			9	8	
2000	6	8	11			8	8	
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								

Sand Penetrometer

Project Number:	RGS00319.1
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Date: 9/11/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod Tip: Blunt
Depth to groundwater:

Test as per AS1289 6.3.2
Surface Level

Depth to base of test section (mm)	Test Number and blows recorded per 100mm							Comments (soil type, general information)
	8							
0 - 100	1							Sand
200	2							
300	4							
400	6							
500	6							
600	7							
700	9							
800	13							
900	13							
1000	15							
1100	18							
1200	20							
1300	17							
1400	19							
1500	18							
1600	16							
1700	11							
1800	9							
1900	9							
2000	7							
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								



	Client	GREAT LAKES COUNCIL	Job No.	RGS00319.1
	Project:	CHAPMAN RD FILL IN TUNCURRY	Drawn By:	JD
			Date:	22-Nov-12
	Title:	DCP LOCATIONS 22/11/12	Drawing No.	Figure 1

Sand Penetrometer

Project Number: RGS00319.1

Date: 22/11/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod Tip: Flat
Depth to groundwater:

Test as per AS1289 6.3.2
Surface Level

Depth to base of test section (mm)	Test Number and blows recorded per 100mm							Comments (soil type, general information)
	1	2	3	4	5	6	7	
0 - 100	1	1	1	1	1	1	1	SAND
200	2	2	3	2	2	2	1	
300	3	3	5	2	3	4	3	
400	5	5	6	5	5	4	5	
500	7	8	7	6	5	6	7	
600	10	12	13	9	9	9	7	
700	14	14	12	14	12	10	9	
800	15	12	14	14	15	11	7	
900	19	17	19	15	16	12	9	
1000	22	24	19	18	20	17	14	
1100	24	24	21	23	22	16	15	
1200								
1300								
1400								
1500								
1600								
1700								
1800								
1900								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
2800								
2900								

Sand Penetrometer

Project Number:	RGS00319.1
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Date: 22/11/2012

Client	Great Lakes Council
Project	Chapman Road Fill In
Location	Chapman Road Tuncurry

Test Details: Hammer Mass: 9kg
Hammer drop: 600mm

Rod Tip: Flat
Depth to groundwater:

Test as per AS1289 6.3.2
Surface Level

Depth to base of test section (mm)	Test Number and blows recorded per 100mm							Comments (soil type, general information)
	8	9	10	11	12			
0 - 100	1	1	1	1	1			
200	1	2	1	2	2			
300	3	3	3	2	3			
400	3	4	3	4	5			
500	2	3	5	3	7			
600	2	4	4	4	10			
700	2	5	5	5	12			
800	3	5	7	7	16			
900	3	6	7	10	17			
1000	10	9	10	13	22			
1100	10	13	12	11	21			
1200		14	11	11	24			
1300		12	19	13	24			
1400		10	15	12	25/8			
1500		10	13	10				
1600		10	13	9				
1700		10	12	9				
1800		10	13	10				
1900		10	11	9				
2000		11	12	9				
2100		11	13	10				
2200		12	13	8				
2300			9					
2400								
2500								
2600								
2700								
2800								
2900								

Appendix E

Letter from Dr David Tully CEnvP SC

Contaminated Land Solutions

14 November 2022

Ref: CLS0176.L02

Regional Geotechnical Solutions Pty Ltd
44 Brent Street
Wingham
NSW 2429

For the attention of Andrew Hills

Dear Andrew,

RE: Report Review: Detailed Site Investigation - Contamination Assessment – Proposed Manufactured Home Estate, 40-80 Chapmans Road, Tuncurry

I, Dr David Tully of Contaminated Land Solutions Pty Ltd, am a Certified Environmental Practitioner Site Contamination Specialist (General Certified Environmental Practitioner certification no. 1138 and Site Contamination Specialist certification no. SC40084).

I confirm I have read the Regional Geotechnical Solutions letter report entitled “*Detailed Site Investigation - Contamination Assessment – Proposed Manufactured Home Estate, 40-80 Chapmans Road, Tuncurry*” (Ref: RGS03137.1-AC), dated 14 November 2022 and a copy of which I have retained.

I can confirm that on the basis of the information contained within Section 6 of the report, I support the conclusions and recommendations related to the contamination assessment provided therein.

Should the client, regulator or local authority have any queries regarding the report review, I can be contacted by e-mail via david.tully@contaminatedlandsolutions.com.au. Specific queries regarding the content of the report should be addressed to Andrew Hills at Regional Geotechnical Solutions.

For and on behalf of

Contaminated Land Solutions Pty Ltd

Dr David Tully CEnvP SC
Director

Contaminated Land Solutions Pty Ltd



Contaminated Land Solutions Pty Ltd
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Crafrs West SA 5152
0410 012 292

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