RAW EARTH
ENVIRONMENTAL

Preliminary Site Investigation

63 Burg Street,

East Maitland,

NSW, 2323

January 2024

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REPORT DISTRIBUTION

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Site Address	63 Burg St, East Maitland, NSW, 2323
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Prepared For	D. Singh & P. Kaur c/o Untapped Planning
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DOCUMENT REVISIONS

Revision	Date	Created by	Short Description of Changes

Executive Summary

Raw Earth Environmental Pty Ltd (Raw Earth) have been engaged by D. Singh & P. Kaur c/o Untapped Planning (the client) to conduct a Preliminary Site Investigation (PSI) at the property located at 63 Burg Street, East Maitland NSW 2323 (the site). The site is described as Lot 1 DP 995219 and comprises an approximate total area of 1019 m². Raw Earth understands that the proposed development at the site includes the demolition of existing building and structures, and the construction of a two storey residential housing complex. Raw Earth understands the proposed excavation depths range from 0.1 to 0.3m below ground level (bgl); the locations are marked in lavender colour in Figure 7, **Appendix A**.

The site walkover and desktop investigation indicate the site has remained a residential property in nature since 1954. The building located at the site consists of a weatherboard, single-storey structure on brick piers. There is a shed located at the rear of the property, which is a fully contained structure on a concrete slab, with two smaller unused, empty weathered storage sheds adjacent to it. The site is predominantly covered by grass with exposed soils in patches mainly along the earthen driveway. The grass cover did not show any signs of stress or decay and appears to be in a relatively good condition consistently around the site. During the site walkover, no Underground Storage Tank (UST) or associated UST infrastructure was observed. Furthermore, no waste/rubble was present on-site; however, a small glass clippings stockpile is present in the central northwestern portion of the site.

The site walkover and desktop investigation indicated three (3) potential Areas of Environmental Concern (AECs) at the site as follows:

- AEC1 – Potential uncontrolled filling across the site;
- AEC2 – Vehicular storage area around large storage shed; and,
- AEC3 – Potential hazardous building materials within and around the building.

Based on the preliminary CSM, the potential exposure of Contaminants of Potential Concern (CoPC) at the site is considered **Moderate** given the presence of three (3) AECs identified across the site, as shown in the site layout plan in Figure 2a, **Appendix A.** The exposure potential is considered moderate due to the potential for contamination to be present from historical activities undertaken at the site.

During the site walkover, the main dwelling and its surrounding footprint labelled as AEC3 was found to contain debris that was noted to be potential asbestos containing material (PACM). Four (4) fragment samples of PACM were collected and submitted for asbestos analysis at a NATA accredited laboratory. Asbestos was identified in all four samples and the fragments were bonded in nature. The samples were taken from various locations from the dwelling's subfloor and areas adjacent to the driveway. These locations can be seen in further detail in Figure 2b, **Appendix A**. The bonded fragment samples ranged in size from 20mm to 200mm and showed low signs of weathering. In accordance with the NEPM (2013) and the *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia, 2019-2024, The* fragments observed were greater than 7mm x 7mm and was not subject to crumbling by hand. As such, the asbestos has been characterised as bonded asbestos containing materials (ACM), as opposed to Asbestos Fines (AF) or Friable Asbestos (FA).

No soil sampling was undertaken at the site.

It is the opinion of Raw Earth and in accordance with relevant Australian standards and guidelines that the site can be made suitable for its proposed development subject to the following recommendations:

- Based on the site inspection and desktop review, a pre-demolition HAZMAT Survey of the existing buildings and structures is recommended due to the age of the building/s and presence of asbestos containing debris underneath and near the footprint of the main dwelling.
- Based on the site inspection, desktop review and the proposed development involving minor excavations for residential development, a Detailed Site Investigation (DSI) with bulk material, soil sampling is recommended to assess the contamination status of the soils identified in AEC1, AEC2 and AEC3. This will confirm the source, pathway, and receptor linkages to the CSM, assessing the risk of exposed soils to future site users and construction workers to ensure suitability for the proposed development. The DSI should be undertaken after site based buildings have been demolished and hardstand infrastructure such as concrete slabs and driveways removed so all soils are accessible, and no data gaps remain.
- If any proposed soil is to be excavated as part of the development and requires offsite disposal, waste needs to be classified in accordance with NSW Environmental Protection Authority, Waste Classification Guidelines Part 1: Classifying Waste, 2014 or be analysed for beneficial reuse under the NSW EPA Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation (2014) to be classified as Excavated Natural Material (ENM).

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1 Introduction

1.1 Background

Raw Earth Environmental Pty Ltd (Raw Earth) have been engaged by D. Singh & P. Kaur c/o Untapped Planning (referred to herein as 'the client') to conduct a Preliminary Site Investigation (PSI) at the property located at 63 Burg Street, East Maitland NSW 2323 (herein referred to as 'the site'). The site is described as Lot 1 DP 995219 and comprises an approximate total area of 1,019 m².

The Site Location Plan is shown in Figure 1, **Appendix A**. The site is located approximately 26km northwest of the Newcastle Central Business District (CBD), within the Local Government Area of Maitland City Council (MCC).

This report has been prepared to support a Development Application (DA) to MCC and for the purpose of enabling the developer to meet its obligations under the Contaminated Land Management Act 1997 (CLM Act) for the assessment and management of contaminated land.

Raw Earth understands that the proposed residential development at the site includes the demolition of all structures at the site, minor excavation of onsite soils and the construction of a two-storey residential housing complex. Raw Earth understands the proposed excavation depths range from 0.1 to 0.3m below ground level (bgl); the locations are marked in lavender colour in Figure 7, **Appendix A**.

1.2 Objectives

The objectives of this PSI were as follows:

- Assess the potential for contamination at the site, from former and current land use activities;
- Determine whether the site is suitable for the proposed residential land use; and,
- Provide recommendations in relation to further investigations and/or a Detailed Site Investigation (DSI) (if required).

2 Scope of Works

To complete the PSI, Raw Earth undertook the following scope of works:

- A desktop review of the following sources:
  - Published geology maps;
  - Real NSW Bore reports;
  - Local council GIS layers including lot description, land zoning and council flood mapping;
  - NSW ePlanning Spatial Viewing GIS layers including hydrology and Acid Sulfate Soil Risk Mapping;
  - Australian Per and Polyfluoroalkyl Substances (PFAS) Chemical Map;
  - NSW Environmental Protection Agency (EPA) Contaminated Land Register (CLR) search;
  - Protection of the Environment Operations (POEO) Act Public Register search; and,
  - Local council records and planning search.
- A historical review, which included the following:
  - Current and historical aerial photographs; and,
  - Current and historical Certificate of Titles.
- Site inspection, detailing current site use and any potential indicators of contamination;
- Development of a preliminary CSM identifying potential sources of contamination, pathways and receptors and any potential linkages; and,
- Preparation of this PSI Report, documenting our findings of the desktop study and recommendations for further investigations (if required).

3 Regulatory Framework

This PSI was undertaken in accordance with the following regulatory framework and guidelines:

- National Environment Protection (Assessment of Site Contamination) Measure as varied 2011, Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater, 2013;
- National Environment Protection (Assessment of Site Contamination) Measure as varied 2011, Schedule B2 – Guideline on Site Characterisation, 2013;
- NSW Department of Environment and Conservation, Guidelines for the Assessment and Management of Groundwater Contamination, 2007;
- NSW Department of Planning and Environment, State Environmental Planning Policy (Resilience and Hazards) Chapter 4, 2022;
- NSW Environmental Protection Authority, Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017;
- NSW Environmental Protection Authority, Guidelines on the Duty to Report Contamination under Contaminated Land Management Act, 1997;
- NSW Environmental Protection Authority, Sampling Design Guidelines, 2022;
- NSW Environmental Protection Authority, Waste Classification Guidelines Part 1: Classifying Waste, 2014;
- NSW Environmental Protection Authority, *Consultants reporting on contaminated Land: Contaminated land guidelines,* 2020;
- Western Australia Department of Health, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2021;
- Work Health and Safety Act, 2011; and,
- Work Health and Safety Regulation, 2017.

4 Site Condition and Environmental Setting

4.1 Site Identification

A site location plan is shown in Figure 1, with a detailed site layout plan shown in Figure 2a, **Appendix A**. A summary of the Site Details is shown below in **Table 1.**

Table 1: Site Details	
Site Address	63 Burg Street, East Maitland NSW 2323
Lot Description	Lot 1 DP 995219
Site Location Map	Figure 1, **Appendix A**
Site Photographs	**Appendix B**
Area of Site (m²)	1,019
Local Government Council	Maitland City Council
Current Land Zoning	R1 General Residential
Surrounding Land Zoning	R1 General Residential RE1 Public Recreation E3 Productivity Support RU1 Primary Production
Previous Land Zoning	R1 General Residential

4.2 Site Inspection

Raw Earth undertook a site inspection at the site on the 22nd January 2024. Site photographs are shown in **Appendix B**. Key observations noted during the inspection are summarised in **Table 2** below.

Table 2: Site Layout and Current Use	
Site Layout and Use	**Details**
Current use	The site is a residential property.
Surface cover type and condition	The site is predominantly covered by grass with exposed soils in patches mainly along the earthen driveway. The grass cover did not show any signs of stress or across the site.
Building construction	The primary building is located in the southeastern portion of the site and consisted of a weatherboard, single-storey structure on brick piers with corrugated iron roofing. The shed is located at the rear northern portion of the property and is a fully contained structure on a concrete slab with two small unused and empty weathered storage sheds adjacent to it.
Water runoff flow direction and drain/ pit location	The site slopes downhill to the rear of the property, water runoff will follow this direction travelling northwest across the site into the adjacent properties.
Depth, size and flow of any water features which may include creeks, rivers, lakes, ponds and lagoons	One Mile Gully is situated approximately 610m to the southeast of the site, the gully connects to Two Mile Creek where it splits and travel towards four-mile creek eventually connecting up with the Hunter River. Furthermore, Wallis Creek lies 1.05km to the east and is a likely receptor due to the topography of the area.
Waste/ rubble	PACM debris was present in the dwelling's subfloor and areas adjacent to the driveway. A small glass clippings stockpile was present in the central northwestern portion of the site. No other waste/rubble was present on-site.
Areas of restricted access	All areas of the site were accessible during the inspection.

4.3 Surrounding Land use

A summary of surrounding features and/or land uses noted during a review of desktop information and the site inspected is provided in **Table 3** below.

Table 3: Surrounding Land Use	
North	High Street and Newcastle Street are situated to the north of the site with R1 general residential beyond. Small patches of RE1 public recreation zoning can also be seen.
East	Newcastle Street is situated directly to the east of the site located at the northeastern end of Burg Street. R1 general residential zoning is consistent here and beyond with RE1 public recreation patches seen throughout.
South	Victoria street lies to the south of the site with predominantly R1 general residential seen. Further to the south there is large RE1 zoning site for Brooklyn Park with E2 zoning for the shopping centre located adjacent to this park.
West	High street can be seen west of the site with R1 general residential zoning turning to RU1 primary production and C2 Environment conservation zoning as you get further away.
Abbreviations (NSW Department of Planning and Environment): R1: General Residential RE1 Public Recreation RU1 Primary Production C2 Environment Conservation E2 Commercial Centre	

4.4 Geology

The Newcastle 1:100 000 Geological Map (Newcastle 1:100 000 Geological Sheet 9132, provisional 1st edition. Geological Survey of New South Wales, Sydney, Gorbert V. & Chesnut W., 1975) published by the NSW Geoscience indicates the site is underlain by Permian, shale, mudstone, sandstone, coal, tuff and clay, of the Tamago Coal Measures group.

4.5 Hydrogeology

A search of the WaterNSW Portal was conducted on 29th January 2024, which identified zero registered groundwater bores within 500m of the site.

4.6 Hydrology

A search of Google Earth was undertaken on the 25th January 2024, the closest surface water receptor is One Mile Gully which situated approximately 610 m to the south southeast of the site.

4.7 Site Vegetation

The site was predominately covered by a thick layer of grass cover. Onsite vegetation did not show signs of stress or decay.

4.8 Topography

A review of Google Earth undertaken on the 25th January 2024, indicates the topography of the site is sloping downhill towards the northwest portion of the site. The surface elevation ranges from 36m to 34m above sea level.

4.9 Acid Sulfate Soils

A search of the MCC Local Environmental Plan (LEP) 2011 was undertaken on the 25th January 2024, to identify if Acid Sulfate Soils (ASS) are a risk at the site.

The site is categorised as Class 5. Areas classified as Class 5 are located within 500m on adjacent Class 1, 2, 3 or 4 land. This review is indicative only as a detailed investigation into ASS risk at the site was not included as part of this scope of works. The site's location in relation to nearby Class 1, 2, 3 and 4 ASS is presented in Figure 4, **Appendix A.**

Development consent is required for the carrying out of works within the following Class ASS Category:

- Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the water table is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

4.10 Per & Polyfluoroalkyl Substances

The Australian potential per- and poly-fluoroalkyl substances (PFAS) Chemicals Map was viewed on the 25th January 2024. No sites were identified as impacted by PFAS contamination within the immediate vicinity of the site.

5 Site History

A site history assessment was conducted for the site which comprised a review of current and historical aerial photographs and council records.

5.1 Historical Aerial Photographs

Aerial photographs dating back to 1954 were reviewed as part of this PSI. Descriptions of the aerial photographs are presented in **Table 4** below. The aerial photographs are attached in Figures 5a-5i, **Appendix A**.

Table 4: Summary of Historical Aerial Review		
Date	**Observations on Site**	**Observations offsite**
1954	The site is residential in nature with a residential dwelling present. There is also a structure, which is most likely a shed, present in the backyard northwestern portion of the site.	The surrounding neighbourhood is residential in nature. Low density residential housing is present and parks and recreational areas are present in all directions.
1966	The site is relatively unchanged.	Housing density has increased in all directions. Vacant lots have been built upon and there is a large recreational like development to the south of the property on previously vacant land.
1975	The site is relatively unchanged.	Additional residential housing has been built to the northwest of the site. A large commercial structure has been built to the northeast of the site on the corner between High Street and the New England Highway.
1984	The site is relatively unchanged.	The housing density has increased in all directions. Houses have been built to the northeast and northwest of the site.
1993	The site is relatively unchanged.	The surrounding area is relatively unchanged.
2001	The shed in the backyard has been demolished and replaced with a large storage shed in the northern most portion of the site.	The surrounding area is generally the same apart from residential renovations taking place. This can be seen directly northwest of the site on the neighbouring property.
2010	The site is relatively unchanged.	Residential density has remained relatively the same however residential development has occurred in all directions to properties around the site. Houses have been upgraded and modernised. Townhouses have been built to the north of the site.
2016	The site is relatively unchanged.	The surrounding area is relatively unchanged.
2023	The site is relatively unchanged.	The neighbouring property to the east of the site has undergone major renovations. The surrounding area overall is relatively the same with only residential renovations and modernisations taking place.

5.2 Section 10.7 (2) Local Council Planning Certificate

The site is zoned R1 general residential under the MCC Section 10.7 (2) of the *Environmental Planning and Assessment 1979.* This zoning includes:

Permitted without consent: Home occupations.

Permitted with consent: Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Centre-based child care facilities; Community facilities; Dwelling houses; Group homes; Home-based child care; Home industries; Hostels; Hotel or motel accommodation; Multi dwelling housing; Neighbourhood shops; Oyster aquaculture; Places of public worship; Pond-based aquaculture; Residential flat buildings; Respite day care centres; Roads; Semi-detached dwellings; Seniors housing; Serviced apartments; Shop top housing; and Tank-based aquaculture.

5.3 NSW EPA Contaminated Land Register

The NSW EPA publishes a list of contaminated land notified under Section 58 of the *Contaminated Land Management Act 1997* (CLM Act). These have been assessed by the EPA as being contaminated, but not always require regulation under the CLM Act. It does not include notifications under Section 60 of the CLM Act.

A search of the NSW EPA Contaminated Land Register found no results relating to the site or the surrounding area.

5.4 Protection of the Environmental Operations Act Public Register

A search of the Protection of the Environmental Operations Act (POEO) Public Register on the 25th January 2024 indicated the site was not listed on the POEO Register, or within 500m of any site registered on the POEO.

5.5 SafeWork NSW Hazardous Goods

At the time of reporting, no authorisation was issued to request a site search for licensed to keep dangerous goods at the site through SafeWork NSW.

6 Preliminary Conceptual Site Model

In accordance with NEPM (2013) *Schedule B2 – Guideline on Site Characterisation* and to aid in the assessment of data collection for the site, a CSM assesses plausible pollutant linkages between potential contamination sources, migration pathways and receptors. The CSM provides a framework for the review of the reliability and useability of the data collected and to identify data gaps in the existing site characterisation.

6.1 Potential Contamination Sources

Potential sources of contamination at the site and the associated Contaminants of Potential Concern (CoPC) are shown in **Table 5**.

Table 5: Potential Sources of Contamination

Source	AEC	CoPC
Uncontrolled fill material across the site.	AEC1	Metals, Total Recoverable Hydrocarbons (TRH)/ Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTEXN), Polycyclic Aromatic Hydrocarbons (PAH), Organochlorine Pesticides and Asbestos.
Historical use of motor vehicle and boat storage in the backyard around the large storage shed.	AEC2	Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTEXN), Polycyclic Aromatic Hydrocarbons (PAH), Chlorinated Hydrocarbons and Tributyltin (TBT).
Hazardous building materials within and around the building footprint	AEC3	Asbestos-containing materials (ACM) and lead-based paint.

6.2 Potential Migration Pathways

A review of the likely contaminant migration pathways and potential mechanisms associated with contaminant movement was carried out as part of the site inspection. The potential migration mechanisms and pathways considered included:

- Soil ingestion;
- Dermal contact;
- Inhalation of vapours;
- Direct uptake;
- Vertical migration;
- Migration via underground service trenches and fill preferential pathways;
- Horizontal migration; and,
- Groundwater migration.

6.3 Potential Receptors

Key receptors and associated pathway mechanisms identified are presented below:

Onsite

- Maintenance workers conducting earthworks. Exposure pathways associated with these receptors include dermal contact, ingestion of soil and inhalation of dust or vapours associated with potential contamination;
- Future site workers and personnel utilising the site for residential purposes. Exposure pathways associated with these receptors include dermal contact, ingestion of soil and inhalation of dust or vapours associated with potential contamination;
- Ecological receptors (fauna). Direct and indirect exposure pathways include dermal contact, inhalation, ingestion (e.g. contaminated food items, ingestion of contaminated dust through preening);
- Ecological receptors (flora). Uptake of contaminated soil or groundwater contamination into the root system, foliage, or fruit; and,
- Groundwater and groundwater ecosystems onsite.

Offsite

- Commercial properties;
- Residential properties;
- Maintenance workers;
- One Mile Gully (situated approximately 610m to the southeast of the site); and,
- Wallis Creek (situated 1.05km to the east of the site but is a likely receptor due to topography).

6.4 Exposure Assessment

Based on the preliminary CSM, the potential exposure of CoPC at the site is considered **Moderate** given the presence of three (3) AECs identified across the site, as shown in the site layout plan in Figure 2a, **Appendix A.** The exposure potential is considered moderate due to the potential for contamination to be present from previously activities undertaken at the site.

6.4.1 AEC1 – Potential uncontrolled filling across the site

Uncontrolled fill in soils has the potential to contain contaminants within the matrix of the material that when applied to land as fill, can cause localised contamination, affecting ecological macrobacteria within the immediate strata beneath, nearby waterways due to contamination leachate runoff and any other flora and fauna coming into contact with the potentially contaminated soil. Contaminated uncontrolled fill also has the capacity to impact human health through contact of fill material via dermal contact, incidental ingestion, and incidental inhalation of volatising contaminants.

6.4.2 AEC2 – Motor vehicle and boat storage around storage shed

Vehicular storage locations are often subject to hydrocarbon contamination due to the nature of having vehicles stored in a location for an extended period of time. During the storage, the components may leak oils and fuels into the surrounding area, which are absorbed by the soil and this leads to hydrocarbon contamination. During the site inspection, no odour or staining was noticed in the vehicular storage shed at the rear of the property or on the ground surface around, which can be seen in the photolog included in **Appendix B**. However, as can been seen in Figures 6a-6c, there is

some historical evidence of vehicles and boats being stored around the rear portion of the site. Hydrocarbon contamination has the capacity to impact human health and flora/fauna via dermal contact, incidental ingestion, and incidental inhalation of volatising contaminants.

6.4.3 AEC3 - Potential hazardous building materials within and around the building

Hazardous building materials such as asbestos and lead-based paint have the potential to be situated within and around the building's footprint. When asbestos-containing material deteriorates or is disturbed, it can release particulates and fibres into the surrounding soil and air. These particles can cause localised contamination which persists for an extended amount of time within the surrounding environment, posing an ongoing risk to individuals and ecosystems, effecting receptors such as ecological flora and fauna, site users and future site workers. Lead dust can be created when lead-based paint is removed by sanding or heat, or when welding or cutting steel coated steel or when dismantling equipment containing lead-based paint. Soil contaminated with lead and asbestos has the capacity to impact human health through incidental ingestion or incidental inhalation.

7 Unexpected Finds

During the site walkover potential asbestos containing materials (PACM) were found to be present within AEC3 underneath the primary dwelling.

Four (4) samples were taken (labelled S1-S4) from various locations underneath the dwelling's subfloor and adjacent to the driveway. These locations can be seen in further detail in Figure 2b, **Appendix A**. The fragment samples were bonded in nature, ranged in size from 20mm to 200mm and did not show signs of weathering.

In accordance with the NEPM (2013) and the *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia, 2019-2024,* the fragments observed were greater than 7mm x 7mm and were not subject to crumbling by hand. As such, the asbestos has been characterised as bonded ACM, as opposed to Asbestos Fines (AF) or Friable Asbestos (FA).

These samples were collected and placed in laboratory supplied ziplock bags and submitted to a NATA accredited laboratory with appropriate chain of custody information for analysis to determine whether they are ACM.

8 Analytical Results

8.1 Asbestos

Asbestos soil sampling was not undertaken at the site. The following bulk material samples tested positive for asbestos:

- S1: Chrysotile Asbestos Detected;
- S2: Chrysotile Asbestos Detected;
- S3: Chrysotile Asbestos Detected; and,
- S4: Chrysotile & Crocidolite Asbestos Detected.

The detailed analytical report can be found in **Appendix C.**

9 Discussion

Raw Earth were engaged by D. Sing & P. Kaur c/o Untapped Planning to conduct a PSI at the property located at 63 Burg Street, East Maitland NSW 2323. The site is described as Lot 1 DP 995219 and comprises an approximate total area of 1,019 m².

The site walkover and desktop investigation indicate the site has remained a residential property in nature since 1954. The building located at the site consists of a weatherboard, single-storey structure on brick piers. There is a shed located at the rear of the property, which is a fully contained structure on a concrete slab with two smaller unused, empty weathered storage sheds adjacent to it. The site is predominantly covered by grass with exposed soils in patches mainly along the earthen driveway. The grass cover did not show any signs of stress or decay and appears to be in a relatively good condition consistently around the site. During the site walkover, no Underground Storage Tank (UST) or associated UST infrastructure was observed. Furthermore, PACM in the form of fibre cement debris was observed in the dwelling's subfloor and areas adjacent to the driveway. A small glass clippings stockpile was present in the central northwestern portion of the site. No other waste/rubble was present on-site.

The site walkover and desktop investigation indicated three (3) potential AECs at the site as follows:

- AEC1 – Potential uncontrolled filling across the site;
- AEC2 – Vehicular storage area around large storage shed; and,
- AEC3 – Potential hazardous building materials within and around the building.

Based on the preliminary CSM, the potential exposure of CoPC at the site is considered **Moderate** given the presence of three AECs identified across the site, as shown in the site layout plan in Figure 2a, **Appendix A.** The exposure potential is considered moderate due to the potential for contamination to be present from previously activities undertaken at the site.

The main dwelling and its surrounding footprint labelled as AEC3 was found to contain debris that was noted to be PACM during the site walkover.

Asbestos soil sampling was not undertaken at the site, however, PACM was identified within AEC3 and four (4) fragment samples were collected and submitted for analysis at a NATA accredited laboratory. The following results are provided:

- S1: Chrysotile Asbestos Detected;
- S2: Chrysotile Asbestos Detected;
- S3: Chrysotile Asbestos Detected; and,
- S4: Chrysotile and Crocidolite Asbestos Detected.

The samples were taken from various locations from the dwelling's subfloor and adjacent to the driveway. These locations can be seen in further detail in Figure 2b, **Appendix A**. The fragment samples were bonded in nature, ranged in size from 20mm to 200mm and showed low signs of weathering. In accordance with the NEPM (2013) and the *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia, 2019-2024,* the fragments observed were greater than 7mm x 7mm and were not subject to crumbling by hand. As such, the asbestos has been characterised as bonded ACM, as opposed to Asbestos Fines (AF) or Friable Asbestos (FA).

10 Conclusion & Recommendations

It is the opinion of Raw Earth and in accordance with relevant Australian standards and guidelines that the site can be made suitable for its proposed development subject to the following recommendations:

- Based on the site inspection and desktop review, a pre-demolition HAZMAT Survey of the existing buildings and structures is recommended due to the age of the building/s and presence of asbestos containing debris underneath and footprint of the Main dwelling.
- Based on the site inspection, desktop review and the proposed development involving minor excavations for residential development, a DSI with bulk material, soil and groundwater sampling is recommended to assess the contamination status of the soils identified in Area of Environmental Concern AEC1, AEC2 and AEC3. This will confirm the source, pathway, and receptor linkages to the CSM, assessing the risk of exposed soils to future site users and construction workers to ensure suitability for the proposed development. The DSI should be undertaken after site based buildings have been demolished and hardstand infrastructure such as concrete slabs and driveways removed so all soils are accessible, and no data gaps remain.
- If any proposed soil is to be excavated as part of the development and requires offsite disposal, then waste needs to be classified in accordance with NSW Environmental Protection Authority, Waste Classification Guidelines Part 1: Classifying Waste, 2014 or be analysed for beneficial reuse under the NSW EPA Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation (2014) to be classified as Excavated Natural Material (ENM).

11 Limitations

Raw Earth Environmental Pty Ltd (Raw Earth) understands to the best of our knowledge, the information within this report is accurate at the date of issue. However, due to the irregularity and dynamic nature of subsurface conditions, soil and groundwater characteristics are capable of change over a short period of time. No warranties, expressed or implied, are made. The contents of this report must be read in full.

If the unexpected finds of materials suspected to be hazardous or toxic occur, all site works must cease, and Raw Earth must be immediately contacted for further instruction.

Raw Earth performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental consulting profession. There is no investigation thorough enough to dismiss a particular material, which presently or in the future is considered hazardous at the site. Regulatory criteria are subject to change, where concentrations of a particular contaminant currently considered low, could be subject to review and fall under different regulatory standards and criteria and may require remediation in the future.

The results of this assessment are based on a desktop review of available information and regulatory criteria identified at the time of the site inspection. Raw Earth will not be liable to revise the report to account for any changes in site characteristics, regulatory requirements, assessment criteria or the availability of additional information, subsequent to the issue date of this report. The scope and period of Raw Earths' services are subject to restrictions and limitations. Raw Earth did not perform a complete assessment of all possible conditions that may exist at the site.

Raw Earth takes no responsibility or liability for errors in any data obtained from scientific laboratories, regulatory agencies, statements from sources outside of Raw Earth, or developments resulting from situations outside the scope of this project.

All conclusions and recommendations regarding the site are the opinion of Raw Earth. Opinions are judgements, which are based on our understanding and interpretation of current regulatory standards and should not be construed as legal opinions.

We trust the information contained within this document meets your requirements. Should you have any queries, please do not hesitate to contact the Raw Earth.

12 References

- Google Earth, https://www.google.com/earth.
- National Environment Protection (Assessment of Site Contamination) (NEPC) Measure as varied 2011, Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater, 2013.
- National Environment Protection (Assessment of Site Contamination) (NEPC) Measure as varied 2011, Schedule B2 – Guideline on Site Characterisation, 2013.
- NSW Department of Environment and Conservation, Guidelines for the Assessment and Management of Groundwater Contamination, 2007.
- NSW Department of Planning and Environment, State Environmental Planning Policy (Resilience and Hazards) Chapter 4, 2022.
- NSW Environmental Protection Authority, Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017.
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- WaterNSW, waternsw.com.au.
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- Work Health and Safety Act, 2011.
- Work Health and Safety Regulation, 2017.

13 Abbreviations

Abbreviation	Full Description
ACM	Asbestos Containing Material
AEC	Area of Environmental Concern
AFFF	Aqueous Firefighting Foam
ASS	Acid Sulfate Soils
BTEXN	Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene
C&D	Construction & Demolition
CoPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DA	Development Application
DSI	Detailed Site Investigation
EPA	Environment Protection Agency
NSW CLR	New South Wales Contaminated Land Register
OCP	Organochlorine Pesticides
OPP	Organophosphorus Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PASS	Potential Acid Sulfate Soil
PFAS	Per and Poly-Fluoroalkyl Substances
PID	Photoionsation Detector
PSI	Preliminary Site Investigation
TPH	Total Petroleum Hydrocarbons
MCC	Maitland City Council

Appendix A: Figures

RAW EARTH
ENVIRONMENTAL

N

Site location

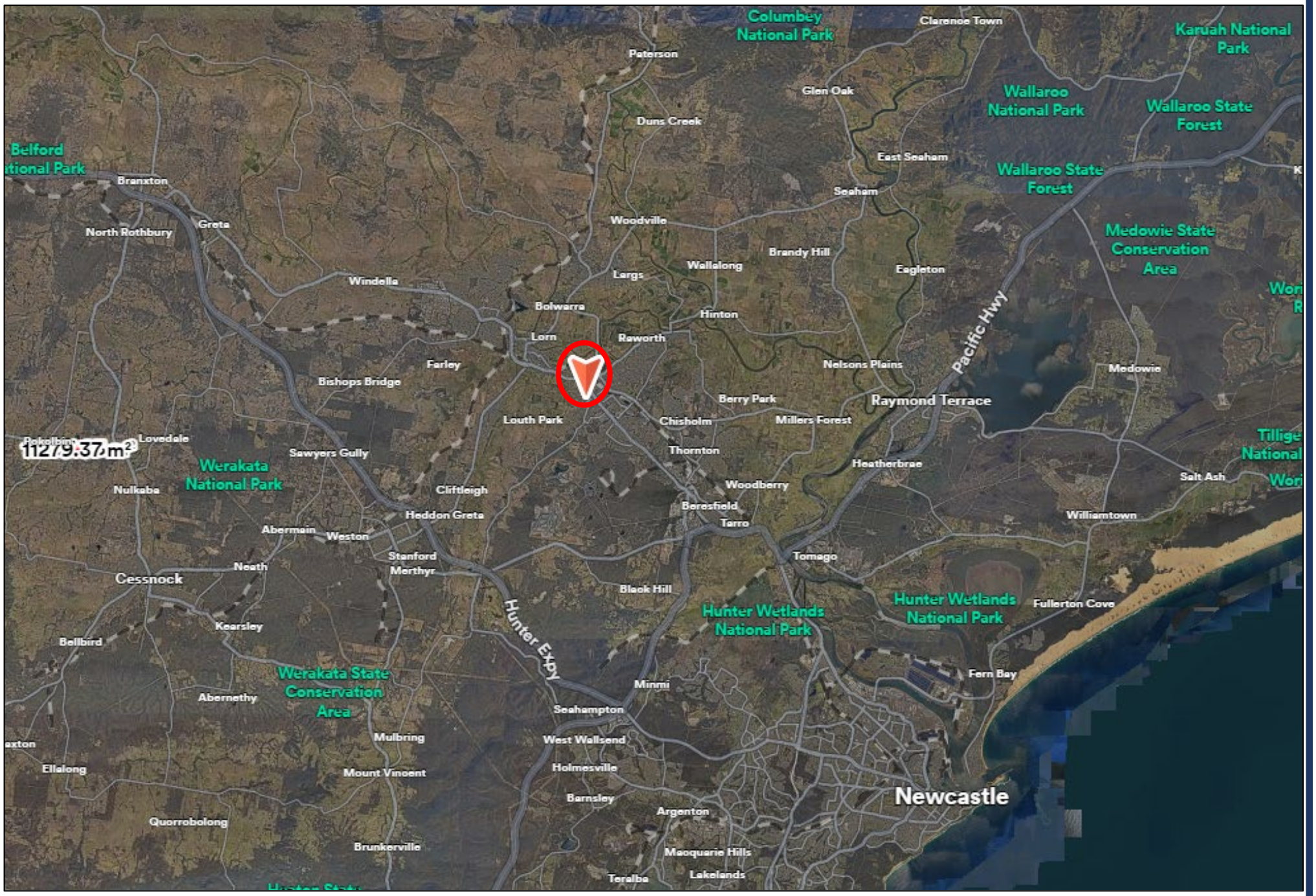


Figure 1:
Site Location Plan

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site Boundary

AEC 1

AEC 2

AEC 3

Figure 2a:
Site Layout Plan

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site Boundary

Sample Location

Figure 2b:
Sampling Locations

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site location

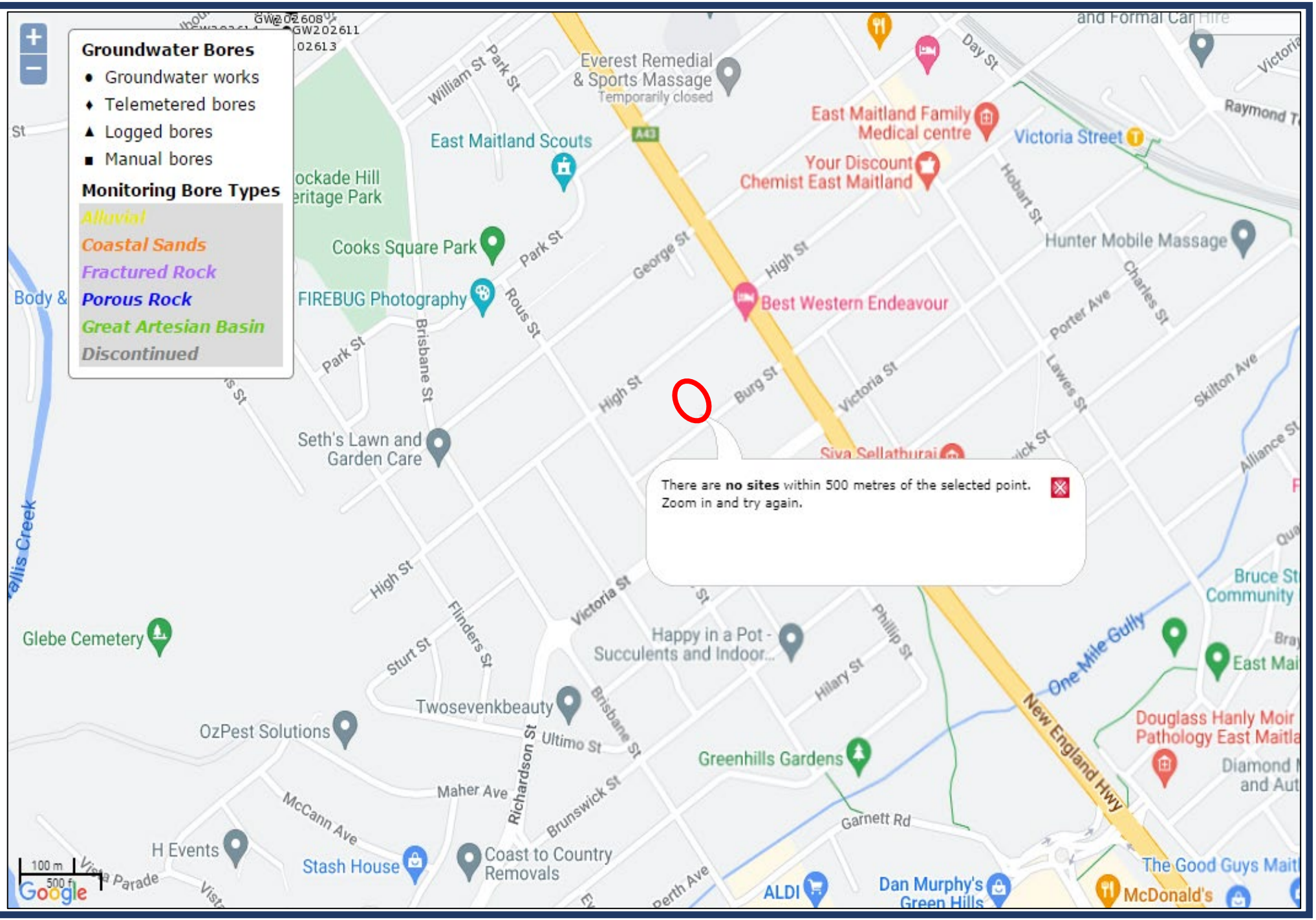


Figure 3:
Groundwater Bore Map

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Maitland Local Environmental Plan 2011

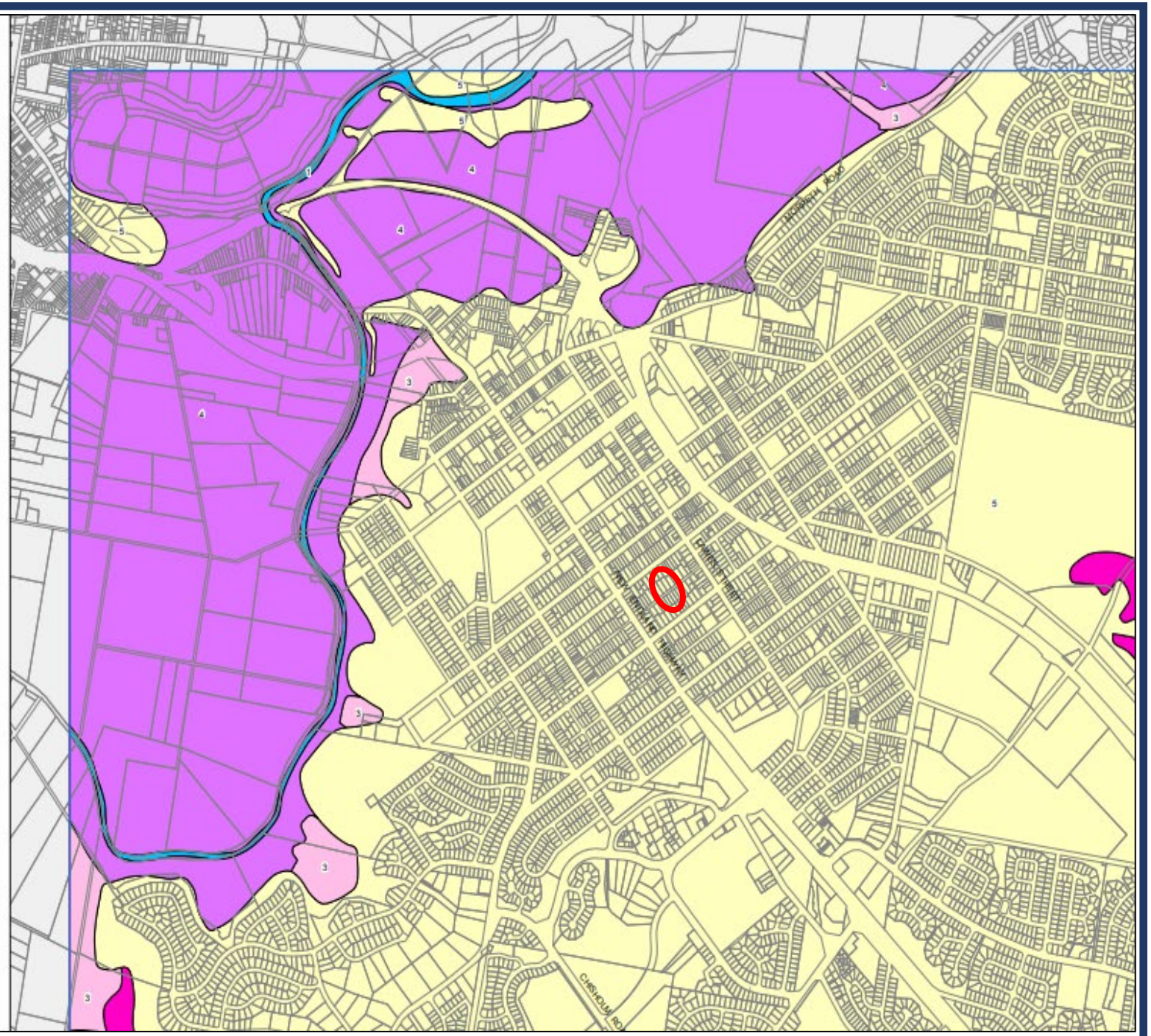
Acid Sulfate Soils Map - Sheet ASS_004D

Acid Sulfate Soils

- 1 Class 1
- 2 Class 2
- 3 Class 3
- 4 Class 4
- 5 Class 5

Cadastre

Base data 03/03/1997 © NSW LPMA
Addendum data 01/04/2011 © Maitland City Council



Site location

Figure 4:
Acid Sulfate Soils Map

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site location

Figure 5a:
Historical Image
1954

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site location

Figure 5b:
Historical Image
1966

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site location

Figure 5c:
Historical Image
1975

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site location

Figure 5d:
Historical Image
1984

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site location

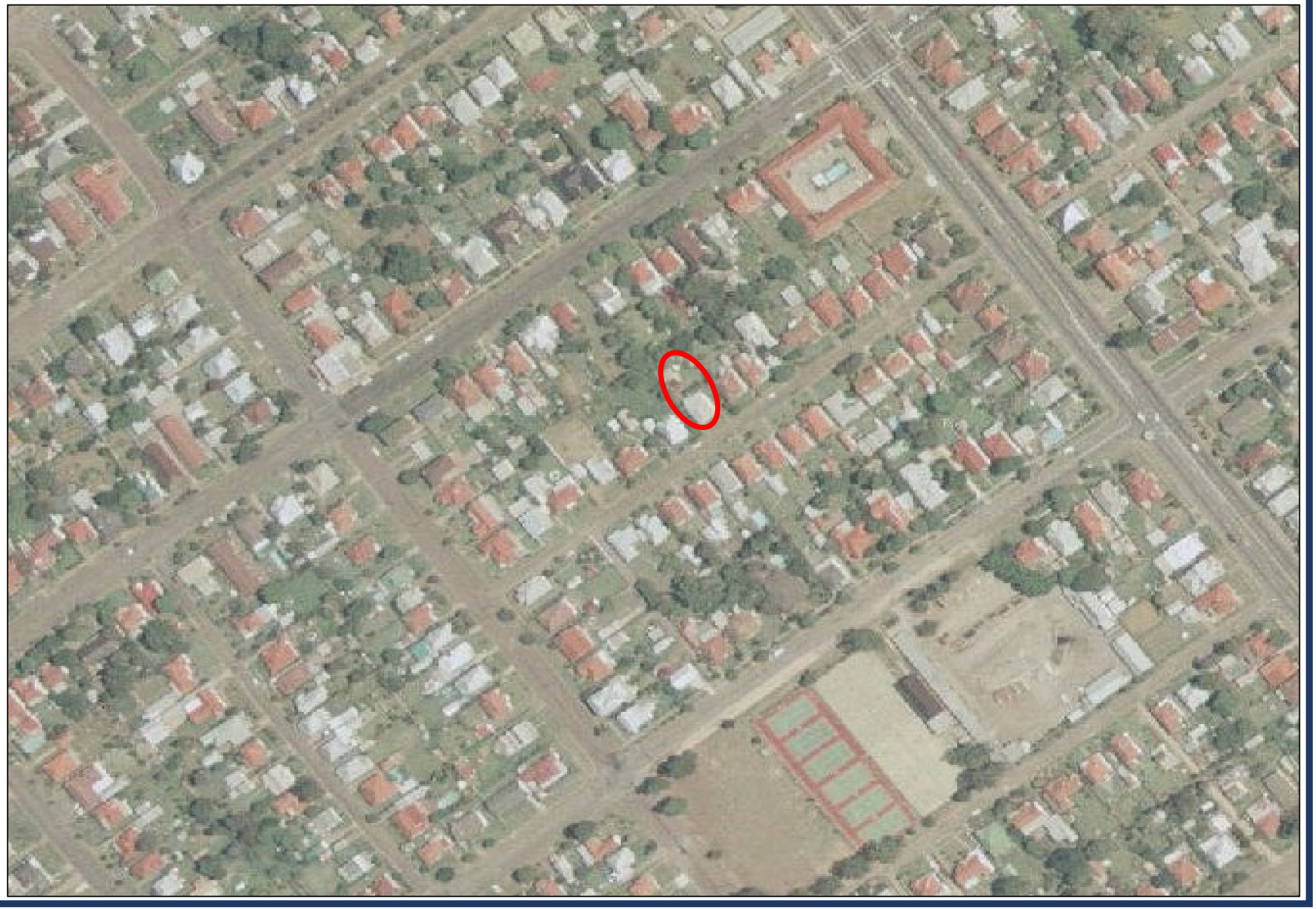


Figure 5e:
Historical Image
1993

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site location

Figure 5f:
Historical Image
2001

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site location

Figure 5g:
Historical Image
Jun 2010

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site location

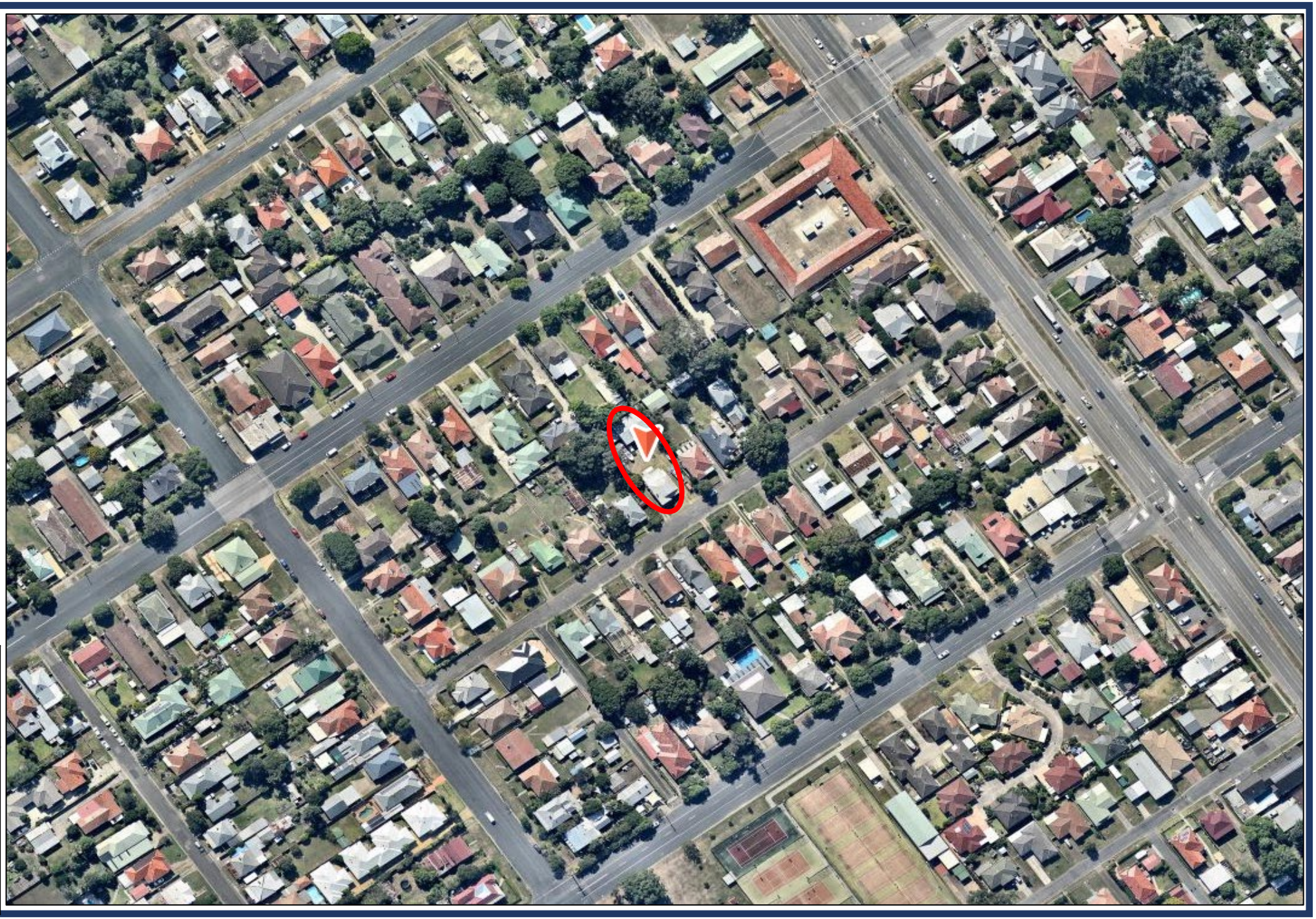


Figure 5h:
Historical Image
Apr 2016

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site location

Figure 5i:
Historical Image
Oct 2023

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site Boundary

Figure 6a:
Historical Image of Vehicular Storage Onsite
Jun 2011

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

N

Site Boundary

Figure 6b:
Historical Image of Vehicular Storage Onsite
May 2017

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

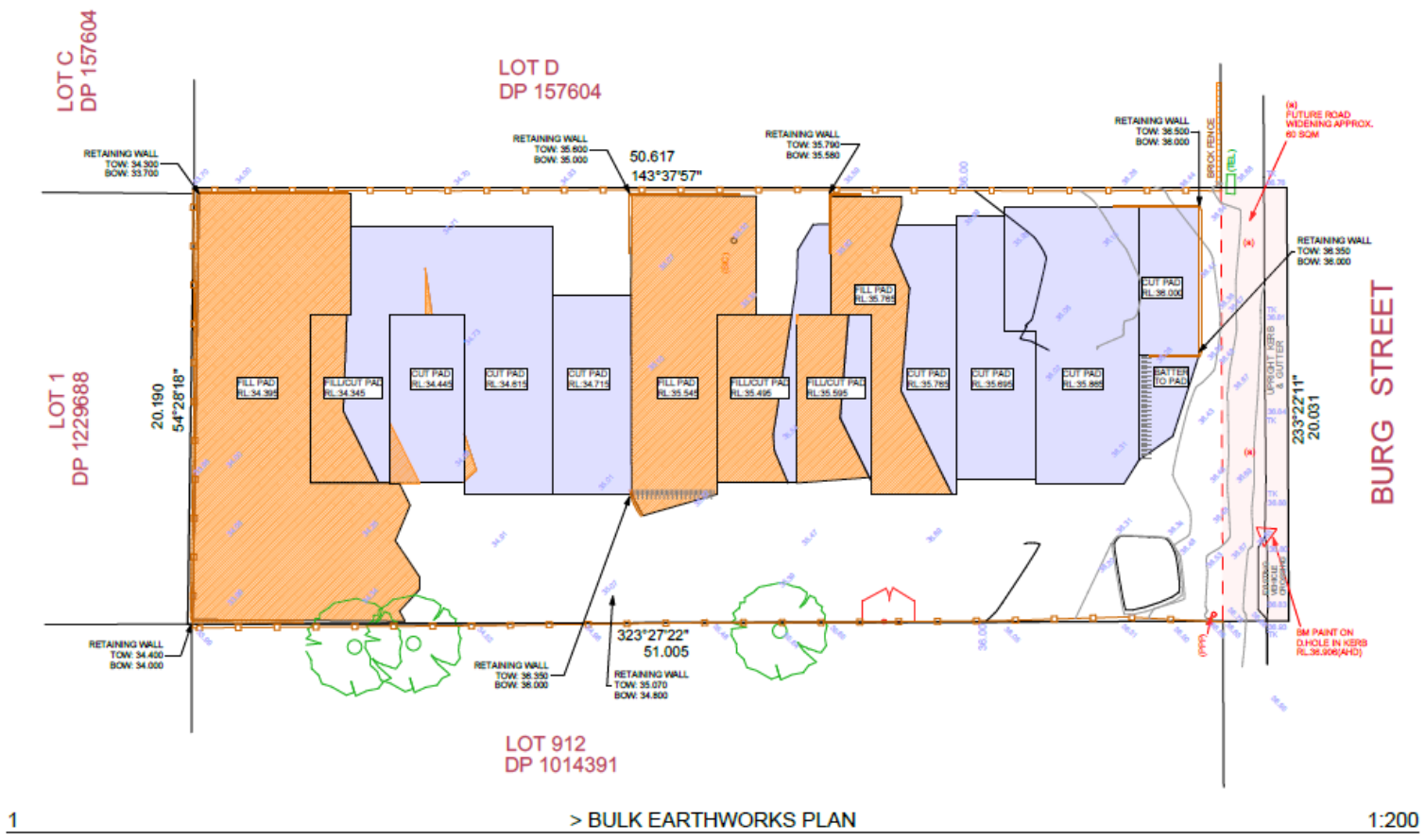
N

Site Boundary

Figure 6c:
Historical Image of Vehicular Storage Onsite
Aug 2020

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL



1 > BULK EARTHWORKS PLAN 1:200

> NOTES

> SITE LEVELS ARE APPROXIMATE ONLY. PLEASE EVALUATE ON SITE BEFORE ANY ORDERING OR WORK BEGINS.

> CUT AND FILL VOLUMES ARE ESTIMATED BASED ON SITE MODELLING USING ArchiCAD. IT DOES NOT TAKE INTO ACCOUNT SOIL CLASSIFICATION, MOISTURE CONTENT, ROCK, VEGETATION, COMPACTION, OR "FLUFF RATE"

> NO SUBTERRANEAN INVESTIGATIONS HAVE BEEN UNERTAKEN, IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT DIAL BEFORE YOU DIG ON PHONE No. 1100 or www.1100.com.au PRIOR TO ANY EXCAVATION OR EARTHWORKS

DIAL BEFORE YOU DIG www.1100.com.au

> EXCAVATION VOLUMES

CUT / FILL	VOLUME (m³)
CUT VOLUME	88.26
FILL VOLUME	89.06

ADVANTAGE
> BUILDING DESIGN THAT'S ALL ABOUT YOU
PH: [02] 4934 4919
E: admin@advantagensw.com

> 1:200 - UNLESS NOTED OTHERWISE

bdaa ACCREDITED BUILDING DESIGNER

> Date Published: > 25/09/2023

> Page Size: A3

THE BUILDER SHALL CHECK AND VERIFY ALL DIMENSIONS BEFORE ORDERING OR CONSTRUCTION STARTS AND VERIFY ALL ERRORS AND OMISSIONS WITH THE DESIGNER.

> Client: > SINGH
> Development: > MULIT RESIDENTIAL HOUSING
> 63 BURG STREET, EAST MAITLAND
> LOT 1, DP 995216

> DEVELOPMENT APPLICATION

> Designer	> Drafter
> JB	> TS / SN

> Job No.	> Revision No.	> Drawing No.
> 4843	> DA1	> 1.5

> DO NOT SCALE. IF IN DOUBT, ASK

Figure 7:
Proposed Earthworks Plan (supplied to Raw Earth)

Project:
Preliminary Site Investigation:
63 Burg Street, East Maitland NSW 2323

Appendix B: Site Photographs

Photo 1: Overview of the property at 63 Burg St, East Maitland, looking north. No visual signs of stress or staining.

Photo 2: Overview of the front of the property, looking west. No visual signs of stress or staining.

Photo 3: Overview of the backyard space at 63 Burg St, East Maitland, looking south. No visual signs of stress or staining.

Photo 4: This image shows a highly weathered outhouse-like structure present in the central portion of the site adjacent to the house. This structure as well as the houses fascia and eaves paint are all very weathered and be a potential source for lead based paint contamination in AEC 3.

Photo 5: Overview of the backyard space, looking north. No visual signs of stress or staining.

Photo 6: Overview of the small sheds adjacent to the large storage shed in the backyard.

Photo 7: Overview of northeaster side alley adjacent to the large storage shed.

Photo 8: Internal overview of the small sheds adjacent to the large storage shed, both small sheds are empty.

Photo 9: Internal overview of the large storage shed which is almost completely empty.

Photo 10: Overview showing the rear portion of the dwelling, looking southeast.

Photo 11: Overview of the subfloor at 63 Burg St, East Maitland.

Photo 12: Stockpiled grass clippings/mulch in the northwestern portion of the site. No visual signs of staining.

Photo 13: Potential Asbestos Containing Material (PACM) sample taken from underneath the dwelling.

Photo 14: Potential Asbestos Containing Material (PACM) sample taken from underneath the dwelling.

Photo 15: Potential Asbestos Containing Material (PACM) sample found on the driveway adjacent to the dwelling.

Photo 16: PACM sample S4 taken from the northeastern portion of the dwelling's footprint.

Photo 17: Vehicular storage location on the partially earthen driveway.

Photo 18: Overview of the earthen driveway showing historical vehicular use.

Appendix C Analytical Hazardous Material Report

Table 1 - Analytical Results

S00255
D. Singh P. Kaur
63 Burg Street, East Maitland NSW 2323

RAW EARTH
ENVIRONMENTAL

		Asbestos
		Yes/No
Field ID	Date	
S1	22 Jan 2024	Yes
S2	22 Jan 2024	Yes
S4	22 Jan 2024	Yes
S4	22 Jan 2024	Yes
S5	22 Jan 2024	Yes

Appendix D: Laboratory Certificates

CHAIN OF CUSTODY & ANALYSIS REQUEST

RAW EARTH ENVIRONMENTAL

RAW EARTH ENVIRONMENTAL PTY LTD		**LABORATORY DETAILS**	
Address: Unit 3.06 106-110 Euston Rd, Alexandria, 2015	**Phone:** 0458 131 302	**Lab. Name:** SGS	**Turn Around Time:** 1 day TAT
Project Manager: Nibha Vaidya	**E-mail:** Philip@rawearthenvironmental.com.au	**Lab. Address:** 30 Maddox St, alexandria	**Results Required by:** 1 day
Sampled By: Philip Waters	**REE Project No:** S00255	**Project Name:** East Maitland	

	Sample ID Number	Sample Date	Matrix	Preservation Type	asbestos						Comments
1	S1	22/01/24	Material		X						fragment
2	S2	↓	↓		X						↓
3	S3				X						
4	S4				X						

Quote # RAW E-IE-SEP23-1460624

SGS EHS Sydney
SE259547

Relinquished by:	Signed:	Date:	Received by:	Signed:	Date:
			Vanl		24/11/24 11:30

Attach to sample cooler with lid taped shut.

SAMPLE RECEIPT ADVICE

SE259547

CLIENT DETAILS

Contact	Philip Waters
Client	RAW EARTH ENVIRONMENTAL
Address	3/17 Tasman Way Byron Bay BYRON BAY NSW 2481
Telephone	(Not specified)
Facsimile	(Not specified)
Email	philip@rawearthenvironmental.com.au
Project	**S00255 East Maitland**
Order Number	**S00255**
Samples	4

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 24/1/2024
Report Due	Thu 25/1/2024
SGS Reference	**SE259547**

SUBMISSION DETAILS

This is to confirm that 4 samples were received on Wednesday 24/1/2024. Results are expected to be ready by COB Thursday 25/1/2024.
Please quote SGS reference SE259547 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	4 Material	Type of documentation received	COC
Date documentation received	24/1/2024	Samples received in good order	Yes
Samples received without headspace	N/A	Sample temperature upon receipt	23.5°C
Sample container provider	Client	Turnaround time requested	Next Day
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	None	Samples clearly labelled	Yes
Complete documentation received	Yes		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

SAMPLE RECEIPT ADVICE

SE259547

CLIENT DETAILS

Client RAW EARTH ENVIRONMENTAL

Project S00255 East Maitland

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre ID in bulk materials
001	S1	2
002	S2	2
003	S3	2
004	S4	2

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Philip Waters
Client	RAW EARTH ENVIRONMENTAL
Address	3/17 Tasman Way Byron Bay BYRON BAY NSW 2481
Telephone	(Not specified)
Facsimile	(Not specified)
Email	philip@rawearthenvironmental.com.au
Project	**S00255 East Maitland**
Order Number	**S00255**
Samples	4

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE259547 R0**
Date Received	24 Jan 2024
Date Reported	25 Jan 2024

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam

SIGNATORIES

S. Ravee

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

ANALYTICAL REPORT

SE259547 R0

RESULTS

Fibre ID in bulk materials — Method S4964

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Date Analysed	Fibre Identification	Est.%w/w*
SE259547.001	S1	Other	50x30x5mm Cement Sheet Fragment	22 Jan 2024	25 Jan 2024	Chrysotile Asbestos Detected	
SE259547.002	S2	Other	85x50x5mm Cement Sheet Fragment	22 Jan 2024	25 Jan 2024	Chrysotile Asbestos Detected	
SE259547.003	S3	Other	40x20x4mm Cement Sheet Fragment	22 Jan 2024	25 Jan 2024	Chrysotile Asbestos Detected	
SE259547.004	S4	Other	180x100x4mm Cement Sheet Fragment	22 Jan 2024	25 Jan 2024	Chrysotile & Crocidolite Asbestos Detected	

METHOD SUMMARY

SE259547 R0

METHOD	METHODOLOGY SUMMARY
AN602/AS4964	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602/AS4964	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf). The fibres detected may or may not be asbestos fibres.
AN602/AS4964	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service .
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.
			***	-	Indicates that both * and ** apply.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety .