

Alan Taylor Civil Pty Ltd

Stage 1 Site Contamination Assessment

Proposed Rezoning

**Lot 2 DP 601094 and Lot 4 DP 825704, 11 and 33 Mumford Street, Port
Macquarie**

Report No. RGS20683.1-AC_Rev1

15 August 2022



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Alan Taylor Civil Pty Ltd
3 Bundarra Way
BONNY HILLS NSW 2445

Attention: Alan Taylor

Dear Alan,

RE: Proposed Rezoning – Lot 2 DP 601094 and Lot 4 DP 825704, 11 and 33 Mumford Street, Port Macquarie

Stage 1 Site Contamination Assessment

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a Stage 1 Site Contamination Assessment for the proposed rezoning at Lot 2 DP 601094 and Lot 4 DP 825704, 11 and 33 Mumford Street, Port Macquarie.

The assessment found the site is likely to be appropriate for the proposed rezoning to C2 – Environmental Conservation and B5 – Business Development from a site contamination perspective provided the recommendations and advice of this report are adopted.

It is noted that a fragment of asbestos containing material (ACM) was encountered near the maintenance sheds in the school (Lot 4). An Asbestos Management Plan should therefore be prepared for the site and further investigation is recommended in this vicinity to delineate the potential extent of ACM.

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, please contact the undersigned.

For and on behalf of **Regional Geotechnical Solutions Pty Ltd**

Prepared by



Tim Morris

Associate Engineering Geologist



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1 INTRODUCTION

Regional Geotechnical Solutions Pty Ltd (RGS) have undertaken a Stage 1 Site Contamination Assessment for the proposed rezoning of Lot 2 DP 601094 and Lot 4 DP 825704, at 11 and 33 Mumford Street, respectively, Port Macquarie.

The western Lot 4 DP 825704 is occupied by the Heritage Christian School which comprises multiple school buildings, outdoor play areas and sealed car parks. The school includes infants, primary and secondary campuses. Within the eastern Lot 2 DP 601094, a large brick and metal clad building is present on a raised fill platform. Areas of sealed car park and gravel hard stand surround the building.

It is understood that the site is currently zoned as C2 – Environmental Conservation and R1 – General Residential. A development application has been submitted to rezone the lots to C2 – Environmental Conservation and B5 – Business Development. The proposed rezoning of the site is shown in Figure 1.

The purpose of the work described herein was to assess the suitability of Lot 4 for its existing school use and Lot 2 for future commercial use with respect to the presence of site contamination resulting from past land use and activities, as well as providing discussions and recommendations regarding:

- Identification of Areas of Environmental Concern (AEC) and Chemicals of Concern (COC);
- The undertaking of limited targeted sampling and analysis at the selected AEC to allow some preliminary analysis of the presence of contamination;
- Evaluation of test results against industry accepted criteria for the intended landuse;
- Conclusions regarding the presence of contamination at the site and its potential impacts on the proposed school or commercial landuse; and
- The requirement for remediation, further investigation, or ongoing management of site contamination.

The work was commissioned by Alan Taylor on behalf of Alan Taylor Civil Pty Ltd and was undertaken in accordance with proposal number RGS20683.1-AB, dated 8 June 2022.

2 GUIDELINES AND ASSESSMENT CRITERIA

The assessment was aimed at fulfilling the requirements of a Stage 1 Contaminated Site Assessment in accordance with NSW EPA *Guidelines for Consultants Reporting on Contaminated Land (2020)*

To evaluate results and for guidance on assessment requirements, the assessment adopted the guidelines provided in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013)*. The NEPM document provides a range of guidelines for assessment of contaminants for various land use scenarios. The proposed continued landuse as a primary school in Lot 4 and commercial land use in Lot 2. As such comparison with the NEPM guideline values for residential, child care, preschool and primary school Health Investigation Level (HIL)-A landuse was considered appropriate for Lot 4 and commercial land use (HIL-D) for Lot 2. In accordance with the NEPM guideline the following criteria were adopted for this assessment:

- Health Investigation Levels (HILs) for residential, child care, preschool and primary school land use were used for Lot 4 and Health Investigation Levels (HILs) for commercial land use for Lot 2 to assess the potential human health impact of heavy metals and polycyclic aromatic hydrocarbons (PAH);
- Health Screening Levels (HSLs) for coarse textured (sand) or fine textured (silt and clay) soils on a residential site were adopted for Lot 4 and commercial land use for Lot 2 as



appropriate for the soils encountered to assess the potential human health impact of petroleum hydrocarbons and benzene, toluene, ethyl-benzene, xylenes (BTEX) compounds;

- Ecological Investigation Levels (EILs) for urban residential/public open space land use were used for Lot 4 and commercial land use for Lot 2, for evaluation of the potential ecological / environmental impact of heavy metals and PAH;
- Ecological Screening Levels (ESLs) for coarse textured (sand) soils or fine textured (silt and clay) soils on a Residential land use site were adopted for Lot 4 and commercial land use for Lot 2 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 criteria does not necessarily deem that remediation is required, but is a trigger for further assessment of the extent of contamination and associated risks. The adopted criteria are presented in the results summary table in Appendix C.

3 METHODOLOGY

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

- A brief study of site history, with the aim of identifying past activities on or near the site that might have the potential to cause contamination;
- Review of selected available recent and historical aerial photography for the last 50 years;
- A search of NSW EPA records, or contaminated land notifications on the site;
- Government records of groundwater bores in the area;
- Land title search of the respective lots available from the Land Titles Office;
- Using the above information, characterise the site into Areas of Environmental Concern, in which the potential for contamination has been identified, and nominate Chemicals of Concern that might be associated with those activities;
- Undertake targeted sampling and analysis at the selected Areas of Concern to allow some preliminary analysis of the presence of contamination;
- Analyse samples for a suite of potential contaminants associated with the past activities; and
- Evaluate the results against industry accepted criteria for the proposed land use.

4 SITE SETTING AND HISTORY

4.1 Site Description

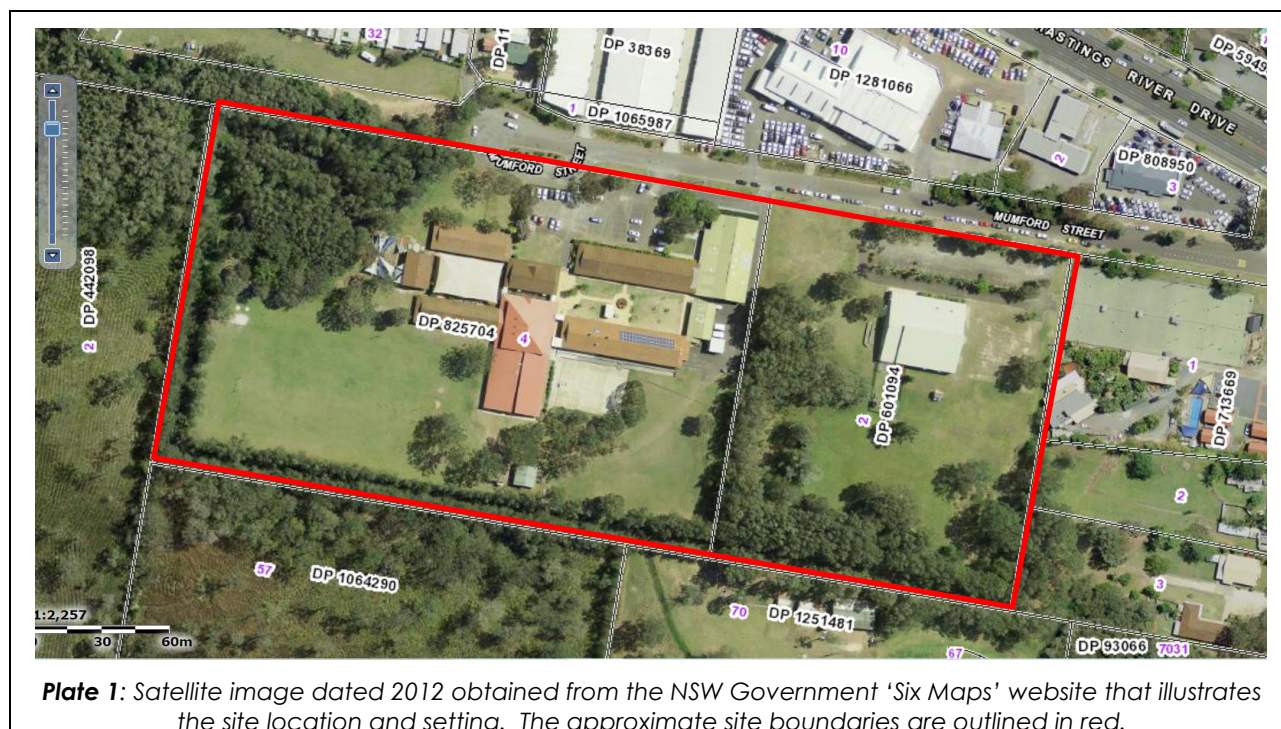
Lot 2 DP601094 and Lot 4 DP825704 at 11 and 33 Mumford Street, respectively are located in gently undulating low lying topography to the south of Mumford Street. The Heritage Christian School is located in Lot 4 and a large brick and metal clad building on Lot 2.

Both lots appear to have been modified by historical filling earthworks. The surface contours on the supplied drawing shows surface levels on the southern boundaries of both lots is approximately 1m AHD as shown in Figure 2. Areas in the north of both lots appear to have been modified by filling works and surface elevations grade up to approximately 3m AHD in elevation near Mumford Street.



A low-lying alluvial depression is present to the west of Lot 4 and a low sand plain is present to the south of the site. A shallow drain approximately 3m wide is present along the rear (southern) boundary of both lots and was flowing to the west at the time of the fieldwork.

A satellite image that shows the location of the site, the two lots and the site setting is reproduced in Plate 1.



Vegetation present in Lot 4 comprised areas of low maintained grass with scattered eucalypts. Melaleuca trees are present in the north west corner of the lot and casuarina trees were present along the southern boundary.

Vegetation in Lot 2 comprised open grassed area maintained by slashing with some scattered trees and bushes. Thick bushes and swamp grasses were present in the south west corner of Lot 2 where surface water was pooling at the time of fieldwork.

4.2 Historical Aerial Photography

Aerial photographs of the site were purchased from the NSW Spatial Services and reviewed to assist in identifying past land uses that may contribute to site contamination. The results of the review are summarised in Table 1.



Table 1- Aerial Photograph Summary

Year	Site	Surrounding Land
1956 Figure 3	The site has been mostly cleared of vegetation, with the exception of the western portion. An inferred alluvial depression commences in the centre of the site and drains towards the north west corner of the site. A farm dwelling is present in the centre north of site, accessed via Hastings River Drive.	Land to the north and east has been cleared, likely for grazing with scattered farm dwellings. Areas to the west and south are heavily vegetated.
1975 Figure 4	Vegetation in the south-west corner has been cleared. The farm dwelling and possibly two associated sheds present in north of the site, accessed via Mumford Road.	Mumford Street has been formed as a gravel access place along the northern boundary. A caravan park is present to the north west of the site. Several structures including a dwelling and surrounding sheds are observed in the adjacent lot to the east.
1981 Figure 5	Former dwelling is not visible and an area of ground disturbance approximately 50m x 50m is visible in and south of the former dwelling location. Image appears to show fill being pushed out from Mumford Street towards the south.	Some filling works occurring in adjacent lot to the east.
1989 Figure 6	Both lots have been developed with four buildings and a car park present in Lot 4 (School site) and a single large building and car park in Lot 2. Excavation works are visible along the southern and western boundaries where a modified drainage channel is present.	Several structures and tennis courts are present in the adjacent lot to the east.
1991 Figure 7	No significant change. Additional filling works using red clay is occurring to the south east of the school buildings in Lot 4.	Industrial developments (car yards) have been constructed to the north of Mumford Street.
2012 Figure 8	Six additional structures are present in the school site in Lot 4. No significant change to Lot 2.	Further industrial development (storage sheds) to the north of Mumford Street.
2022 Figure 9	No significant change to Lot 4. Approximately 50 cars are visible in Lot 2 in the sealed car park and in grassed areas	Further residential development to the east of the site.

4.3 NSW EPA Records

A check with the NSW EPA website (www.epa.nsw.gov.au) revealed that no notices have been issued on the site under the Contaminated Land Management Act (1997).



4.4 Land Title Search

A list of past registered proprietors and lessors of the site was obtained from the Land Titles Office. A summary of the title details is included in Appendix A.

The title history search revealed the following for Lot 2 DP 601094:

- 09 Nov 2016 – to date: Gantons Pty Ltd (ACN 003 088 453)
- 31 Aug 1988 to 09 Nov 2016: Christian Outreach Centre (ARBN 008 388 092)
- 05 Nov 1985 to 31 Aug 1988: Australian Christian Outreach Centre Limited
- 25 Jul 1984 to 05 Nov 1985: Geoffrey Mark Hammond Elaine Dawn Hammond
- 01 Feb 1984 to 25 Jul 1984: Christopher Francis McCarron Frederick James Cahill
- 11 Aug 1977 to 01 Feb 1984: Charles Bruce Thomas, electrical contractor
- 07 Apr 1975 to 11 Aug 1997: Susan Maria Marchant, wife of David Durack Marchant
- 14 Nov 1974 to 07 Apr 1975: Susan Maria Nicholls, widow
- 01 Mar 1972 to 14 Nov 1974: Roger Philip Nicholls
- 30 Apr 1970 to 01 Mar 1972: Patricia Maria Shelton, widow
- 14 Dec 1965 to 30 Apr 1970: Alfred Henry Shelton, agent Patricia Maria Shelton, his wife
- 23 Jun 1959 to 14 Dec 1965: William Charles Raddatz, retired farmer
- 01 May 1953 to 23 Jun 1959: Alice Raddatz, married woman
- 08 Sep 1938 to 01 May 1953: Edward Francis Grace, retired dairy farmer
- 04 Nov 1909 to 08 Sep 1938: Eli Sonter, labourer
- 03 Oct 1906 to 04 Nov 1909: Leslie George Wilson, millhand

The title history search revealed the following for Lot 4 DP 825704:

- 16 Nov 1992 – to date: Hastings Association for Christian Education Limited
- 08 Feb 1990 to date: Hastings Association for Christian Education Limited
- 09 Jul 1980 to 08 Feb 1990: Errol Edwin Stein, business proprietor, Jean Margaret Stein, his wife
- 02 Jan 1975 to 09 Jul 1980: Cove House Australia Pty Limited
- 25 Sep 1973 to 25 Sep 1973: Tapago Pty Limited
- 01 Feb 1973 to 25 Sep 1973: Celia Patricia Mumford, spinster
- 04 Jan 1944 to 01 Feb 1973: Stella Rebecca Pearl Mumford, married woman
- 20 Jun 1906 to 04 Jan 1944: Florence May Westley, wife of Richard Charles Edgar Westley, labourer

4.5 Geology

Reference to the Port Macquarie Coastal Quaternary Geology 1:25,000 Sheet (Troedson et al 2008) indicates the site contains an estuarine fluvial delta front (Qhemd) that crosses the site from north west to south east, a backbarrier sandplain (Qpbf) in the south west and a tidal delta flat to the east (Qhef). An excerpt of the Sheet is reproduced in Plate 2.

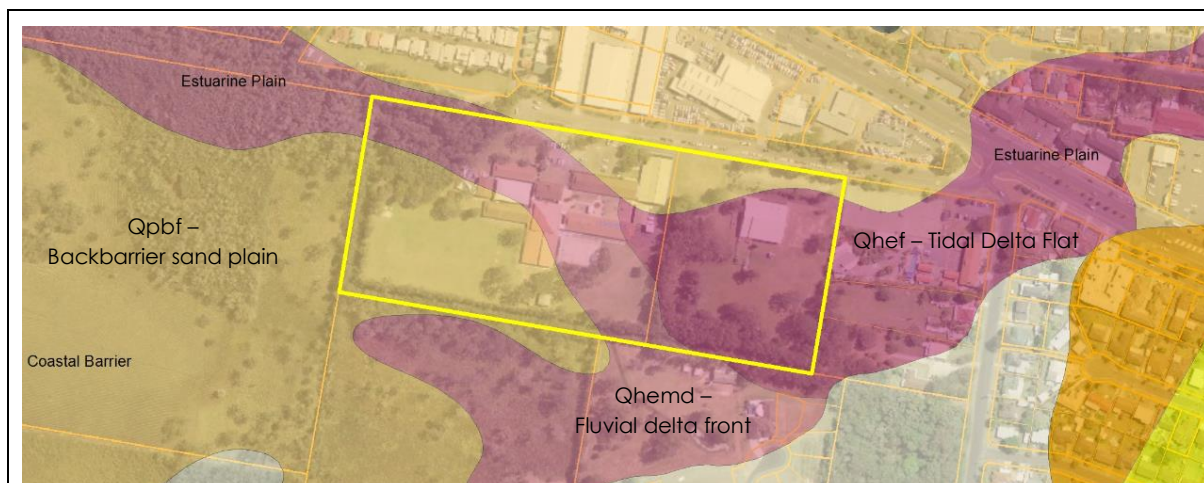


Plate 2: Excerpt from the 1:25,000 Port Macquarie Coastal Quaternary Geology Sheet. Approximate lot boundary is outlined in yellow.

4.6 Groundwater

A groundwater bore search on the Water NSW website indicates that there are no licensed groundwater bores within 200m of the site boundary. The nearest licensed bore is located approximately 250m to the north west as shown in Plate 3.

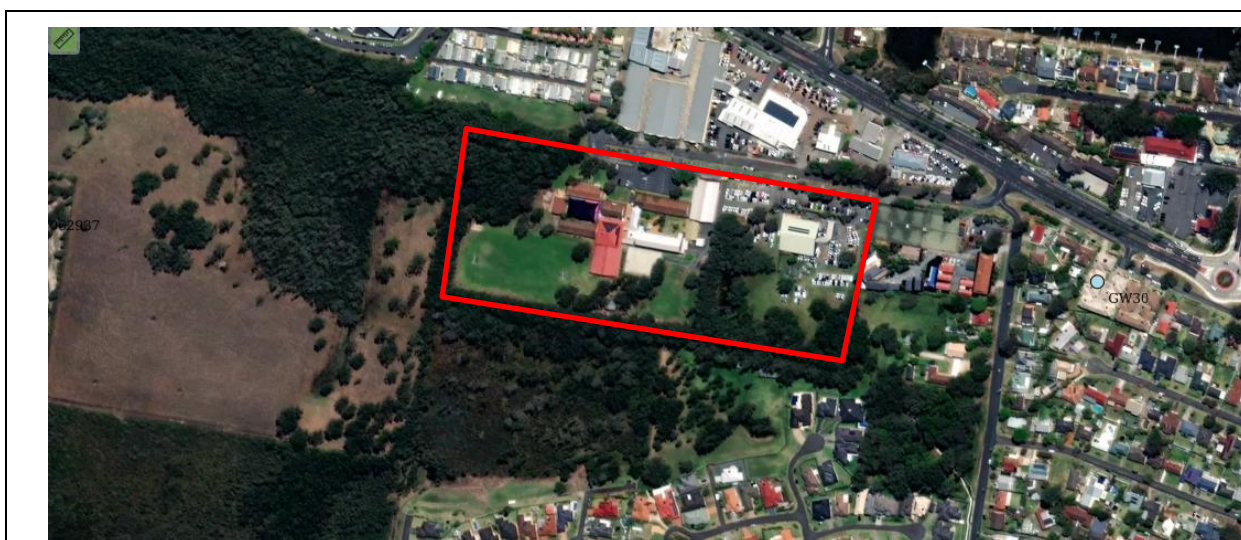


Plate 3: Approximate boundary of Lot 2 DP601094 and Lot 4 DP825704 outlined in red. Nearest licensed groundwater bore (GW304701) is located approximately 250m to the northwest.

Regional groundwater flow direction typically follows topographic slopes, which for this site would be towards the south and west.



4.7 Council Records

Reference to the Port Macquarie Hastings Council Local Environment Plan (LEP) shows the site is currently zoned as C2 – Environmental Conservation and R1 – General Residential.

4.8 Site Observations

Fieldwork was undertaken on 16 June 2022. Observations made during the site visit are summarised below:

- Existing structures have been built on raised fill embankment that were up to approximately 2m above existing surface levels;
- School buildings were typically single storey and brick construction. Two metal sheds for maintenance equipment were present on the southern boundary;
- Low lying swamp landscape was present to the south and west of the site. Water was flowing to the west in the drain on the southern boundary; and
- In Lot 2 a large brick and metal clad building was constructed on a raised fill embankment. Approximately 50 cars were parked/stored in the grassed areas and on the gravel hardstand and sealed car park surrounding the building. The building was locked at the time of fieldwork.

Selected site photographs are presented below.



Lot 4 (TP3): Metal sheds located on the southern boundary that appear to be used for storage of maintenance equipment. The sheds are constructed on a 0.5m high fill embankment.



Lot 4: Single storey brick classrooms in east of Lot 4, constructed on 2m high fill embankment. Red clay soils exposed in embankment.



Lot 4: Looking south-west across the playing fields.



Lot 4: Low-lying swamp environment to the west of the site.



Lot 2: Large metal clad building on raised fill platform.



Lot 2: Various cars being stored on site.

4.9 Supplied Information

Prior to 2016, Lot 2 was owned by the Christian Outreach Centre and the building present is understood to have been used by the Coastwide Church as a place of worship.

Since 2017, Lot 2 has been used as a temporary storage facility for new vehicles that are sold from the adjacent car dealership (Andrew Miedecke Hyundai) to the north of Mumford Street. It is understood that there are some trade in cars also present, some of which are in poor condition and are being stored temporarily before being sent off site for disposal. The building is being used to prepare new cars for sale which includes some polishing and cleaning. It is understood that no repairs or car maintenance is being undertaken on site.

4.10 Site History Summary

Based on available data the chronological development of the site was undertaken as summarised below:



- Aerial photographs indicate a farm house was present in the north of the site near the Lot 2 and Lot 4 boundary from between the late 1950s or 1960s until the late 1970s. The site of the previous dwelling was modified by filling works visible in 1981 which appear to have extended out from Mumford Street towards the south across both subject lots. Supplied detail survey shows surface levels of up to RL3m in the north of the site and RL1m in the south, suggesting up to 2m of fill may be present;
- Lot 4 was owned by Hastings Association for Christian Education from 1986. Construction works for the Heritage Christian School commenced between 1981 and 1989. There were 12 structures present at the site in 2012 and the site layout does not appear to have changed significantly since then;
- Site filling works and construction of the large brick and metal clad building on Lot 2 occurred in the same period as the adjacent school development between 1981 and 1989;
- Lot 2 was purchased by Grantons Pty Ltd in 2016 and since 2017, satellite imagery indicates the site has been used as a storage for vehicles. It is understood the stored vehicles are associated with the car dealership located to the north of Mumford Street with up to approximately 50 vehicles present. The vehicles present include new cars for sale and old cars that are stored temporarily prior to disposal off site. The building is understood to be used for cleaning of the vehicles prior to sale.

5 SITE CONTAMINATION ASSESSMENT

5.1 Conceptual Site Model

Based on the site observations and knowledge obtained about site activities as outlined above, potential Areas of Concern and Chemicals of Concern were identified for the assessment as outlined in Table 2. Refer to Figure 1 for location of the identified AECs within the site.

Table 2: Conceptual Site Model

Area of Environmental Concern	The	Chemicals of Concern	Targeted Sampling Location
AEC1: Soils below building areas in school site (Lot 4)	Imported fill of unknown origin	Heavy Metals, TPH, BTEX, PAH, OC/OPP, asbestos	TP1, TP4
AEC2: Soils surrounding school maintenance shed constructed on fill platform (Lot 4)	Imported fill of unknown origin, potential spillage of chemicals from containers including cleaning fluids/fuel/oils, pesticides	Heavy Metals, TPH, BTEX, PAH, OC/OPP, asbestos	TP3
AEC3: Soils below and surrounding existing building in Lot 2 constructed on fill platform. Used for car storage.	Imported fill of unknown origin. Potential spillage of chemicals including fuel and oils	Heavy Metals, TPH, BTEX, PAH, OC/OPP, asbestos	TP8, TP10
Heavy Metals - Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc BTEX - Benzene, Toluene, Ethylbenzene and Xylene TPH - Total Petroleum Hydrocarbons PAH - Polycyclic Aromatic Hydrocarbons OC/OPP - Organochlorine and Organophosphorus Pesticides			



The risk of groundwater contamination at the site was considered low as the potential sources of contamination were typically of surface origin. An assessment of groundwater assessment was therefore not undertaken as part of this preliminary contamination assessment. Assessment of soil vapours were not undertaken as it is also beyond the scope of this preliminary contamination assessment.

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.

Based on the site observations and knowledge obtained about site activities as outlined above, potential exposure routes linking chemicals of concern with identified receptors to form plausible exposure routes are summarised in Table 3.

Table 3: Plausible Exposure Pathways

Area of Environmental Concern	Chemicals of Concern	Exposure Route	Receptors	Comment
AEC1: Soils below building areas in school site (Lot 4)	Heavy Metals, TPH, BTEX, PAH, OC/OPP, asbestos	Inhalation, dermal contact, ingestion	Site users, services maintenance and construction workers	Possible risk from historical fill
AEC2: Soils surrounding school maintenance shed constructed on fill platform (Lot 4)	Heavy Metals, TPH, BTEX, PAH, OC/OPP, asbestos	Inhalation, dermal contact, ingestion	Site users, services maintenance and construction workers	Possible risk from historical fill and storage of chemicals
AEC3: Soils surrounding existing building in Lot 2 constructed on fill platform. Used for car storage.	Heavy Metals, TPH, BTEX, PAH, OC/OPP, asbestos	Inhalation, dermal contact, ingestion	Site users, services maintenance and construction workers	Possible risk from historical fill and leaking motor vehicles (fuels and lubricants)

5.2 Field Work

Field work for the assessment was undertaken on 16 June 2022 and included:

- Site walkover to assess visible surface conditions and identify evidence of contamination, or past activities that may cause contamination;
- Twelve shallow test pits, designated TP1 to TP12, undertaken by hand tools, logged and sampled by an Engineering Geologist;
- Test pit locations were based on professional judgement with consideration of the site history and visible site features.

Engineering logs of the test pits are presented in Appendix B. The locations of the test pits are shown on Figure 2. They were obtained on site by measurements relative to existing site features. Reduced levels at the test pit locations were estimated from the drawings and are shown on the logs.



Soil samples were taken from excavated test pits using disposable gloves and hand tools 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. Where possible asbestos containing material was observed, samples were collected and placed in sealed plastic bags.

5.3 Sample Description

Descriptions of the samples collected are summarised in Table 4.

Table 4: Sample Description

Sample	Lot	Sample Depth (m)	Sample Location	Sample Description
TP1	4	0 – 0.1	Edge fill embankment	Topsoil/fill
TP1	4	0.2 – 0.3	Edge fill embankment	Topsoil/fill
TP2	4	0 – 0.1	Spoil from drain	Topsoil/fill
TP2	4	0.2 – 0.3	Spoil from drain	Red Clay Fill
TP3	4	0 – 0.1	Fill embankment near maintenance shed	Topsoil/fill
TP3	4	0.2 – 0.3	Fill embankment near maintenance shed	ACM*
TP4	4	0 – 0.1	Fill embankment – Class room	Topsoil/fill
TP4	4	0.2 – 0.3	Fill embankment – Class room	Red Clay Fill
TP5	4	0 – 0.1	Playing Field	Topsoil/fill
TP5	4	0.2 – 0.3	Playing Field	Red Clay Fill
TP6	4	0 – 0.1	Natural profile	Topsoil
TP7	4	0 – 0.1	Spoil from drain	Topsoil
TP8	2	0 – 0.1	Hardstand car park	Gravel Fill
TP8	2	0.2 – 0.3	Hardstand car park	Sand Fill
TP9	2	0 – 0.1	Natural profile	Topsoil
TP10	2	0 – 0.1	Fill embankment – Building	Topsoil/fill
TP10	2	0.2 – 0.3	Fill embankment – Building	Red Clay Fill



Sample	Lot	Sample Depth (m)	Sample Location	Sample Description
TP11	2	0 – 0.1	Natural profile	Topsoil
TP11	2	0.2 – 0.3	Natural profile	Sand
TP12	2	0 – 0.1	Grassed area	Red Clay Fill

Table Notes: * Possible Asbestos Containing Material.

A fragment of fibre cement sheeting product was observed in TP3 and submitted for asbestos analysis. An image of the sample is presented below.



5.4 Ground Conditions Encountered

A summary of the observed profiles is presented in Table 5.



Table 5: Subsurface Profile Summary

Investigation	Depth to Base of Material Layer (m)						
	Topsoil/ Fill: dark brown, trace grass roots	Topsoil/ Fill: Sandy CLAY, trace fibro	FILL – CLAY: Sandy CLAY, red/orange	FILL – GRAVEL: Sandy GRAVEL, grey	FILL – SAND: Clayey SAND, brown	Topsoil: Clayey SILT, black, some plant roots	Marine: Clayey SAND, pale brown
TP1	≥0.3	--	--	--	--	--	--
TP2	0.1	--	≥0.3	--	--	--	--
TP3	--	≥0.3	--	--	--	--	--
TP4	0.1	--	≥0.3	--	--	--	--
TP5	0.1	--	≥0.3	--	--	--	--
TP6	--	--	--	--	--	≥0.3	--
TP7	≥0.3	--	--	--	--	--	--
TP8	--	--	--	0.1	≥0.3	--	--
TP9	--	--	--	--	--	≥0.3	--
TP10	0.1	--	≥0.3	--	--	--	--
TP11	--	--	--	--	--	0.2	≥0.3
TP12	--	--	≥0.3	--	--	--	--

5.5 Laboratory Testing

Samples were transported under chain-of-custody conditions to a NATA accredited specialist chemical testing laboratory, to be tested for the following suite of common contaminants:

- Polycyclic Aromatic Hydrocarbons (PAH)
- Total Petroleum Hydrocarbons (TPH)
- Benzene, Toluene, Ethyl-benzene, Xylenes (BTEX)
- Organochlorine and organophosphorus pesticides (OC/OPs)
- Heavy metals (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, and zinc)
- Asbestos identification in accordance with AS4964; and
- Soil pH, total organic carbon content (TOC), cation exchange capacity (CEC) and electrical conductivity (EC) for the purposes of determination of ecological investigation levels (see Section 5.6).

The results are presented in Appendix C. A summary table of the results comparing them to the adopted guidelines is also presented in Appendix C.



5.6 Quality Control

Samples were obtained using industry accepted protocols for sample treatment, preservation, and equipment decontamination. A duplicate soil sample of TP9 (0 - 0.1m) was submitted to the laboratory for analysis as DP1.

The Relative Percent Differences (RPDs) were calculated for the duplicate sample and presented in the results summary table in Appendix B. RPD were less than 40%.

In addition to the field QC 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.

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.

5.7 Analysis Results

An appraisal of the laboratory test results presented in Appendix C is provided below with reference to the adopted soil investigation and screening levels discussed in Section 2.

- EILs are site specific and are determined by calculating an Ambient Background Concentration (ABC) and an Added Contaminant Limit (ACL) for the site. ABC values were adopted using results from soil sample TP6 in the northern east undisturbed area of the site. EILs are presented in the Summary Table in Appendix C and summarised in Table 6:

Table 6: EILs Summary (With Reference to NEPM, Schedule B1)

Analyte	ABC – TP6 (mg/kg)	EIL – Aged Residential/Open Space Landuse (mg/kg) - Lot 4	EIL – Aged Commercial Landuse (mg/kg) – Lot 2
Copper	71	200	250
Arsenic	22	100	160
Lead	15	1100	1800
Nickel	24	280	480
Chromium (III)	62	260	390
Zinc	14	230	350

5.8 HIL A – Lot 4 (School Site)

- Concentrations of heavy metals exceeded the calculated EIL for chromium in four samples and zinc in one sample. Each of these samples were taken from the fill mound where red clay was present. Speciation testing was undertaken on the elevated total chromium samples confirmed the chromium valence present as Chromium (III). It is noted that red clay soils in the Port Macquarie area are naturally enriched in heavy metals including Chromium (III);
- Concentrations of heavy metals were above the laboratory limit of reporting (LOR), but were below adopted health investigation criteria for a residential site;



- Concentrations of PAH hydrocarbons were below the LOR in all samples analysed;
- Concentrations of BTEX and PCB contaminants were below the LOR in all samples analysed;
- Concentrations of pesticide contaminants were below the LOR in all samples analysed; and
- Asbestos (chrysotile) was detected in a sample of fibre cement sheeting encountered at TP3: 0.2 – 0.3m in Lot 4, near the maintenance sheds. The origin of the fibre cement fragment is not known but may be from a previous demolished structure on site, or, within fill imported to site.

5.9 HIL D – Lot 2 (Proposed Commercial Site)

- Concentrations of heavy metals were less than the calculated EIL's;
- Concentrations of heavy metals were above the laboratory limit of reporting (LOR), but were below adopted health investigation criteria for a commercial site;
- Concentrations of PAH hydrocarbons were below LOR in all samples analysed;
- Concentrations of BTEX and PCB contaminants were below LOR in all samples analysed; and
- Concentrations of pesticide contaminants were below LOR in all samples analysed.

6 ASSESSMENT AND CONCLUSIONS REGARDING SITE CONTAMINATION

A Stage 1 Site Contamination Assessment was undertaken to assess past and present potentially contaminating activities and contamination types and evaluate the site's suitability for residential use from a contamination perspective.

6.1 Summary

Based on the results outlined in this report the following points and recommendations are made:

- Site soils at several locations in Lot 2 exceeded heavy metal (chromium and zinc) EILs and plant growth may therefore be restricted in these areas. However, it is noted that soils in the Port Macquarie area are naturally enriched in heavy metals and unlikely to pose a risk to the locally adapted ecosystems;
- Trace of asbestos containing material was present within the fill near the school maintenance sheds as shown in Figure 2. An asbestos register and an asbestos management plan must be prepared for the site in accordance with the NSW WorkCover Code of Practice (*How to Manage and Control Asbestos in the Workplace*). Removal and disposal of any asbestos containing material must be undertaken in accordance with the NSW WorkCover Code of Practice (*How to Safely Remove Asbestos*) which would include preparation of an asbestos removal control plan by a licensed asbestos removalist;
- Should any existing fill require removal off-site, it will require assessment for a Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 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;
- Considering the age of some of the buildings present on site there is the potential for asbestos type building materials to have been used in their construction. Prior to any site demolition works a hazardous material inspection should therefore be undertaken to determine if hazardous materials including asbestos are present.



6.2 Conclusion

Based on the results obtained in this investigation Lot 4 is considered likely to be suitable for primary school land use with regard to the presence of soil contamination provided the recommendations and advice of this report are adopted, specifically with regards to the presence of asbestos encountered near the maintenance sheds and site preparation works are conducted in accordance with appropriate site management protocols and legislative requirements. Further investigations by a suitably accredited environmental professional is recommended to assess the extent of ACM in the vicinity of the maintenance sheds .

Based on the results obtained in this investigation Lot 2 is considered likely to be suitable for commercial 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.

Should potential evidence of site contamination be identified during development activities, such as soil staining, odours or possible asbestos cement sheeting, then a site contamination specialist should be contacted for advice without delay.

7 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

Tim Morris

Associate Engineering Geologist



Figures

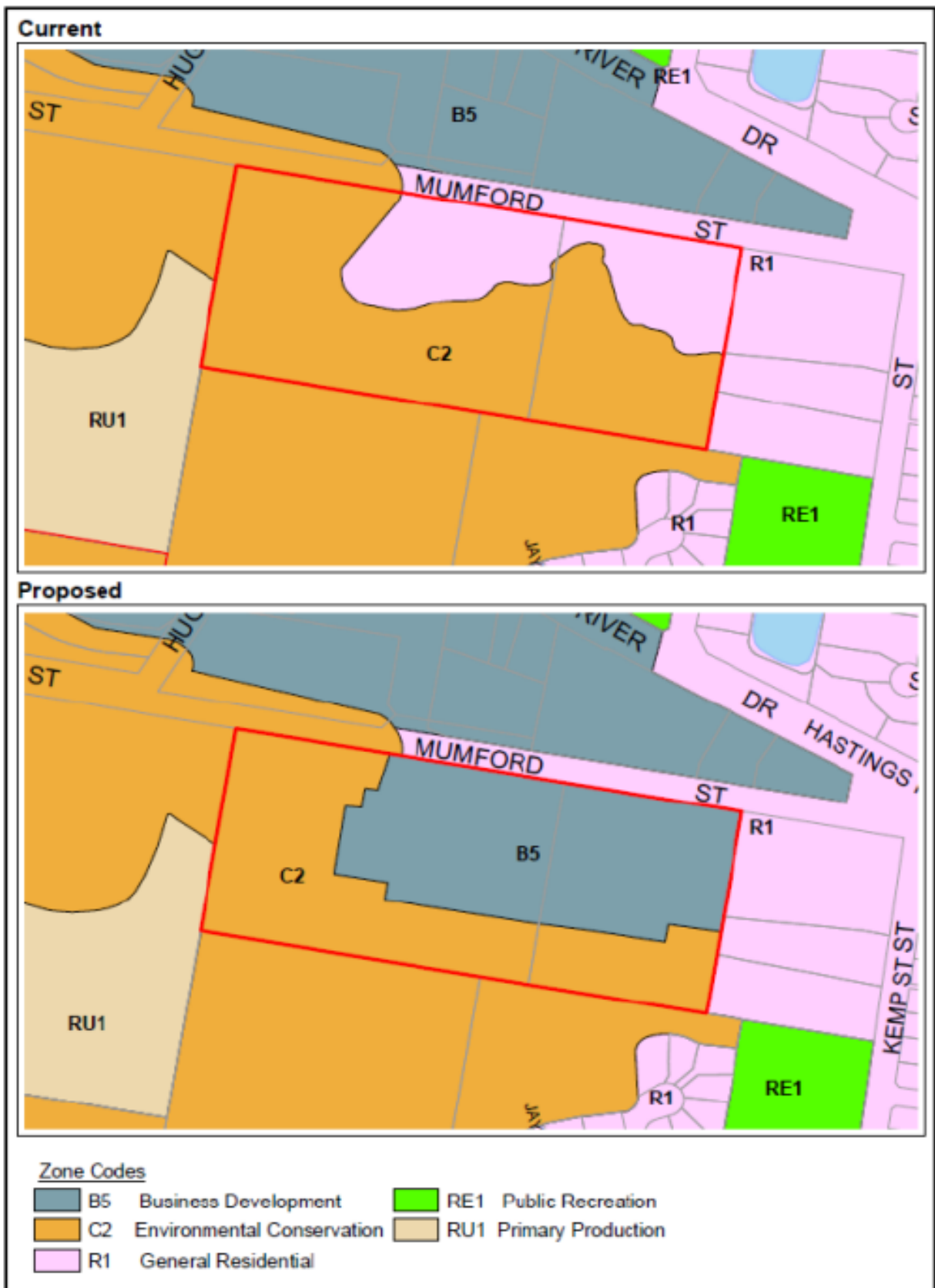
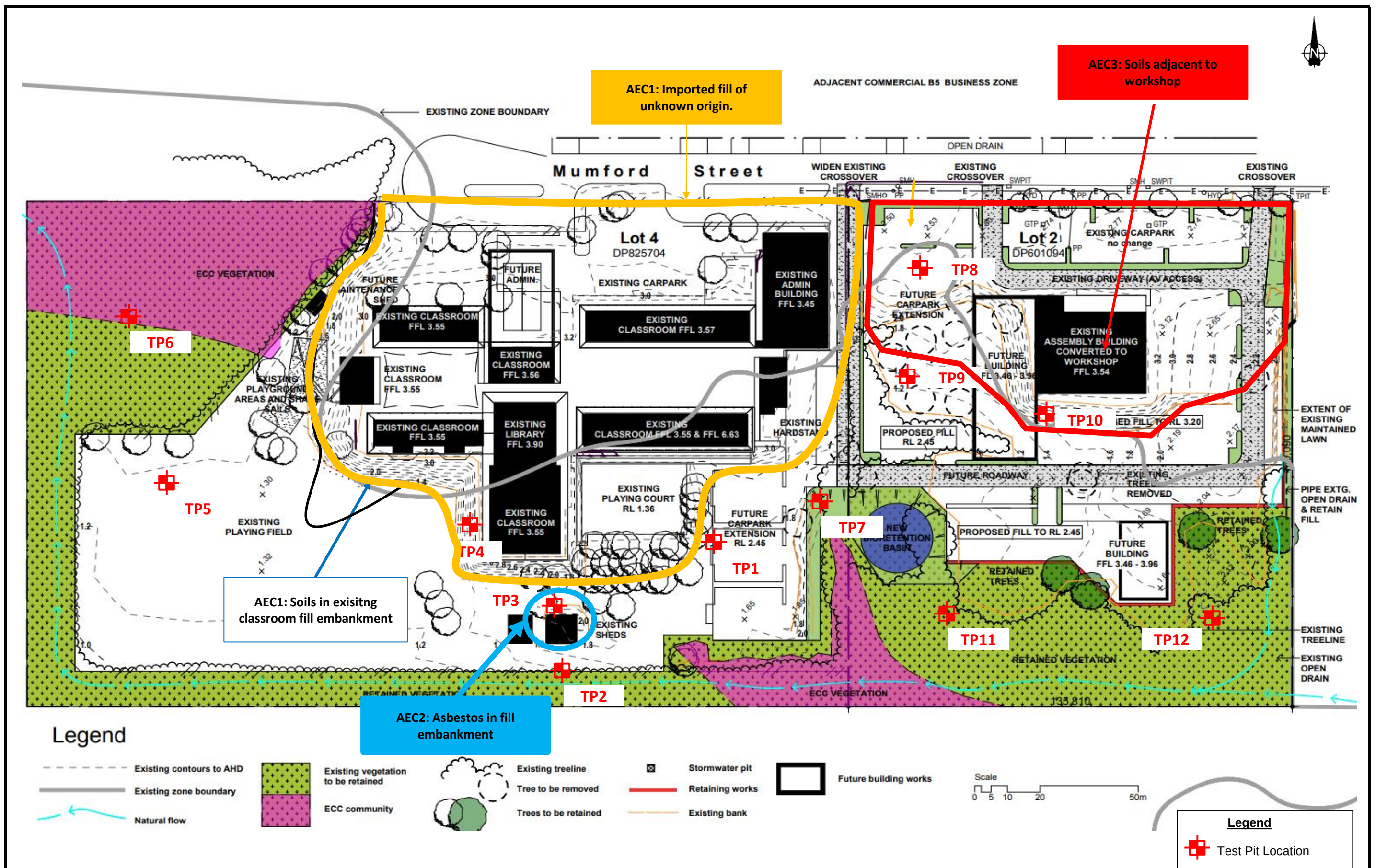


Figure 4 - Current and proposed zoning map (Source: Planning Proposal)

Based on Council website information

	Client:	ALAN TAYLOR CIVIL	Job No.	RGS20683.1
	Project:	PROPOSED REZONING	Drawn By:	DS
		11-33 MUMFORD STREET, PORT MACQUARIE	Scale:	NTS
	Title:	INVESTIGATION LOCATION PLAN	Date:	27-Jul-22
			Figure No.	1



Based on supplied drawing titled " "

	Client:	ALAN TAYLOR CIVIL	Job No.	RGS20683.1
	Project:	PROPOSED REZONING	Drawn By:	DS
		11-33 MUMFORD STREET, PORT MACQUARIE	Scale:	NTS
		INVESTIGATION LOCATION PLAN	Date:	27-Jul-22
	Title:		Figure No.	2



	Client:	ALAN TAYLOR CIVIL	Job No.	RGS20683.1
	Project:	PROPOSED REZONING	Drawn By:	DS
		11-33 MUMFORD STREET, PORT MACQUARIE	Scale:	NTS
	Title:	1956 AERIAL IMAGE	Date:	26-Jul-22
			Figure No.	3



Farmhouse within site



Client:	ALAN TAYLOR CIVIL	Job No.	RGS20683.1
Project:	PROPOSED REZONING	Drawn By:	DS
	11-33 MUMFORD STREET, PORT MACQUARIE	Scale:	NTS
Title:	1975 AERIAL IMAGE	Date:	26-Jul-22
		Figure No.	4

Farmhouse demolished and
filling works being undertaken



	Client:	ALAN TAYLOR CIVIL	Job No.	RGS20683.1
	Project:	PROPOSED REZONING	Drawn By:	DS
		11-33 MUMFORD STREET, PORT MACQUARIE	Scale:	NTS
	Title:	1981 AERIAL IMAGE	Date:	26-Jul-22
			Figure No.	5



School buildings present in Lot 4 and
large building present in Lot 2



Client:	ALAN TAYLOR CIVIL	Job No.	RGS20683.1
Project:	PROPOSED REZONING	Drawn By:	DS
	11-33 MUMFORD STREET, PORT MACQUARIE	Scale:	NTS
Title:	1989 AERIAL IMAGE	Date:	26-Jul-22
		Figure No.	6



	Client:	ALAN TAYLOR CIVIL	Job No.	RGS20683.1
	Project:	PROPOSED REZONING	Drawn By:	DS
		11-33 MUMFORD STREET, PORT MACQUARIE	Scale:	NTS
	Title:	1991 AERIAL IMAGE	Date:	26-Jul-22
			Figure No.	7



 REGIONAL GEOTECHNICAL SOLUTIONS	Client:	ALAN TAYLOR CIVIL	Job No.	RGS20683.1
	Project:	PROPOSED REZONING 11-33 MUMFORD STREET, PORT MACQUARIE	Drawn By:	DS
			Scale:	NTS
			Date:	26-Jul-22
Title:	2012 SATELLITE IMAGE	Figure No.	8	



Cars from car dealership being temporarily stored onsite

	Client:	ALAN TAYLOR CIVIL	Job No.	RGS20683.1
	Project:	PROPOSED REZONING	Drawn By:	DS
		11-33 MUMFORD STREET, PORT MACQUARIE	Scale:	NTS
	Title:	2022 SATELLITE IMAGE	Date:	26-Jul-22
			Figure No.	9



Appendix A

Site History Documentation

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

18/36 Osborne Road,
Manly NSW 2095

Mobile: 0412 169 809
Email: search@alsearchers.com.au

10th June, 2021

REGIONAL GEOTECHNICAL SOLUTIONS PTY LTD

1/12 Jindalee Road,
PORT MACQUARIE, NSW, 2444

Attention: Grant Colliar,

**RE: 11 and 33 Mumford Street,
Port Macquarie
RGS20683.1**

Note 1:	Lot 2	DP 601094	(page 1)
Note 2:	Lot 4	DP 825704	(page 4)

Note 1:

Current Search

Folio Identifier 2/601094 (title attached)
DP 601094 (plan attached)
Dated 09th June, 2022
Registered Proprietor:
GANTONS PTY LTD (ACN 003 088 453)

Title Tree
Lot 2 DP 601094

Folio Identifier 2/601094

Certificate of Title Volume 13881 Folio 46

Certificate of Title Volume 10228 Folio 208

Certificate of Title Volume 1726 Folio 39

Index

T – Transfer

CN – Change of Name

ND – Notice of Death

TA – Transmission Application

Summary of proprietor(s) Lot 2 DP 601094

Year	Proprietor(s)	
	(Lot 2 DP 601094)	
09 Nov 2016 – todate	Gantons Pty Ltd (ACN 003 088 453)	T
31 Aug 1988	Christian Outreach Centre (ARBN 008 388 092)	
	(Lot 2 DP 601094 – CTVol 13881 Fol 46)	
05 Nov 1985	Australian Christian Outreach Centre Limited	T
25 Jul 1984	Geoffrey Mark Hammond Elaine Dawn Hammond	T
01 Feb 1984	Christopher Francis McCarron Frederick James Cahill	
	(Part Portion 233 Parish Macquarie – CTVol 10228 Fol 208)	
11 Aug 1977	Charles Bruce Thomas, electrical contractor	T
07 Apr 1975	Susan Maria Marchant, wife of David Durack Marchant	CN
14 Nov 1974	Susan Maria Nicholls, widow	ND
01 Mar 1972	Roger Philip Nicholls, veterinary surgeon Susan Maria Nicholls, his wife	T
30 Apr 1970	Patricia Maria Shelton, widow	ND
08 Feb 1966	Alfred Henry Shelton, agent Patricia Maria Shelton, his wife	
	(Part Portion 233 Parish Macquarie – Area 10 Acres – CTVol 1726 Fol 39)	
14 Dec 1965	Alfred Henry Shelton, agent Patricia Maria Shelton, his wife	T
23 Jun 1959	William Charles Raddatz, retired farmer	TA
01 May 1953	Alice Raddatz, married woman	T
08 Sep 1938	Edward Francis Grace, retired dairy farmer	T
04 Nov 1909	Eli Sonter, labourer	T
03 Oct 1906	Leslie George Wilson, millhand	

Note 2:

Current Search

Folio Identifier 4/825704 (title attached)

DP 825704 (plan attached)

Dated 09th June, 2022

Registered Proprietor:

HASTINGS ASSOCIATION FOR CHRISTIAN EDUCATION LIMITED

Title Tree
Lot 4 DP 825704

Folio Identifier 4/825704

(a)

(b)

Folio Identifier 3/734414

Folio Identifier 4/734414

Certificate of Title Volume 1697 Folio 210

Index

T – Transfer

CN – Change of Name

ND – Notice of Death

TA – Transmission Application

**Summary of proprietor(s)
Lot 4 DP 825704**

Year	Proprietor(s)	
	(Lot 4 DP 825704)	
16 Nov 1992 – todate	Hastings Association for Christian Education Limited	

See Notes (a) & (b)

Note (a)

	(Lot 3 DP 734414)	
08 Feb 1990	Hastings Association for Christian Education Limited	T
08 Jul 1986	Errol Edwin Stein, business proprietor Jean Margaret Stein, his wife	
	(Part Portion 233 Parish Macquarie – Area 10 Acres – CTVol 1697 Fol 210)	
09 Jul 1980	Errol Edwin Stein, business proprietor Jean Margaret Stein, his wife	T
02 Jan 1975	Cove House Australia Pty Limited	CN
25 Sep 1973	Tapago Pty Limited	T
01 Feb 1973	Celia Patricia Mumford, spinster	TA
04 Jan 1944	Stella Rebecca Pearl Mumford, married woman	T
20 Jun 1906	Florence May Westley, wife of Richard Charles Edgar Westley, labourer	T

Note (b)

	(Lot 4 DP 734414)	
05 Aug 1986	Hastings Association for Christian Education Limited	T
08 Jul 1986	Errol Edwin Stein, business proprietor Jean Margaret Stein, his wife	
	(Part Portion 233 Parish Macquarie – Area 10 Acres – CTVol 1697 Fol 210)	
09 Jul 1980	Errol Edwin Stein, business proprietor Jean Margaret Stein, his wife	T
02 Jan 1975	Cove House Australia Pty Limited	CN
25 Sep 1973	Tapago Pty Limited	T
01 Feb 1973	Celia Patricia Mumford, spinster	TA
04 Jan 1944	Stella Rebecca Pearl Mumford, married woman	T
20 Jun 1906	Florence May Westley, wife of Richard Charles Edgar Westley, labourer	T



Appendix B

Results of Field Investigations



ENGINEERING LOG - TEST PIT

CLIENT: Alan Taylor Civil
PROJECT NAME: Proposed Rezoning
SITE LOCATION: Lot 2 DP60194 Part Lot 4 DP825704
TEST LOCATION: Mumford Street - Port Macquarie

TEST PIT NO: TP1
PAGE: 1 of 1
JOB NO: RGS20683.1
LOGGED BY: GC
DATE: 16/6/22

EQUIPMENT TYPE: Hand Tools
TEST PIT LENGTH: **WIDTH:** **EASTING:** 488703 m **SURFACE RL:** 1.6 m
NORTHING: 6522691 m **DATUM:** AHD

Excavation 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	
HA	Not Encountered	ES				SC	FILL: Clayey SAND, fine to medium grained, dark brown, traces of grass roots to 5mm	M				FILL/TOPSOIL
		0.10m					0.15m					
		0.20m	1.4	0.2		SC	FILL: Clayey SAND, fine to medium grained, dark brown					
		ES					0.30m					
		0.30m					Hole Terminated at 0.30 m					
			1.2	0.4								
			1.0	0.6								
			0.8	0.8								
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: Alan Taylor Civil
PROJECT NAME: Proposed Rezoning
SITE LOCATION: Lot 2 DP60194 Part Lot 4 DP825704
TEST LOCATION: Mumford Street - Port Macquarie

TEST PIT NO: TP2
PAGE: 1 of 1
JOB NO: RGS20683.1
LOGGED BY: GC
DATE: 16/6/22

EQUIPMENT TYPE: Hand Tools
TEST PIT LENGTH: **WIDTH:** **EASTING:** 488701 m **SURFACE RL:** 2.0 m
NORTHING: 6522654 m **DATUM:** AHD

Excavation 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	
HA	Not Encountered	ES				SC	FILL: Clayey SAND, fine to medium grained, dark brown, traces of grass roots to 5mm	D				FILL/TOPSOIL
		0.10m				CH	FILL: Sandy CLAY, medium to high plasticity, red/orange, sand, fine to medium grained	M < w _p	Fr / VSt			FILL-CLAY
		0.20m	1.8	0.2								
		ES										
		0.30m					Hole Terminated at 0.30 m					
			1.6	0.4								
			1.4	0.6								
			1.2	0.8								
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%

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>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>UCS (kPa)</u> D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit	
	<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>Density</u> 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: Alan Taylor Civil
PROJECT NAME: Proposed Rezoning
SITE LOCATION: Lot 2 DP60194 Part Lot 4 DP825704
TEST LOCATION: Mumford Street - Port Macquarie

TEST PIT NO: TP4
PAGE: 1 of 1
JOB NO: RGS20683.1
LOGGED BY: GC
DATE: 16/6/22

EQUIPMENT TYPE: Hand Tools
TEST PIT LENGTH: **WIDTH:**
EASTING: 488614 m
NORTHING: 6522698 m
SURFACE RL: 3.0 m
DATUM: AHD

Excavation 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		
HA	Not Encountered	ES	2.8	0.2		CL	FILL: Sandy CLAY, low plasticity, dark brown, traces of grass roots, gravel, fine to medium grained, subrounded	M < w _p	Fr			FILL/TOPSOIL	
		CI				FILL: Sandy CLAY, medium plasticity, dark brown, traces of gravel, fine grained, subrounded						FILL-CLAY	
		ES											
		0.30m											
Hole Terminated at 0.30 m													
			2.6	0.4									
			2.4	0.6									
			2.2	0.8									
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					St Stiff		100 - 200	W _p Plastic Limit		
Strata Changes			ASS Acid Sulfate Soil Sample					VSt Very Stiff		200 - 400	W _L Liquid Limit		
			B Bulk Sample					H Hard		>400			
								Fb Friable					
								Density		V Very Loose	Density Index <15%		
 Gradational or transitional strata			Field Tests					L Loose		Density Index 15 - 35%			
 Definitive or distinct strata change			PID Photoionisation detector reading (ppm)					MD Medium Dense		Density Index 35 - 65%			
			DCP(x-y) Dynamic penetrometer test (test depth interval shown)					D Dense		Density Index 65 - 85%			
			HP Hand Penetrometer test (UCS kPa)					VD Very Dense		Density Index 85 - 100%			



ENGINEERING LOG - TEST PIT

CLIENT: Alan Taylor Civil
PROJECT NAME: Proposed Rezoning
SITE LOCATION: Lot 2 DP60194 Part Lot 4 DP825704
TEST LOCATION: Mumford Street - Port Macquarie

TEST PIT NO: TP6
PAGE: 1 of 1
JOB NO: RGS20683.1
LOGGED BY: GC
DATE: 16/6/22

EQUIPMENT TYPE: Hand Tools
TEST PIT LENGTH: **WIDTH:** **EASTING:** 488544 m **SURFACE RL:** 1.0 m
NORTHING: 6522754 m **DATUM:** AHD

Excavation 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	
HA	Not Encountered	ES 0.10m		0.8 0.2		MH	TOPSOIL: Clayey SILT, black, some plant roots	W	Fr			TOPSOIL
				0.6 0.4 0.2			Hole Terminated at 0.30 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 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		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

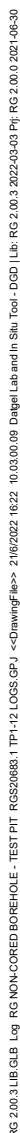
CLIENT: Alan Taylor Civil
PROJECT NAME: Proposed Rezoning
SITE LOCATION: Lot 2 DP60194 Part Lot 4 DP825704
TEST LOCATION: Mumford Street - Port Macquarie

TEST PIT NO: TP7
PAGE: 1 of 1
JOB NO: RGS20683.1
LOGGED BY: GC
DATE: 16/6/22

EQUIPMENT TYPE: Hand Tools
TEST PIT LENGTH: **WIDTH:**
EASTING: 488730 m
NORTHING: 6522713 m
SURFACE RL: 1.8 m
DATUM: AHD

Excavation 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	
HA	Not Encountered	ES 0.10m		1.6	0.2	SC	FILL: Clayey SAND, fine to medium grained, dark brown, traces of grass roots	M				FILL/TOPSOIL
							Hole Terminated at 0.30 m					
			1.4	0.4								
			1.2	0.6								
			1.0	0.8								

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: Alan Taylor Civil
PROJECT NAME: Proposed Rezoning
SITE LOCATION: Lot 2 DP60194 Part Lot 4 DP825704
TEST LOCATION: Mumford Street - Port Macquarie

TEST PIT NO: TP9
PAGE: 1 of 1
JOB NO: RGS20683.1
LOGGED BY: GC
DATE: 16/6/22

EQUIPMENT TYPE: Hand Tools
TEST PIT LENGTH: **WIDTH:** **EASTING:** 488784 m **SURFACE RL:** 1.4 m
NORTHING: 6522739 m **DATUM:** AHD

Excavation 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	
HA	Not Encountered	ES 0.10m		1.2	0.2	SC	TOPSOIL: Clayey SAND, fine to medium grained, dark grey, traces of grass roots	M				TOPSOIL
							Hole Terminated at 0.30 m					
				1.0	0.4							
				0.8	0.6							
				0.6	0.8							

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: Alan Taylor Civil
PROJECT NAME: Proposed Rezoning
SITE LOCATION: Lot 2 DP60194 Part Lot 4 DP825704
TEST LOCATION: Mumford Street - Port Macquarie

TEST PIT NO: TP10
PAGE: 1 of 1
JOB NO: RGS20683.1
LOGGED BY: GC
DATE: 16/6/22

EQUIPMENT TYPE: Hand Tools
TEST PIT LENGTH: **WIDTH:**
EASTING: 488794 m
NORTHING: 6522715 m
SURFACE RL: 3.0 m
DATUM: AHD

Excavation 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	
HA	Not Encountered	ES	2.8	0.2		CL	0.10m FILL: Sandy CLAY, low plasticity, dark grey, traces of grass roots	M > w _p	Fr			FILL/TOPSOIL
		CL				0.30m FILL: Sandy CLAY: Medium plasticity, pale brown, traces of gravel, fine grained, subangular						FILL-CLAY
		0.20m										
		ES				0.30m						
			2.6	0.4			Hole Terminated at 0.30 m					
			2.4	0.6								
			2.2	0.8								

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: Alan Taylor Civil
PROJECT NAME: Proposed Rezoning
SITE LOCATION: Lot 2 DP60194 Part Lot 4 DP825704
TEST LOCATION: Mumford Street - Port Macquarie

TEST PIT NO: TP11
PAGE: 1 of 1
JOB NO: RGS20683.1
LOGGED BY: GC
DATE: 16/6/22

EQUIPMENT TYPE: Hand Tools
TEST PIT LENGTH: **WIDTH:** **EASTING:** 488794 m **SURFACE RL:** 1.6 m
NORTHING: 6522674 m **DATUM:** AHD

Excavation 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	
HA	Not Encountered	ES	1.4	0.2		SC	TOPSOIL: Clayey SILT, brown, traces of grass roots	M				TOPSOIL
							0.20m					
		0.20m				SC	Clayey SAND: Fine to medium grained, pale brown					MARINE
		ES					0.30m					
		0.30m					Hole Terminated at 0.30 m					
			1.2	0.4								
			1.0	0.6								
			0.8	0.8								
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

TEST PIT NO: **TP12**

CLIENT: Alan Taylor Civil

PAGE: 1 of 1

PROJECT NAME: Proposed Rezoning

JOB NO: RGS20683.1

SITE LOCATION: Lot 2 DP60194 Part Lot 4 DP825704

LOGGED BY: GC

TEST LOCATION: Mumford Street - Port Macquarie

DATE: 16/6/22

EQUIPMENT TYPE: Hand Tools

EASTING: 488831 m

SURFACE RL: 2.0 m

TEST PIT LENGTH: WIDTH:

NORTHING: 6522684 m

DATUM: AHD

Excavation and Sampling

Material description and profile information

Field Test

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	Structure and additional observations
HA	Not Encountered	ES 0.10m		1.8	0.2	CH	FILL: Gravelly Sandy CLAY, medium plasticity, brown, gravel, fine to medium grained, subangular	M < w _p	Fr			FILL-CLAY
							Hole Terminated at 0.30 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
- 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%



Appendix C

Laboratory Test Result Sheets

Comparison of Contamination Analysis Results with Adopted Investigation Levels (Results in mg/kg)

National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013)



Client: Alan Taylor Civil
 Job No. RGS20683.1
 Project: Proposed Rezoning
 Location: Lot 2 DP60194 Part Lot 4 DP825704, 11-13 Mumford Street, Port Macquarie

SAMPLE	DEPTH (m)	Material	TOTAL RECOVERABLE HYDROCARBONS					PAH		DDT+DDE	Aldrin	PCB	BTEX		Heavy Metals							
			C6-C10	C10-C16	C16-C34	C34-C40	TOTAL	Total	b-a-p (TEQ)	Pesticides	Pesticides		Sum	Napthalene	As	Cd	Cr (Total)#	Cu	Pb	Ni	Zn	Hg
TP1	0.0 - 0.1		--	--	--	--	--	--	--	--	--	--	--	--	5	<1	40	12	34	17	77	<0.1
TP1	0.2 - 0.3		--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	77	13	70	28	134	0.2
TP2	0.0 - 0.1		<10	<50	<100	<100	<50	<0.05	<0.05	<0.05	<0.05	<0.1	<0.2	<1	<5	<1	96	16	67	29	83	0.1
TP2	0.2 - 0.3		<10	<50	<100	<100	<50	<0.05	<0.05	<0.05	<0.05	<0.1	<0.2	<1	<5	<1	262	25	43	24	47	0.1
TP3	0.0 - 0.1		<10	<50	<100	<100	<50	<0.05	<0.05	<0.05	<0.05	<0.1	<0.2	<1	<5	<1	276	50	142	24	275	0.1
TP3	0.2 - 0.3		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP4	0.0 - 0.1		<10	<50	<100	<100	<50	<0.05	<0.05	<0.05	<0.05	<0.1	<0.2	<1	7	<1	86	15	24	31	44	0.1
TP4	0.2 - 0.3		--	--	--	--	--	--	--	--	--	--	--	--	5	<1	71	14	18	29	35	0.1
TP5	0.0 - 0.1		--	--	--	--	--	--	--	--	--	--	--	--	6	<1	752	18	15	52	13	0.1
TP5	0.2 - 0.3		<10	<50	<100	<100	<50	<0.05	<0.05	<0.05	<0.05	<0.1	<0.2	<1	7	<1	1100	32	16	70	8	0.1
TP6	0.0 - 0.1		<10	<50	<100	<100	<50	<0.05	<0.05	<0.05	<0.05	<0.1	<0.2	<1	22	<1	62	71	15	24	14	0.1
TP7	0.0 - 0.1		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP9	0.0 - 0.1		--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	7	<5	<5	2	7	0.1
D1															<5	<1	7	<5	<5	<2	5	<0.1
RPD															--	#VALUE!	0%	#VALUE!	#VALUE!	#VALUE!	33%	--
CRITERIA (NEPM 2013)																						
Health Investigation Level (HIL)*:								300	3	240	6				100	20	100##	600	300	400	7400	40
Health Screening Level (HSL)**			45	110																		
Ecological Screening Level (ESL)***			180	120	300	2800																
Ecological Investigation Level (EIL)@													170	100		550	200	1100	280	230		

CRITERIA:

* Health Based Investigation Levels for Primary School Use (NEPM 2013)

** Health Screening Level (F2) for residential land use and fine grained soil (clay), 0 - 1m depth

*** Ecological Screening Level for recreational land use

@ Ecological Investigation Level - aged (>2 years) for residential landuse

Total Chromium (CRIII + CRVI)

Chromium VI - Speciation testing confirmed only Chromium III present

Comparison of Contamination Analysis Results with Adopted Investigation Levels (Results in mg/kg)																						
National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013)																						
		Client: Alan Taylor Civil Job No. RGS20683.1 Project: Proposed Rezoning Location: Lot 2 DP60194 Part Lot 4 DP825704, 11-13 Mumford Street, Port Macquarie																				
SAMPLE	DEPTH (m)	Material	TOTAL RECOVERABLE HYDROCARBONS					PAH		DDT+DDE	Aldrin	PCB	BTEX		Heavy Metals							
			C6-C10	C10-C16	C16-C34	C34-C40	TOTAL	Total	b-a-p (TEQ)	Pesticides	Pesticides		Sum	Napthalene	As	Cd	Cr (Total)#	Cu	Pb	Ni	Zn	Hg
TP8	0.0 - 0.1		<10	160	230	<100	470	<0.05	<0.05	<0.05	<0.05	<0.1	<0.2	<1	<5	<1	6	<5	<5	4	30	0.1
TP8	0.2 - 0.3		--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	18	6	<5	8	18	0.1
TP9	0.0 - 0.1		--	--	--	--	--	--	--	--	--	--	--	--	<5	<1	7	<5	<5	2	7	0.1
TP10	0.0 - 0.1		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TP10	0.2 - 0.3		--	--	--	--	--	--	--	--	--	--	--	--	22	<1	76	21	10	3	<5	<0.1
TP11	0.0 - 0.1		<10	<50	<100	<100	<50	<0.05	<0.05	<0.05	<0.05	<0.1	<0.2	<1	7	<1	37	12	16	8	9	<0.1
TP11	0.2 - 0.3		--	--	--	--	--	--	--	--	--	--	--	--	25	<1	99	22	13	30	6	<0.1
TP12	0.0 - 0.1		<10	<50	<100	<100	<50	<0.05	<0.05	<0.05	<0.05	<0.1	<0.2	<1	<5	<1	195	160	14	64	91	0.2
D1	(TP9 0 -0.1m)														<5	<1	7	<5	<5	<2	5	<0.1
RPD															--	#VALUE!	0%	#VALUE!	#VALUE!	#VALUE!	33%	--
CRITERIA (NEPM 2013)																						
Health Based Soil investigation Level*:			100	800	NL	NL	NL	4000	40	40	NL	NL	40	NL	3000	900	3600##	240000	1500	6000	400000	
Health Screening Level (HSL)**			310	NL	NL	NL	NL															
Ecological Investigation Level (EIL)															100		390	71	1100	2	350	
Ecological Screening Level (ESL)***			215	170	1700	3300	NL	1.4	1.4				75	Coarse grained soil in mg/kg								
			215	170	2500	6600	NL	1.4	1.4				95	Fine grained soil in mg/kg								

CRITERIA:

* Health Based Investigation Levels for Commercial Use (NEPM 2013)

** Health Screening Level (F2) for commercial land use and fine grained soil (clay), 0 - 1m depth

*** Ecological Screening Level for Commercial land use

@ Ecological Investigation Level - aged (>2 years) for residential landuse

Total Chromium (CrIII + CrVI)

Chromium VI - Speciation testing undertaken confirmed only CrIII present



CERTIFICATE OF ANALYSIS

Work Order	: ES2226216
Client	: REGIONAL GEOTECHNICAL SOLUTION
Contact	: GRANT COLLIAR
Address	: Unit 14 25-27 Hurley Drive COFFS HARBOUR NSW, AUSTRALIA 2450
Telephone	: +61 02 6553 5641
Project	: Rezoning
Order number	: ----
C-O-C number	: ----
Sampler	: ----
Site	: Lot 2 & Lot 4, Mumford Street, Port Macquarie
Quote number	: EN/222
No. of samples received	: 1
No. of samples analysed	: 1

Page : 1 of 2
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 : 26-Jul-2022 08:30
Date Analysis Commenced : 29-Jul-2022
Issue Date : 05-Aug-2022 19:12



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

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>
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, 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.

- EG048G: Poor spike recovery for Hexavalent Chromium by Alkaline Digestion due to matrix interferences.

Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Sample ID

				TP5 0.2-0.3	----	----	----	----
Sampling date / time				20-Jul-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2226216-001	-----	-----	-----	-----
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	-----	0.1	%	28.0	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Chromium	7440-47-3	2	mg/kg	994	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	1.6	----	----	----	----
EG049: Trivalent Chromium								
Trivalent Chromium	16065-83-1	2	mg/kg	992	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order : **ES2221406**
Client : **REGIONAL GEOTECHNICAL SOLUTION**
Contact : MR TIM MORRIS
Address : 44 BENT STREET
 WINGHAM NSW, AUSTRALIA 2429
Telephone : +61 02 6553 5641
Project : Rezoning
Order number : ----
C-O-C number : ----
Sampler : ----
Site : Lot 2 & Lot 4, Mumford Street, Port Macquarie
Quote number : EN/222
No. of samples received : 22
No. of samples analysed : 22

Page : 1 of 23
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 : 20-Jun-2022 09:35
Date Analysis Commenced : 22-Jun-2022
Issue Date : 30-Jun-2022 21:13



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>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Vincent Emerton-Bell	Laboratory Technician	Newcastle - Inorganics, Mayfield West, 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.

- EA150H: Soil particle density results fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- 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.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- 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.
- EG005: Poor precision was obtained for Lead on sample ESS2221406-#006. Results have been confirmed by re-extraction and reanalysis.
- EP075(SIM): LOR raised due to the high amount of moisture present.
- **EA200 Legend**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- 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: Analysis of asbestos from swabs and tapes is not covered under the current scope of NATA accreditation.
- 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: 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.

Page : 3 of 23
Work Order : ES2221406
Client : REGIONAL GEOTECHNICAL SOLUTION
Project : Rezoning



- EA200: N/A - Not Applicable



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP1 0-0.1	TP1 0.2-0.3	TP2 0-0.1	TP2 0.2-0.3	TP3 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-001	ES2221406-002	ES2221406-003	ES2221406-004	ES2221406-006
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	19.5	12.6	11.0	19.2	21.3
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	40	77	96	262	276
Copper	7440-50-8	5	mg/kg	12	13	16	25	50
Lead	7439-92-1	5	mg/kg	34	70	67	43	142
Nickel	7440-02-0	2	mg/kg	17	28	29	24	24
Zinc	7440-66-6	5	mg/kg	77	134	83	47	275
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	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
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



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP1 0-0.1	TP1 0.2-0.3	TP2 0-0.1	TP2 0.2-0.3	TP3 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-001	ES2221406-002	ES2221406-003	ES2221406-004	ES2221406-006
				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
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	72-54-8/72-55-9/5 0-2	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								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP1 0-0.1	TP1 0.2-0.3	TP2 0-0.1	TP2 0.2-0.3	TP3 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-001	ES2221406-002	ES2221406-003	ES2221406-004	ES2221406-006
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	<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
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<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
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	<50	<50
^ >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



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP1 0-0.1	TP1 0.2-0.3	TP2 0-0.1	TP2 0.2-0.3	TP3 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-001	ES2221406-002	ES2221406-003	ES2221406-004	ES2221406-006
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
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	<0.2
^ Total Xylenes	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	----	----	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	83.5	74.3	101
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	97.2	81.8	88.0
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	104	81.7	130
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	81.4	80.3	102
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	89.6	82.8	103
2,4,6-Tribromophenol	118-79-6	0.5	%	----	----	70.5	66.3	89.0
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	92.1	92.2	99.9
Anthracene-d10	1719-06-8	0.5	%	----	----	88.1	87.6	99.0
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	82.8	82.8	112
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	80.5	77.9	79.7
Toluene-D8	2037-26-5	0.2	%	----	----	77.1	74.8	82.4
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	78.4	77.2	89.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP3 0.2-0.3	TP4 0-0.1	TP4 0.2-0.3	TP5 0-0.1	TP5 0.2-0.3
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-007	ES2221406-008	ES2221406-009	ES2221406-010	ES2221406-011
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	29.3	17.2	36.4	32.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	Yes	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	Ch	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	No	----	----	----	----
Organic Fibre	----	0.1	g/kg	No	----	----	----	----
Sample weight (dry)	----	0.01	g	152	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	J.SPOONER	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	7	5	6	7
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	86	71	752	1100
Copper	7440-50-8	5	mg/kg	----	15	14	18	22
Lead	7439-92-1	5	mg/kg	----	24	18	15	16
Nickel	7440-02-0	2	mg/kg	----	31	29	52	70
Zinc	7440-66-6	5	mg/kg	----	44	35	13	8
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP3 0.2-0.3	TP4 0-0.1	TP4 0.2-0.3	TP5 0-0.1	TP5 0.2-0.3
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-007	ES2221406-008	ES2221406-009	ES2221406-010	ES2221406-011
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<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
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	----	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP3 0.2-0.3	TP4 0-0.1	TP4 0.2-0.3	TP5 0-0.1	TP5 0.2-0.3
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-007	ES2221406-008	ES2221406-009	ES2221406-010	ES2221406-011
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	----	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	----	----	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	<50



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP3 0.2-0.3	TP4 0-0.1	TP4 0.2-0.3	TP5 0-0.1	TP5 0.2-0.3
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-007	ES2221406-008	ES2221406-009	ES2221406-010	ES2221406-011
				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
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	<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
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	67.5	----	----	65.3
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	58.0	----	----	80.8
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	82.2	----	----	74.8
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	90.7	----	----	76.1
2-Chlorophenol-D4	93951-73-6	0.5	%	----	89.3	----	----	83.8
2,4,6-Tribromophenol	118-79-6	0.5	%	----	96.2	----	----	69.9
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	84.0	----	----	90.7
Anthracene-d10	1719-06-8	0.5	%	----	97.1	----	----	85.6
4-Terphenyl-d14	1718-51-0	0.5	%	----	92.4	----	----	81.3
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	89.4	----	----	87.6
Toluene-D8	2037-26-5	0.2	%	----	101	----	----	83.5
4-Bromofluorobenzene	460-00-4	0.2	%	----	108	----	----	87.8



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP6 0-0.1	TP7 0-0.1	TP8 0-0.1	TP8 0.2-0.3	TP9 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-012	ES2221406-013	ES2221406-014	ES2221406-015	ES2221406-016
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	5.2	----	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	6.0	----	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	218	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	62.2	----	----	----	----
Moisture Content	----	1.0	%	----	----	1.1	5.2	16.3
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	19	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	1.58	----	----	----	----
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	----	142	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	J.SPOONER	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	8.1	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	8.8	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	0.4	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	4.3	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	21.8	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	1.04	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	22	----	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	62	----	6	18	7
Copper	7440-50-8	5	mg/kg	71	----	<5	6	<5
Lead	7439-92-1	5	mg/kg	15	----	<5	<5	<5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP6 0-0.1	TP7 0-0.1	TP8 0-0.1	TP8 0.2-0.3	TP9 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-012	ES2221406-013	ES2221406-014	ES2221406-015	ES2221406-016
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES - Continued								
Nickel	7440-02-0	2	mg/kg	24	----	4	8	2
Zinc	7440-66-6	5	mg/kg	14	----	30	18	7
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	<0.1	<0.1	<0.1
EP004: Organic Matter								
Organic Matter	----	0.5	%	21.9	----	----	----	----
Total Organic Carbon	----	0.5	%	12.7	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	<0.05	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	<0.05	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	<0.05	----	----
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	<0.05	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP6 0-0.1	TP7 0-0.1	TP8 0-0.1	TP8 0.2-0.3	TP9 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-012	ES2221406-013	ES2221406-014	ES2221406-015	ES2221406-016
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.05	mg/kg	<0.05	----	<0.05	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	<0.05	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	<0.05	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	<0.05	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	<0.05	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	<0.05	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.8	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.8	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.8	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.8	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.8	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.8	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.8	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.8	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.8	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.8	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.8	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP6 0-0.1	TP7 0-0.1	TP8 0-0.1	TP8 0.2-0.3	TP9 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-012	ES2221406-013	ES2221406-014	ES2221406-015	ES2221406-016
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.8	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.8	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.8	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.8	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.8	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	1.0	----	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.9	----	1.2	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	350	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	120	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	470	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	160	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	230	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	390	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	160	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<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	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP6 0-0.1	TP7 0-0.1	TP8 0-0.1	TP8 0.2-0.3	TP9 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-012	ES2221406-013	ES2221406-014	ES2221406-015	ES2221406-016
				Result	Result	Result	Result	Result
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	73.7	----	71.0	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	91.2	----	59.9	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	90.2	----	106	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	80.0	----	90.5	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	87.8	----	90.0	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%	75.6	----	102	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	89.5	----	85.8	----	----
Anthracene-d10	1719-06-8	0.5	%	85.9	----	98.6	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	81.6	----	92.1	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	82.3	----	100	----	----
Toluene-D8	2037-26-5	0.2	%	79.9	----	102	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	80.2	----	104	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP10 0-0.1	TP10 0.2-0.3	TP11 0-0.1	TP11 0.2-0.3	TP12 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-017	ES2221406-018	ES2221406-019	ES2221406-020	ES2221406-021
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	21.5	35.5	52.8	5.7
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	89.8	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	J.SPOONER	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	22	7	25	<5
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	76	37	99	195
Copper	7440-50-8	5	mg/kg	----	21	12	22	160
Lead	7439-92-1	5	mg/kg	----	10	16	13	14
Nickel	7440-02-0	2	mg/kg	----	3	8	30	64
Zinc	7440-66-6	5	mg/kg	----	<5	9	6	91
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	<0.1	0.2
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP10 0-0.1	TP10 0.2-0.3	TP11 0-0.1	TP11 0.2-0.3	TP12 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-017	ES2221406-018	ES2221406-019	ES2221406-020	ES2221406-021
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<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
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	----	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP10 0-0.1	TP10 0.2-0.3	TP11 0-0.1	TP11 0.2-0.3	TP12 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-017	ES2221406-018	ES2221406-019	ES2221406-020	ES2221406-021
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	----	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	----	----	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	<50



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				TP10 0-0.1	TP10 0.2-0.3	TP11 0-0.1	TP11 0.2-0.3	TP12 0-0.1
Sampling date / time				20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00	20-Jun-2022 00:00
Compound	CAS Number	LOR	Unit	ES2221406-017	ES2221406-018	ES2221406-019	ES2221406-020	ES2221406-021
				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
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	<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
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	73.3	----	----	72.7
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	85.8	----	----	61.9
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	84.0	----	----	73.6
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	81.6	----	----	88.6
2-Chlorophenol-D4	93951-73-6	0.5	%	----	89.3	----	----	87.3
2,4,6-Tribromophenol	118-79-6	0.5	%	----	72.2	----	----	87.2
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	91.8	----	----	82.4
Anthracene-d10	1719-06-8	0.5	%	----	87.9	----	----	94.2
4-Terphenyl-d14	1718-51-0	0.5	%	----	83.1	----	----	90.0
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	85.9	----	----	84.2
Toluene-D8	2037-26-5	0.2	%	----	80.4	----	----	87.3
4-Bromofluorobenzene	460-00-4	0.2	%	----	84.4	----	----	90.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D1	----	----	----	----
Sampling date / time					20-Jun-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2221406-022	-----	-----	-----	-----
Result						----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.9	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg		7	----	----	----	----
Copper	7440-50-8	5	mg/kg		<5	----	----	----	----
Lead	7439-92-1	5	mg/kg		<5	----	----	----	----
Nickel	7440-02-0	2	mg/kg		<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg		5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	----



Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)				Sample ID	TP3 0.2-0.3	----	----	----	----
				Sampling date / time	20-Jun-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2221406-005	-----	-----	-----	-----
					Result	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg		Yes	----	----	----	----
Asbestos Type	1332-21-4	-	--		Ch	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		N/A	----	----	----	----
Sample weight (dry)	----	0.01	g		14.6	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg		No	----	----	----	----
Organic Fibre	----	0.1	g/kg		Yes	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		B.SCHRADER	----	----	----	----

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	TP30.2-0.3 - 20-Jun-2022 00:00	Soil sample containing a collection of fibrous asbestos cement sheeting debris approxiamtely 20x20x2mm.
EA200: Description	TP70-0.1 - 20-Jun-2022 00:00	Soil sample.
EA200: Description	TP100-0.1 - 20-Jun-2022 00:00	Soil sample.

Sub-Matrix: SOLID		
Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	TP30.2-0.3 - 20-Jun-2022 00:00	One piece of asbestos cement sheeting approximately 60x35x5mm.



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).

(SOLID) EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples

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

(SOIL) EA150: Soil Classification based on Particle Size

(SOIL) EA152: Soil Particle Density



Appendix D

Letter from Dr David Tully CEnvP SC

Contaminated Land Solutions

15 August 2022

Ref: CLS0208.L02.1

Regional Geotechnical Solutions Pty Ltd
1/12 Jindalee Road
Port Macquarie
NSW 2444

For the attention of Tim Morris

Dear Tim,

RE: Review of Stage 1 Site Contamination Assessment Report – Proposed Rezoning Lot 2 DP601094 and Lot 4 DP825704, 11 and 33 Mumford Street, Port Macquarie

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 reviewed the Regional Geotechnical Solutions report entitled “Stage 1 Site Contamination Assessment Report – *Proposed Rezoning Lot 2 DP601094 and Lot 4 DP825704, 11 and 33 Mumford Street, Port Macquarie*” (Ref: RGS20683.1-AC_Rev1), dated 15 August 2022 and a copy of which I have retained.

I can confirm that on the basis of the information contained within the report, I support the conclusions and recommendations 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 Tim Morris 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



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