ENVIRONMENTAL CONSULTING SERVICES

PRELIMINARY ENVIRONMENTAL SITE INVESTIGATION

170 Russell Street
Emu Plains NSW 2750

ENVIRONMENTAL CONSULTING SERVICES PTY LTD
E: simon@ecsgroup.com.au | P 0415 225 474 | ABN 75 073 668 425

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Tom Caples	13.04.2023	
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Simon Caples Principal Consultant	27.04.2023	

Executive Summary

Environmental Consulting Services Pty Ltd (ECS) was engaged to undertake a Preliminary Site Assessment (PSI) of the property at 170 Russell Street in Emu Plains (the Site). ECS understands that it is proposed to redevelop the Site as a commercial precinct that includes commercial facilities, factory units and a childcare centre.

The objective of the environmental investigation was to evaluate the potential for contamination resulting from past Site activities and draw conclusion about the suitability of the Site for sensitive use. The scope of work undertaken to meet this objective included the review of selected background information including historical aerial photographs and certificates of title, the identification of potential contamination types and the development of a conceptual Site model, a Site inspection and targeted soil sampling.

The Site currently cleared and vacant with three stockpiles of soil on land to the north-east, as well as three small piles of mulch close to the south boundary along Old Bathurst Road. There are no existing structures on the Site and no evidence of significant development across the Site surface. There have been no other modifications, other than the addition of a gravel driveway with access to Russell Street.

A history review showed the Site has been owned by various individuals although there was no indication of development shown on historical aerial photographs. It is considered that historical activities would have been limited to agricultural (grazing) use. The aerial photographs indicate that historical filling activities have not been undertaken and the Site has remained undeveloped since the earliest photographic record in 1943. Although one stockpile of material on the land to the north does extent onto the Site. This stockpile and an adjoining stockpile were sampled.

There appears to be minimal potential for significant or widespread contamination to be present associated with historical Site activities. To characterise the surface material, ten shallow test pits were excavated across the Site with no significant thicknesses of fill material observed.

The results of the soil analysis indicate concentrations of contaminants below the site assessment criteria for sensitive land use including the samples from the stockpiles on the adjoining land. Concentrations of some heavy metals detected in soil samples are considered to represent natural background levels at the Site.

Selected soil samples from test pits adjacent to the substation facility to the south west were tested for PCBs. PCBs are a common contaminant associated with older substations. The Results of analysis did not detect PCBs.

There is a service station on the land to the south of the Site across Old Bathurst Road. This service station is relatively recent (constructed between 1994 and 2005) and not listed as a notified site on the EPA databases. The potential for contamination on the Site from the service station across Old Bathurst Road is considered to be low.

Based on the findings of this investigation, ECS concludes that the Site is considered suitable for proposed redevelopment which will include sensitive land use in the form of a child care facility.

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1.0 INTRODUCTION

Environmental Consulting Services Pty Ltd (ECS) was engaged to undertake a Preliminary Site Investigation (PSI) of the property known as 170 Russell Street in Emu Plains (the Site). The purpose of this assessment was to evaluate the potential for contamination resulting from past Site activities and to draw conclusions regarding the suitability of the Site for mixed uses including sensitive land use.

ECS understands that it is proposed to redevelop the Site as a commercial precinct that includes commercial facilities, factory units and a childcare centre. Proposed developmental plans for this Site are included in *Appendix 1*.

The investigation has been undertaken in accordance with:

- Guidelines for Consultants Reporting on Contaminated Sites (NSW EPA, 2020);
- State Environmental Planning Policy (Resilience and Hazards) 2021; and
- National Environment Protection Measure (NEPM) for the Assessment of the Site Contamination (NEPM 2013).

1.1 Scope of Work

The objective of the environmental investigation was to evaluate the potential for contamination resulting from past Site activities and draw conclusion about the suitability of the Site for the proposed development which includes sensitive land use. The scope of work undertaken to meet this objective included the following:

- The review of selected background information including historical aerial photographs and certificates of title;
- The identification of potential contamination types and the development of a conceptual Site model (CSM);
- A Site inspection and methodical soil sampling; and
- The preparation of a site assessment report for submission to council.

2.0 SITE INFORMATION

2.1 Site Identification

The location of the Site is presented in *Figure 2.1 – Site Location Plan* with the Site identification details summarised in *Table 2.1 – Site Identification*.

Table 2.1 – Site Identification

Attribute	Detail
Site Address	170 Russell Street, Emu Plains NSW 2750
Lot & Deposited Plan	Lot 1, DP 1273251
Current Land Use	Cleared / Vacant
Proposed Land Use	Childcare Centre & Commercial Precinct
Local Government Authority	Penrith City Council
Current Zoning	IN2 – Light Industrial (partial) DM – Deferred Matter (partial)
Site Area (ha)	Approximately 2.09 ha
Geographical Location (approximate centre)	Latitude: -33.741941 Longitude: 150.656791

Figure 2.1 – Site Location Plan

2.2 Site Location and Regional Setting

The Site is within the suburb of Emu Plains, which is approximately 58km west of the Sydney central business district. It is located at the intersection of Russell Street and Old Bathurst Road on the north-western corner, behind a substation. The property consists of a single lot (Lot 1, DP 1273251) with approximate street frontages of 29m onto Russell Street and 162m onto Old Bathurst Road.

Emu Plains lies on the western side of the Nepean River, located at the foot of the Blue Mountains. The Site is bounded to the west, across Russell Street by residential developments and to the south across Bathurst Street by a commercial/industrial precinct. The land to the north of the Site is predominantly vacant and to the is Emu Plains correctional facility.

At the intersection of Russell Street and Bathurst Road at the south west corner of the Site is an electrical substation. To the south of the substation, across Bathurst Road is a service station and to the south west is another service station.

The Site is outlined in red and surrounding properties shown on *Figure 2.2 – Site Layout.*

2.3 Topography

The Site is looks to be relatively level although the survey which is included in *Appendix 1* shows there are some gentle undulations across the Site. The highest elevation shown on the survey is at the south west corner at approximately 25m AHD (Australian Height Datum), and the lowest is approximately 23.5m AHD at the north-east corner.

There is no indication of significant filling on the Site although there are three stockpiles on the land to the north of the Site, one of which just crosses the boundary onto the Site (shown on the Site survey). These stockpiles of material are understood to have been sourced from the neighbouring land to the north. The conditions of the stockpiles can be seen in *Figure 2.3 – Stockpiles*. There are also some stockpiles of organic mulch material on the Site that are the result of removal of vegetation at the south west corner of the Site.

Figure 2.2 – Site Layout

Figure 2.3 – Surface Modifications

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geology of the area is shown on the Penrith Geological Map scaled at 1:100,000 (Geological Series Sheet 9030, 1st Edition 1991). The Site is underlain by Ashfield Shale of the Wianamatta Group described as being dark grey to black claystone-siltstone and fine sandstone-siltstone laminite.

3.2 Acid Sulfate Soil (ASS) Risk Planning

The Penrith Local Environment Plan (LEP) 2010 prepared by Penrith City Council does not include Acid Sulfate Soil (ASS) risk maps which indicates a low likelihood of encountering ASS in the area. Additionally, the ASS risk maps prepared by the NSW Department of Planning, Industry and Environment do not extend over this area.

ECS considers that the absence of risk maps indicates there is a low likelihood for ASS to be encountered at the Site.

3.3 Hydrogeology

The nearest surface water body to the Site is Lapstone Creek approximately which flows generally east from Blaxland and then north through Emu Plains, where it discharges into the Nepean River. It also forms the eastern boundary of the Site.

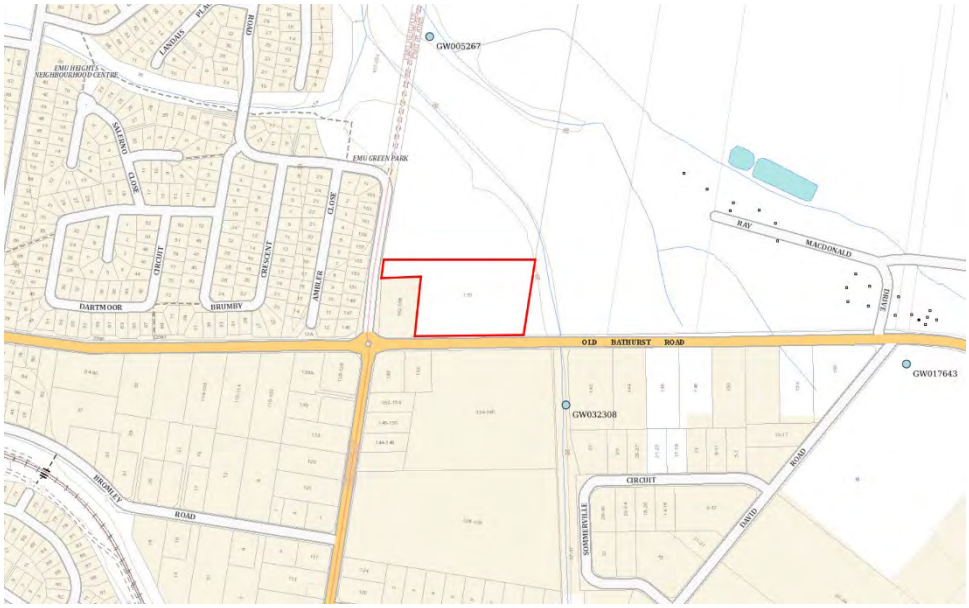
The MinView database provided by the NSW Government (2021) shows that there are three registered groundwater bores within close proximity to the Site. The details of the wells are summarised in *Table 3.2 – Groundwater Bores*.

Table 3.1 – Groundwater Bores

Groundwater Bore	Year Constructed	Purpose	Depth
GW005267	1959	Irrigation	9.4m
GW032308	1969	Commercial & Industrial	17.4m
GW017643	1959	Commercial & Industrial	13.7m

An extract from the Minview database showing licenced groundwater bores is presented in *Figure 3.2 – Groundwater Bores* with the approximate location of the Site shown in red and groundwater bores shown in blue.

Figure 3.1 – Groundwater Bores



The closest groundwater bore is approximately 230m south-east located outside an industrial area and along Lapstone Creek. It is considered that the groundwater bore is functioning and being used for irrigation and commercial practices.

4.0 DATA QUALITY OBJECTIVES

The Data Quality Objective (DQO) process is a systematic, seven-step process that defines the criteria an investigation should satisfy including the type, quantity and quality of data required to support decisions relating to the investigation. DQOs for this investigation have been developed based on the seven-step approach in accordance with the NSW DEC Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017. The DQOs incorporate field quality control and laboratory analysis, methods and information on laboratory quality control data and validate the field and analytical data for this investigation. The DQOs are presented in detail in the following sections.

Step 1 - State the Problem

The Site is proposed to be used for commercial activities and will include a childcare facility and could be contaminated from past Site activities. The objective of the investigation is to assess the potential for contamination resulting from past Site activities and to draw conclusions regarding the suitability of the Site for sensitive land use.

This investigation should be undertaken in general accordance with the NSW EPA Guidelines for Consultants Reporting on Contaminated Sites 2020. This requires a review of historical Site usage to evaluate the potential for the former uses to result in contamination. Where there is the potential for impact, an intrusive investigation should be undertaken, and appropriate management strategies implemented.

Step 2 - Identify the Decisions

The assessment for contamination is based on the known historic uses of the land. The decisions associated with this assessment include:

- Would historic land uses result in contamination that may preclude sensitive land use;
- Is the Site suitable for proposed sensitive land use?

Step 3 - Identify Inputs to the Decision

The inputs required to make the identified decisions include:

- Data regarding the regional and local conditions;
- Historical records and air photographs;
- Site walkover; and
- Targeted soil sampling.

Step 4 - Define the Study Boundary

The boundaries for this assessment have been identified as follows:

- Lateral boundaries – the Site area; and
- Vertical boundaries – surface soils to a depth of about 0.5m.

Step 5 - Develop an Analytical Approach

The decision rules for this investigation are:

- If the Site history and/or preliminary sampling indicates the potential for Site contamination to exist, then an assessment for actual impacts from that activity must be undertaken.
- If the presence of potential sources of contamination are encountered such as areas of filling of damaged asbestos materials on the ground surface, then remediation or management must be undertaken.
- Results of assessment activities undertaken to investigate for actual impacts need to consider the proposed Site use. If the results of sampling encounter concentrations of contaminants greater than nominated Site Assessment Criteria indicating a potential human health of environmental risk then remediation or management must be undertaken.

Step 6 - Specify Performance or Acceptance Criteria

The null hypothesis is that the soil and fill material is contaminated and exceeds the adopted Site Assessment Criteria. The alternative hypothesis is that the soil and fill material is not contaminated above the adopted Site Assessment Criteria.

The incorrect consideration of background information has the potential to conclude that the Site is contaminated when it is not or alternatively, conclude the Site is not contaminated when it actually is. To provide more certainty to the conclusion regarding the contamination status of the Site, both the background information and the Site conditions will be jointly assessed.

The continuity and understanding of past Site activities provides the basis for the consideration of the necessity for Site sampling. Where there is uncertainty or indications of the potential for contamination, sampling needs to be undertaken.

The preliminary sampling at the Site needs to address the findings of the background data review and needs to include sufficient sampling locations and depths, utilise appropriate field sampling methodologies, review suitable data quality indicators (DQIs) and quality

assessment procedures and incorporate appropriate data evaluation procedures such as the use of 95 percent upper confidence limit (95% UCL) calculations.

Step 7 - Optimise the Design for Obtaining Data

The data sources for this assessment are historic records that have been maintained and that are readily available, soil samples that are from targeted locations established as the preliminary sampling plan.

The sampling plan prepared for this investigation considered the Site history and the Site setting. A sampling plan was established to assess near surface soil conditions with locations targeting areas of environmental concern, if present.

The density of sampling considered the Schedule B2 of the NEPM Guideline on Site Characterisation (2011) and the sampling depth intervals set to assess surface soil. The sampling density also considered the NSW EPA Guidelines. The sampling density is below the recommended sampling density in the EPA Guidelines however, this is considered suitable for the preliminary Site investigation.

Near surface soils are considered the primary indicator for significant impact based on the Site history.

5.0 HISTORY REVIEW

To evaluate the development history of the Site, historical aerial photographs and certificates of title acquired from Lotsearch were reviewed.

5.1 Regional History

Emu Plains was an area first explored in 1790 that was originally thought to be an island until later realising that the area was a flood plain which made it appear isolated. A government farm was established in 1813 with over 1300 convicts working there until its closure in 1833. The post office was later opened in 1863 and the suburb was officially renamed to Emu Plains in 1882.

5.2 Aerial Photographs

Aerial photographs dating back to 1943 were reviewed to evaluate developmental history at the Site. *Table 5.1 – Aerial Photographs* summarises the features observed in the historical aerial photographs. Copies of the aerial photographs are included in *Appendix 2*.

Table 5.1 – Aerial Photographs

Year	Site Features	Surrounding Area
1943	The Site is cleared and vacant land with a few trees along the south west boundaries.	The surrounding land is mostly cleared and vacant. It appears that most properties are being used for agricultural purposes but with a few houses. To the east of the Site is Lapstone Creek which is within a man made channel and the main roadways of Bathurst Road and Russell Street to the south of Old Bathurst Road are visible.
1949	The Site remains relatively unchanged from the 1943 aerial photograph.	The surrounding land remains relatively unchanged from the 1943 aerial photograph.
1955, 1956	The Site remains relatively unchanged from the 1949 aerial photograph.	The surrounding land remains relatively unchanged from the 1949 aerial photograph although a driveway runs along the eastern Site boundary from Old Bathurst Road to the house to the north. Russell street to the north of Old Bathurst Road is now visible.
1961	The Site remains relatively unchanged from the 1956 aerial photograph.	The surrounding land remains relatively unchanged from the 1956 aerial photograph.
1966	The Site remains relatively unchanged from the 1961 aerial photograph.	The surrounding land remains relatively unchanged from the 1961 aerial photograph.
1970	The Site remains relatively unchanged from the 1966 aerial photograph.	The surrounding land remains mostly used for farming and agriculture although there is a large industrial development to the south, across Old Bathurst Road.
1978	The Site remains relatively unchanged from the 1970 aerial photograph.	The surrounding land remains relatively unchanged from the 1970 aerial photograph, however, there is a new house on the adjacent property to the north and the substation is being constructed on the land at corner of Russell Street and Old Bathurst Road.
1982	The Site remains relatively unchanged from the 1978 aerial photograph.	The surrounding land remains relatively unchanged from the 1978 aerial photograph. There is an additional industrial building that has been built further to the south.
1986	The Site remains relatively unchanged from the 1982 aerial photograph.	New houses have been built on the land across Russell Street to the west and there are a few new streets. Land to the south and south-west are being used as industrial sites.
1991	The Site remains relatively unchanged from the 1986 aerial photograph.	There are more industrial and commercial buildings to the south-west including the service station at the intersection of Russell Street and Old Bathurst Road and there are several new houses to the west.
1994	The Site remains relatively unchanged from the 1991 aerial photograph, but there is vegetation growth at the south-west corner boundary.	The surrounding land remains relatively unchanged from the 1991 aerial photograph, although there has been further residential development to the north-west.
2005	The Site remains relatively unchanged from the 1994 aerial photograph, but there are now small trees at the south-west corner boundary.	There has been further industrial and commercial development across Old Bathurst Road to the south and a second service station has been built with street frontage onto Old Bathurst Road.
2011	The Site remains relatively unchanged from the 2005 aerial photograph.	The surrounding land remains relatively unchanged from the 2005 aerial photograph, although there are new industrial buildings to the south-east. There has been an extension to the adjacent substation.
2015	The Site remains relatively unchanged from the 2011 aerial photograph.	The surrounding land remains relatively unchanged from the 2011 aerial photograph. There are additional buildings in the industrial area to the south-east.
2020	The Site remains relatively unchanged from the 2015 aerial photograph, although some of the Site has been mowed.	The surrounding land remains relatively unchanged from the 2015 aerial photograph.
2023	The Site has been re-cleared and there is a gravel driveway from Russell Street.	The surrounding land remains relatively unchanged from the 2020 aerial photograph.

5.3 Certificate of Title

Historical land title records indicating ownership of the land were reviewed during this assessment. The title records associated with the Site are presented in *Table 5.2 – Title History*. A copy of the title search for the Site is included in *Appendix 3*.

Table 5.2 – Title History

Years owned	Proprietor(s)
1911 to 1916	Martin Gilligan (Farmer)
1916 to 1917	Annie Elizabeth Gilligan (Spinster)
1917 to 1949	Annie Dobson (Married Woman)
1949 to 1963	Harry Albert Dobson (Farmer) Edith Muriel Dobson (Spinster) Annie Margaret Dobson (Spinster) Jessie Louise Dobson (Spinster) Florence Marion Dobson (Spinster)
1963 to 1966	Harry Albert Dobson (Farmer) Annie Margaret Dobson (Spinster) Jessie Louise Dobson (Spinster) Florence Marion Dobson (Spinster)
1966 to 2006	Blacktown and Districts Plumbing and Draining Company Pty Limited *now* Carthona Properties Pty Limited
2006 to date	Bernard Jean -Yves Le Boursicott Linna Le Boursicott

5.4 History Summary

Based on the review of historic aerial photographs, the Site at 170 Russell Street appears to have been primarily agricultural land (grazing). The historical ownerships of title indicate that the Site has been owned by various individuals and is considered to have been limited only to potential farming or grazing activities. There is minimal potential for significant or widespread contamination to be present associated with the historical Site activities and ownership.

5.5 NSW EPA Records

A review of the NSW Environment Protection Authority (EPA) databases was conducted including the following:

- Records maintained in relation to contaminated land under Section 58 of the CLM Act 1997;
- Records of sites notified to the EPA in accordance with the Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015);
- Licensed activities under the Protection of the Environment Operations Act (1997).

This review indicated there is only one property within Emu Plains that has been notified to the EPA. The details are outlined in *Table 5.3 – NSW EPA Records*.

Table 5.3 – NSW EPA Records

Address	Type	Management Class
283 Great Western Hwy	Service Station	Regulation under CLM Act not required.

5.6 Gaps in the Site History

Sixteen aerial photos were reviewed covering a time span of 80 years (1943 to 2023). The largest gap in time was eleven years from 1994 to 2005. As there was little change in the site usage during this time, the gap is not considered significant.

The aerial photos confirmed that the Site has remained undeveloped since the earliest photographic record. There is a risk that some demolition and erection of new structures could have occurred during gaps in the photographic record, but these would be considered minor, since there is no remaining evidence of development.

Based on the above no significant gaps have been identified in the site history.

6.0 CONCEPTUAL SITE MODEL SUMMARY

The potential for Site contamination is reflective of past use of the land. The conceptual site model (CSM) is based on the findings of the desktop study including regional and local conditions and historical records. The history review indicated the Site has been primarily used for agricultural purposes that are unlikely to result in significant contamination.

During this investigation, the following potential areas of environmental concern were identified. Each potential area of concern was analysed and determined if further investigation and management were required.

The CSM is the framework for identifying activities with the potential to contaminate the site and how potential receptors may be exposed to contamination (if present) either in the present or the future, i.e. it enables an assessment of the potential source – pathway – receptor linkages (complete pathways).

Potential Sources

Based on the results of the background data review the Areas of Environmental Concern (AEC) include the following potential sources of contamination and associated Contaminants of Potential Concern (CoPC) have been identified.

S1 – Minor surface soil impacts from agricultural activities such as ploughing or slashing. The potential for such impacts are very low but could include common contaminants including metals, petroleum hydrocarbons or asbestos containing materials (ACM).
S2 – Impact from the adjoining substation through loss of containment of cooling oils containing Polychlorinated Biphenyls (PCB). The potential for cooling oils impacting the Site is considered to be low. Hazardous building materials such as asbestos and lead may be present as a result damage, renovation and maintenance of the building on the Site.

Potential Receptors

Human health receptors
R1 – Construction and maintenance workers;
R2 – End users (residential); and
R3 – Adjacent users (residential and sensitive).

Environmental receptors
R4 – Water bodies (Lapstone Creek);
R5 – Ecology (vegetation and biota); and
R6 – Groundwater (freshwater).

Potential Pathways

P1 – Ingestion and dermal contact;
P2 – Inhalation of dust;
P3 – Surface water run-off;
P4 – Leaching of contaminants and vertical migration into groundwater;
P5 – Lateral migration of groundwater providing base flow to water bodies; and
P6 – Direct contact with ecological receptors (including accidental and/or via irrigation).

A 'source–pathway–receptor' approach has been used to assess the potential risks of harm being caused to human, water or environmental receptors from potential contamination sources on or in the vicinity of the Site, via exposure pathways (complete pathways). The possible pathways between the above potential source (S1 and S2) and receptors (R1 to R6) are provided in *Table 6.1 – Source Pathway Analysis*.

Table 6.1 – Source Pathway Analysis

Source	Pathway	Receptor	Risk Evaluation
S1 & S2	P1 – Ingestion and dermal contact	R1 – Workers	Possible during development works
		R2 – Occupants	Possible following development works
		R3 – Neighbours	Unlikely the Site is relatively isolated
	P2 – Inhalation of dust and/or vapours	R1 – Workers	Possible during development works
		R2 – Occupants	Possible following development works
		R3 – Neighbours	Unlikely the Site is relatively isolated
	P3 – Surface water run-off	R4 – Water bodies	Possible during development works
		R6 – Groundwater	Unlikely potential source is limited
	P4 – Leaching of contaminants	R4 – Water bodies	Unlikely potential source is limited
		R6 – Groundwater	Unlikely potential source is limited
	P5 – Migration of groundwater	R4 – Water bodies	Unlikely the Site is relatively isolated
		R6 – Groundwater	Unlikely potential source is limited
	P6 – Contact with ecological receptors	R5 – Ecology	Unlikely, potential source is limited

Notes: Risk ranking assessed as low and acceptable are shaded in green
Risk ranking assessed to be more than low shaded in yellow.

The potential area of environmental concern (AEC) identified, that are associated with historical Site usage, are considered to be a low probability with respect to Site contamination. The AEC including disturbance during farming activities or the spillage of cooling oils containing PCBs at the neighbouring substation.

7.0 SITE ASSESSMENT

To evaluate for the presence of contamination, in particular the presence and quality of fill material, at the Site the following scope of work was undertaken:

- A walkover Site inspection with observations for potential Asbestos Containing Material (ACM);
- The excavation of twelve shallow test pits around the Site;
- The collection of surface soil samples from the test pits; and
- The analysis of the soil samples for common contaminants including the contaminants of potential concern (CoPC).

The rationale for environmental sampling locations was based on the probability that surface soils would unlikely be impacted from prior activities on the Site.

Randomly distributed test pit sampling was used to evaluate for impacts spread across the Site. Methodical sampling with a density based on the Schedule B2 of the NEPM Guideline on Site Characterisation (2011) was not considered necessary for this preliminary Site investigation.

7.1 Site Inspection

The Site inspection was conducted on 3 April 2023. The Site is cleared and vacant land with three stockpiles of soil material on the land to the north-east one of which extends approximately 5m on to the Site. There are also three stockpiles of mulch along Old Bathurst Road from the removal of the trees from the south-west corner.

Photographs of the Site are included in the following Figures:

- *Figure 7.1 – South-East View*;
- *Figure 7.2 – North-East View*; and
- *Figure 7.3 – South-West View*.

Figure 7.1 – South-East View

Figure 7.2 – North-East View

Figure 7.3 – South-West View

The surface of the property is consistent with the surrounding landscape and is relatively flat, following the natural gradient of the surrounding topography. The only observed areas of exposed surface soils were associated with recent surface excavations for exploration purposes.

The potential for asbestos to be present at the Site based on this inspection is considered to be low and no potential ACM fragments that were observed across the surface of the Site.

7.2 Assessment Method

The sampling plan prepared for this investigation considered the Site history and the Site setting with twelve shallow test pits excavated to evaluate surface soils and stockpiles. Test pit locations were distributed randomly across the Site surface but with a slight bias to the western end around the substation. Soil samples were collected from each test pit targeting the surface material. Each sample location was recorded in the field on a test pit plan and on a chain of custody.

Test pits on the Site were labelled EP1-EP10 with each sample labelled with the test pit number. A duplicate soil sample was collected from test pit EP1 and labelled EPD. Two test pites were also excavated into stockpiled material to the north of the Site which were labelled EPSP1 and EPSP2. The locations of the test pits are presented on *Figure 7.4 – Sample Location Plan*. The subsurface conditions encountered at each location are summarised in *Table 7.1 – Sample Schedule*.

Figure 7.4 – Sample Location Plan

Table 7.1 – Sample Schedule

Location Number	Sample Depth (m)	Location	Description
EP1	0.0 – 0.1	North-West	Brown silt with organic material
EP2	0.0 – 0.1	North-West	Brown silt with organic material
EP3	0.0 – 0.1	West / North	Brown silt with organic material
EP4	0.0 – 0.1	West / Middle	Brown silt with organic material
EP5	0.0 – 0.1	West / South	Brown silt with organic material
EP6	0.0 – 0.1	Middle / North	Brown silt with organic material
EP7	0.0 – 0.1	Middle / South	Brown silt with organic material
EP8	0.0 – 0.1	North-East	Brown silt with organic material
EP9	0.0 – 0.1	East	Brown silt with organic material
EP10	0.0 – 0.1	South-East	Brown silt with organic material
EPSP1	0.0 – 0.1	North-East adjoining land	Brown silt with organic material
EPSP2	0.0 – 0.1	North-East adjoining land	Brown silt with organic material
EPD	0.0 – 0.1	North-West	Brown silt with organic material

Conditions encountered in all the test pits on the Site were consistent with brown silty topsoil over yellow brown silt. *Figure 7.5 – Subsurface Conditions* shows the typical soil profile at the Site.

Figure 7.5 – Subsurface Conditions

Soil samples were collected directly from test pits at the nominated sample depth by hand directly into laboratory prepared sample jars wearing a new pair of disposable gloves to collect each sample.

7.3 Quality Plan

The field quality assurance / quality control (QA/QC) procedures adopted during this assessment included: field decontamination protocols, sample labelling storage and handling methodologies.

Field decontamination involved rinsing of sampling equipment with potable water. All samples were labelled in the field with the sample location recorded. A duplicate sample (sample D) was also collected during this investigation of this Site at sample location EP1.

The analytical laboratory also conducted a QA/QC program. This program included the analysis of one blank sample and one spiked sample with every batch of samples tested; then repeat analysis of approximately 10% of the samples. The results of this laboratory QA/QC program are included within the laboratory reports.

8.0 ASSESSMENT GUIDELINES

The NSW Environment Protection Authority (EPA) has issued a number of guidelines relevant to the concentration of contaminants in soil. These are used in conjunction with the National Environment Protection Council (NEPC) – National Environment Protection (Assessment of Site Contamination) Measure 2013.

The Site Assessment Criteria (SAC) that have been used to evaluate surface soils are based on the National Environment Protection Measure (NEPM) for the Assessment of Site Contamination (NEPM 2013). These criteria are not derived as acceptance criteria for contamination at a site, but as levels above which specific consideration of risk, based on the site use and potential exposure, is required. If a risk is determined present, then remediation and/or management must be undertaken.

The National Environmental Protection Measure (NEPM) provides Health Investigation Levels (HILs) that are concentration levels, which have been tiered (provided in sets based on risk) for various exposure settings pertaining to land uses. The site criteria within the NEPM are based on potential impact to human health and are intentionally conservative.

The HILs have been derived for four (4) generic land use settings. The HILs for the land use type considered in NEPM include:

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

Health Screening Levels (HSLs) for various petroleum hydrocarbon compounds have also been developed. The HSLs also relate to the land use (consistent with the HILs) and are dependent on soil type and depth.

The Site is being redeveloped to be used as a residence. The conservative guidelines used for this proposed land use are the residential criteria (HIL A levels). Consistent with the HILs, HSLs for residential land use (HSL A) with clayey soils have been adopted for the relevant SAC. These criteria are summarised on *Table 8.1 – Soil Assessment Criteria*.

Table 8.1 – Soil Assessment Criteria

Contaminant	Site Assessment Criteria (mg/kg)
Heavy Metals	
Arsenic	100[1]
Cadmium	20[1]
Chromium (VI)	100[1]
Copper	6000[1]
Lead	300[1]
Mercury	40[1]
Nickel	400[1]
Zinc	7400[1]
Total Recoverable Hydrocarbons (TRH)	
Naphthalene	4[2]
TRH C6-C10 (F1)	40[2]
TRH C10-C16 (F2)	230[2]
Monocyclic Aromatic Hydrocarbons	
Benzene	0.6[2]
Toluene	230[2]
Ethylbenzene	NL[2]
Xylene (Total)	95[2]
Polycyclic Aromatic Hydrocarbons (PAH)	
Benzo(a)pyrene (TEQ)	3[3]
Total PAH	300[3]
Polychlorinated Biphenyl (PCB)	
Total PCBs	1
Asbestos	
Bonded Asbestos	0.01%

Notes: NL – Not Limiting
1. HIL A levels sensitive land use.
2. Health screening levels for silty soils over the depth interval 0-1m.
3. Carcinogenic PAHs based on the 8 carcinogenic PAHs.

9.0 DISCUSSION

9.1 Site Conditions

At the locations where sampling was undertaken, surface soils appeared to consist of mostly silts. These sediments are considered to be natural soils at this location. No significant thicknesses of fill material were observed at the Site.

Potential Asbestos Containing Material (ACM) was not observed across the Site surface or within test pits.

9.2 Analytical Results

The results of analysis soil samples are summarised in Table 9.1 and the laboratory reports are included in *Appendix 4*.

The results of the soil analysis indicate concentrations of contaminants below the site assessment criteria (SAC) for sensitive land use including use as a childcare centre.

Table 9.1 – Summary of Results

Sample Number	EP1	EP2	EP3	EP4	EP5	EP6	EP7	EP8	EP9	EP10	EPSP1	EPSP2	EPD	SAC
Heavy Metals														
Arsenic	2.7	2.2	2.7	4.2	2.5	3.5	2.6	2.2	< 2	4.1	4.4	4.3	2.1	100
Cadmium	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	20
Chromium	6.8	< 5	8.3	6.8	5.7	9.3	7.7	6.5	< 5	11	14	12	6.4	100
Copper	< 5	< 5	< 5	< 5	5.6	5.1	6.5	< 5	< 5	< 5	8	14	< 5	6000
Lead	8.5	< 5	11	11	14	14	15	8.2	7.6	15	11	16	7.4	300
Mercury	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	40
Nickel	< 5	< 5	5.4	5.4	< 5	6.6	5.6	5	< 5	< 5	8.8	9.8	< 5	400
Zinc	9.1	< 5	15	12	21	18	23	8.7	6.1	15	25	50	11	7400
Total Recoverable Hydrocarbons (TRH)														
Naphthalene	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	4
TRH F1	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	40
TRH F2	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	230
Monocyclic Aromatic Hydrocarbons														
Benzene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.6
Toluene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	230
Ethylbenzene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NL
Xylene (Total)	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	95
Polycyclic Aromatic Hydrocarbons (PAH)														
Benzo(a)pyrene	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	3
Total PAH	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	300
Polychlorinated Biphenyls														
Total PCBs	< 0.1	-	< 0.1	-	-	-	-	-	-	-	-	-	< 0.1	1
Asbestos														
Asbestos	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01%

Notes: All measurements in mg/kg except asbestos
ND - No asbestos detected at the reporting limit of 0.01% w/w

9.3 Data Quality Review

Data Quality Objectives

The purpose of establishing data quality objectives is to ensure the field investigations and analyses are undertaken in a way that enables the collection and reporting of reliable data on which to base the site assessment.

The data quality objectives (DQOs) for sampling techniques and laboratory analysis of collected samples defines the acceptable level of error required for this investigation. The data quality objectives will be assessed by reference to data quality indicators (DQI) as follows:

Data Representativeness

Data representativeness expresses the degree which sample data accurately and precisely represents a characteristic of a population or an environmental condition. Representativeness was achieved by collecting samples at pre-determined locations across the Site and by taking an adequate number of samples to achieve the intended objectives. Consistent and repeatable sampling techniques and methods were utilised throughout the sampling, as described.

Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at there being sufficient valid data generated during the study. If there is insufficient valid data, as determined by the other data quality indicators, then additional data would be required to be collected.

Completeness also needs to consider the integrity of the samples collected delivered to the laboratory for analysis. The laboratory sample receipt notice summarises the sample integrity on receipt.

Data Comparability

Data comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency for analytical techniques and reporting methods. With respect to soil vapour sampling the same method and laboratory was used to allow for comparison of pre and post demolition samples.

Reporting of results was done in consistent units and nomenclatures, and comparability was achieved by ensuring that precision and accuracy objectives were met.

Precision

Precision measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD) of duplicate samples. The criteria used for the assessment of RPDs is based on guidelines given in AS4482.1 (1997) and laboratory criteria but has been set by ECS for this assessment. If duplicate results are not within the acceptable RPDs, investigation into the cause is initiated. If a cause cannot be determined the validity of the data is questioned.

The proposed acceptable range for Relative Percent Difference (RPD) for duplicate samples have been set as follows:

%RPD Range result >10 times PQL then maximum RPD 50%
result >5 times PQL then maximum RPD 75%
result >2 times PQL then maximum RPD 100%
result <2 times PQL then no limit.

RPD is calculated as the absolute value of the difference between the initial and repeat result divided by the average value expressed as a percentage. The overall success is based on assessment of the data set as a whole and not on individual acceptance or exceedance within the data set.

A summary of the duplicate soil and groundwater samples with the calculated RPDs is presented in the *Table 9.2 - Relative Percent Differences*. These calculations are limited to contaminants that were detected, that is to say above the laboratory Level of Reporting (LOR). In total, twelve primary soil samples were collected with one duplicate sample.

Table 9.2 – Relative Percent Differences

Sample Number	LOR	EP1	EPD	RPD (%)	Comment
Arsenic	2	2.7	2.1	25	Meets criteria
Cadmium	0.4	< 0.4	< 0.4	0	Meets criteria
Chromium	5	6.8	6.4	6	Meets criteria
Copper	5	< 5	< 5	0	Meets criteria
Lead	5	8.5	7.4	14	Meets criteria
Mercury	0.1	< 0.1	< 0.1	0	Meets criteria
Nickel	5	< 5	< 5	0	Meets criteria
Zinc	5	9.1	11	19	Meets criteria
All other CoPC below the LOR					

In general, the analysis of duplicate samples showed correlation with consistent detections/non detections. Where RPDs were able to be calculated all results were below the acceptance criteria. Acceptable results were required for most (70% or better) of the calculated RPDs of duplicate samples.

The analytical laboratory QA/QC program included the analysis of one blank sample and one spiked sample with every batch of samples tested, and the repeat analysis of approximately 10% of the samples. Laboratory Quality Assurance and Quality Control procedures are provided in the Final Certificate of Analysis.

- A copy of chain of custody (COC) forms are provided with the laboratory results. These forms detail the sample logs such as sample identification, matrix, depths, dates of sampling, container type, and analysis requests;
- A sample receipt notice (SRN) is issued upon delivery of samples, and Sample Integrity and Validated Time of Sample Receipt (VTSR) Holding Times are verified;
- Analytical methods are detailed in the Final Certificate of Analysis; and
- NATA accreditation is held for each method and sample matrix type reported, unless otherwise specified, NATA accredited in-house laboratory methods are referenced from NEPC, ASTM, and modified USEPA / APHA documents.

Performance of intra-laboratory spikes and duplicates are specific to each report, details of which are provided in the Final Certificate of Analysis (FCA). Details referring to instrument detection limits, method detection limits (MDL), and estimated quantitative limits (EQL) are also provided in the FCA.

This soil data is considered to meet the DQIs and thus be representative and usable for the purposes of the investigation.

10.0 CONCLUSIONS

The Site currently cleared and vacant with three stockpiles of soil on land to the north-east, as well as three small piles of mulch close to the south boundary along Old Bathurst Road. There are no existing structures on the Site and no evidence of significant development across the Site surface. There have been no other modifications, other than the addition of a gravel driveway with access to Russell Street.

A history review showed the Site has been owned by various individuals although there was no indication of development shown on historical aerial photographs. It is considered that historical activities would have been limited to agricultural (grazing) use. The aerial photographs indicate that historical filling activities have not been undertaken and the Site has remained undeveloped since the earliest photographic record in 1943. Although one stockpile of material on the land to the north does extent onto the Site. This stockpile and an adjoining stockpile were sampled.

There appears to be minimal potential for significant or widespread contamination to be present associated with historical Site activities. To characterise the surface material, ten shallow test pits were excavated across the Site with no significant thicknesses of fill material observed.

The results of the soil analysis indicate concentrations of contaminants below the site assessment criteria for sensitive land use including the samples from the stockpiles on the adjoining land. Concentrations of some heavy metals detected in soil samples are considered to represent natural background levels at the Site.

Selected soil samples from test pits adjacent to the substation facility to the south west were tested for PCBs. PCBs are a common contaminant associated with older substations. The Results of analysis did not detect PCBs.

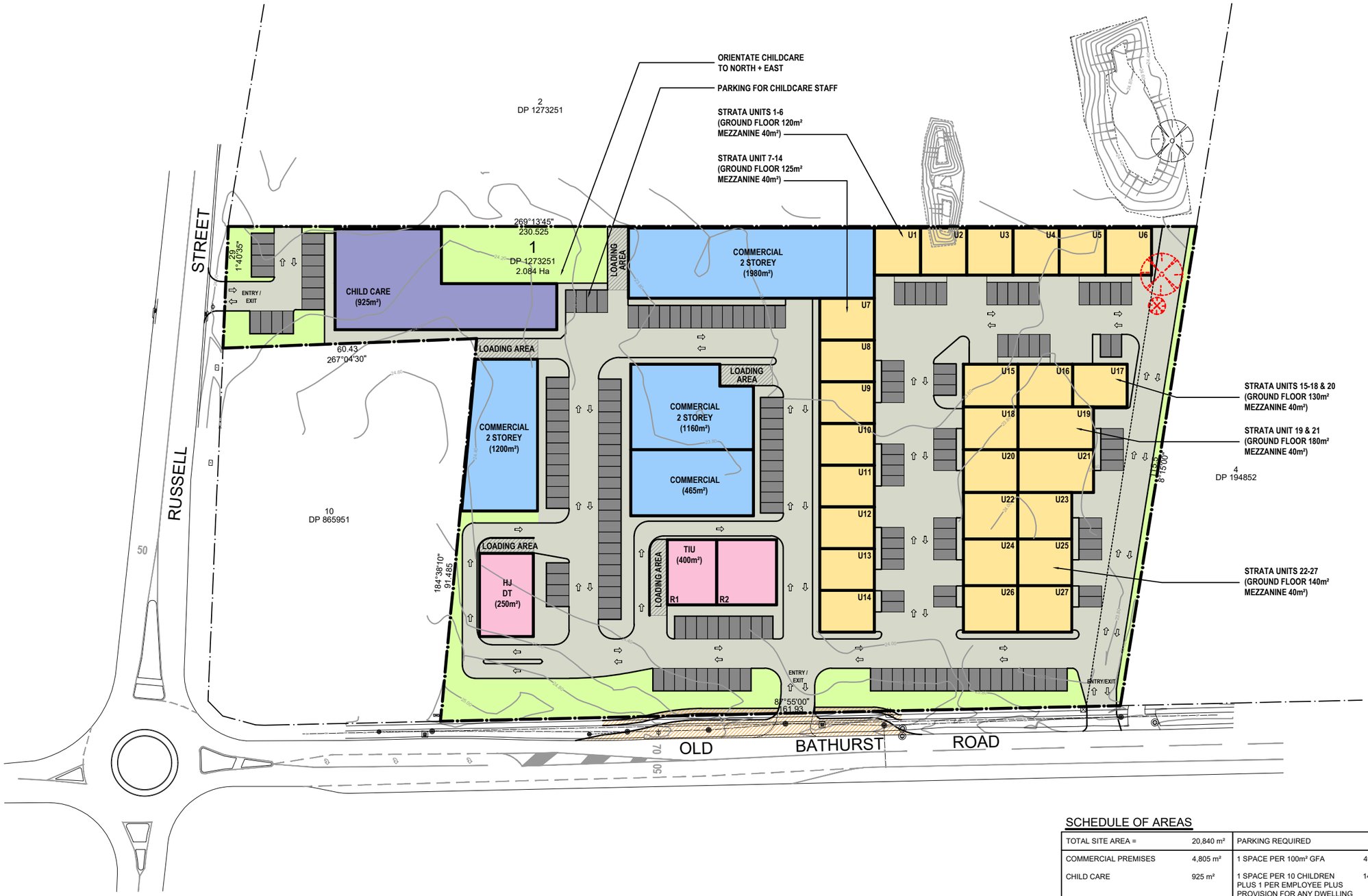
There is a service station on the land to the south of the Site across Old Bathurst Road. This service station is relatively recent (constructed between 1994 and 2005) and not listed as a notified site on the EPA databases. The potential for contamination on the Site from the service station across Old Bathurst Road is considered to be low.

Based on the findings of this investigation, ECS concludes that the Site is considered suitable for proposed redevelopment which will include sensitive land use in the form od a child care facility provided the following recommendation is implemented:

- Excavated soil material generated during development activities should be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines and disposed of to an appropriate permitted facility/site.

APPENDIX 1

H:\MCHP\Glenstone\Emu Plains\Proposed Mixed Use Development\2021 Concepts\Drawings\21-078 SK04 A Option 4.dwg, 30/03/2022 4:29:26 PM, AutoCAD PDF (High Quality Print).pc3



1 - PROPOSED SITE PLAN
SCALE: 1:500 @ A1

0 5 10 25 50
metres

SCHEDULE OF AREAS

TOTAL SITE AREA =	20,840 m²	PARKING REQUIRED		PARKING PROVIDED
COMMERCIAL PREMISES	4,805 m²	1 SPACE PER 100m² GFA	49 SPACES	52 SPACES
CHILD CARE	925 m²	1 SPACE PER 10 CHILDREN PLUS 1 PER EMPLOYEE PLUS PROVISION FOR ANY DWELLING	14 SPACES	19 SPACES
RESTAURANT (HJ DT)	250 m²	1 SPACE PER 6m² OF SEATING AREA PLUS 1 SPACE PER EMPLOYEE	25 SPACES	30 SPACES
RETAIL PREMISES (R1 / R2)	400 m²	1 SPACE PER 30m² GFA	14 SPACES	18 SPACES
INDUSTRIAL PREMISES	4,650 m²	1 SPACE PER 100m² GFA	47 SPACES	59 SPACES
		TOTAL	149 SPACES	178 SPACES
LANDSCAPE	2,126 m²			

DRAFT

No	Date	Amendment	By
A	30.03.2022	ORIGINAL ISSUE	MF2

MCHP ARCHITECTS
ABN 21 096 632 450
SUITE 5, 38-46 ALBANY ST
ST LEONARDS NSW 2065
TELEPHONE: 02 9436 2222
FACSIMILE: 02 9439 1340
www.mchp.com.au

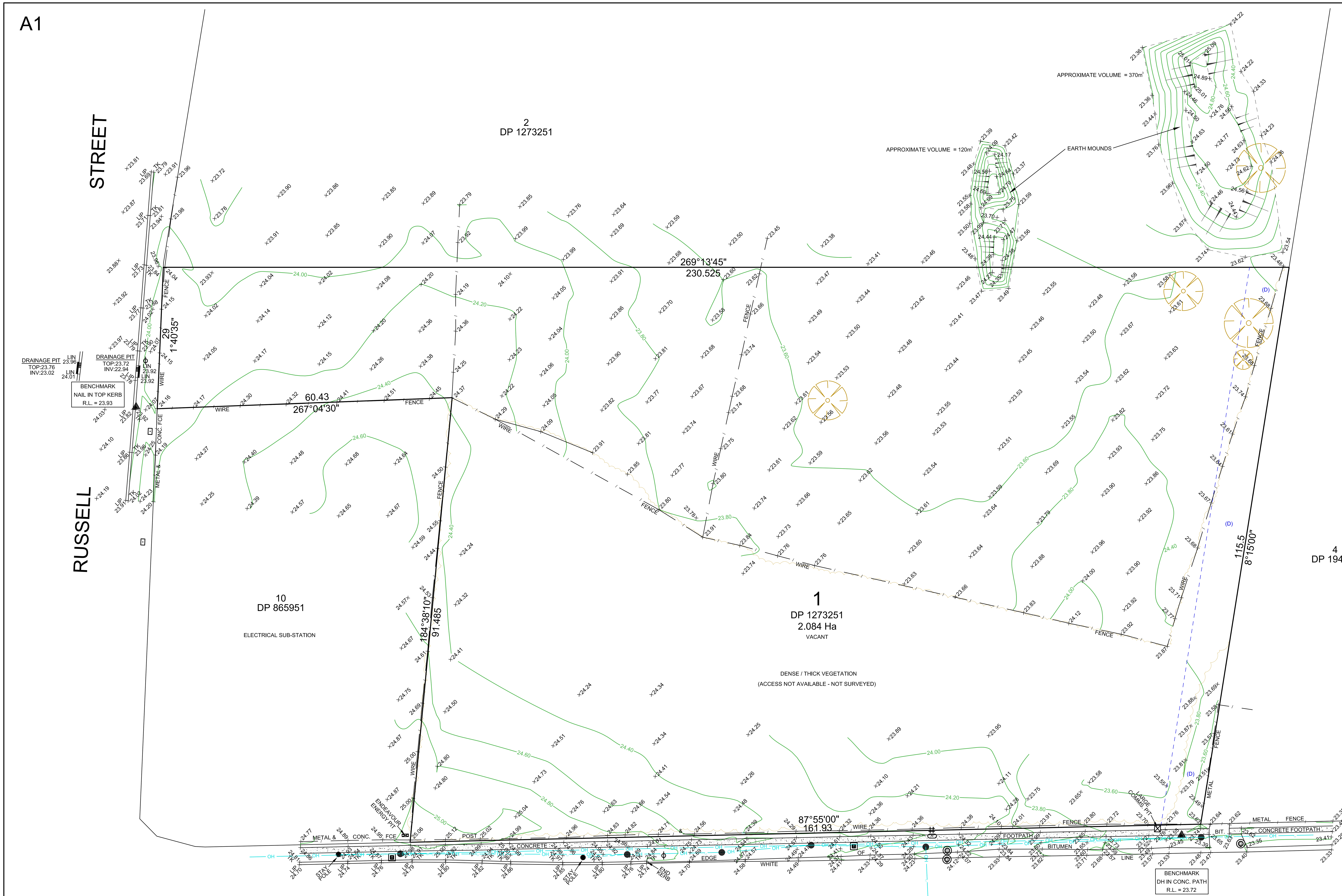
Client: **GLENSTONE**

Project: **PROPOSED MIXED USE DEVELOPMENT**
170 RUSSELL STREET
EMU PLAINS, NSW 2750
LOT 1, DP 1273251

Drawing Title: **PROPOSED SITE PLAN - OPTION 4**

A1 Scale	A3 Scale	Date	Drawn
1:500	HALF A1 SCALE	09.02.2022	MF2

Drawing No: **21-078 SK04**
Revision: **A**



- COMMS. POST
- GAS
- HYDRANT
- COMMS. PIT
- COMMS. PIT
- SIGN POST
- POWER POLE

TK - DENOTES LEVEL AT TOP OF KERB
LIP - DENOTES LEVEL AT LIP OF KERB
LIN - DENOTES LEVEL AT TOP OF LINTEL
(D) - RIGHT OF ACCESS 8 WIDE

NOTES :

1. THIS DETAIL SURVEY IS NOT A 'SURVEY' AS DEFINED BY THE SURVEYING & SPATIAL INFORMATION ACT, 2002.
2. DATUM OF LEVELS : AUSTRALIAN HEIGHT DATUM
3. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY THE NSW LAND REGISTRY AND ARE SUBJECT TO FINAL SURVEY.
4. NO SEARCH MADE OF LOCATION AND NATURE OF TELEPHONE, ELECTRICITY, SEWER, WATER, GAS AND DRAINAGE RECORDS AT THE RELEVANT AUTHORITY. PRIOR TO ANY CONSTRUCTION THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR LOCATION OF SERVICES.
5. THE POSITION OF IMPROVEMENTS IN RELATION TO BOUNDARIES IS DIAGRAMMATIC ONLY.
6. VISIBLE, ACCESSIBLE SERVICES LOCATED ONLY
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10. CONTOURS ARE INDICATIVE ONLY. SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

DIAL BEFORE YOU DIG
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DENOTES OVERHEAD POWER LINES
— OH —— —— OH ——

1:400
10 0 10 20 30 40 50
METRES

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SURVEYOR:	RR
DRAWN:	DG
REDUCTION RATIO:	1:400 @ A1
CONTOUR INTERVAL:	0.2
SHEET 1 OF 1	

ORIGIN OF LEVELS:
SSM 24966
R.L. = 24.660 (SCIMS)
DATUM: AUSTRALIAN HEIGHT DATUM
DATE: 14/12/2021
VERSION No.: A

PLAN OF DETAIL AND LEVELS OVER LOT 1 IN D.P. 1273251, No. 170 RUSSELL STREET, EMU PLAINS.

CLIENT:	GLENSTONE		
L.G.A.:	PENRITH	JOB REF:	21744

CAD FILENAME: X:\2021 - RHCO\21744 - 170 Russell St Emu Plains\ACAD\21744 - 170 Russell St, Emu Plains - Detal Survey.dwg

APPENDIX 2

Date: 11 Apr 2023

Reference: LS042382 EA

Address: 170 Russell Street, Emu Plains, NSW 2750

Aerial Imagery 2023

170 Russell Street, Emu Plains, NSW 2750

Aerial Imagery 2020

170 Russell Street, Emu Plains, NSW 2750

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 11 April 2023
0 30 60 90 120 Meters	© Aerometrex Pty Ltd	GDA 1994 MGA Zone 56	

Aerial Imagery 2015

170 Russell Street, Emu Plains, NSW 2750

Aerial Imagery 2011

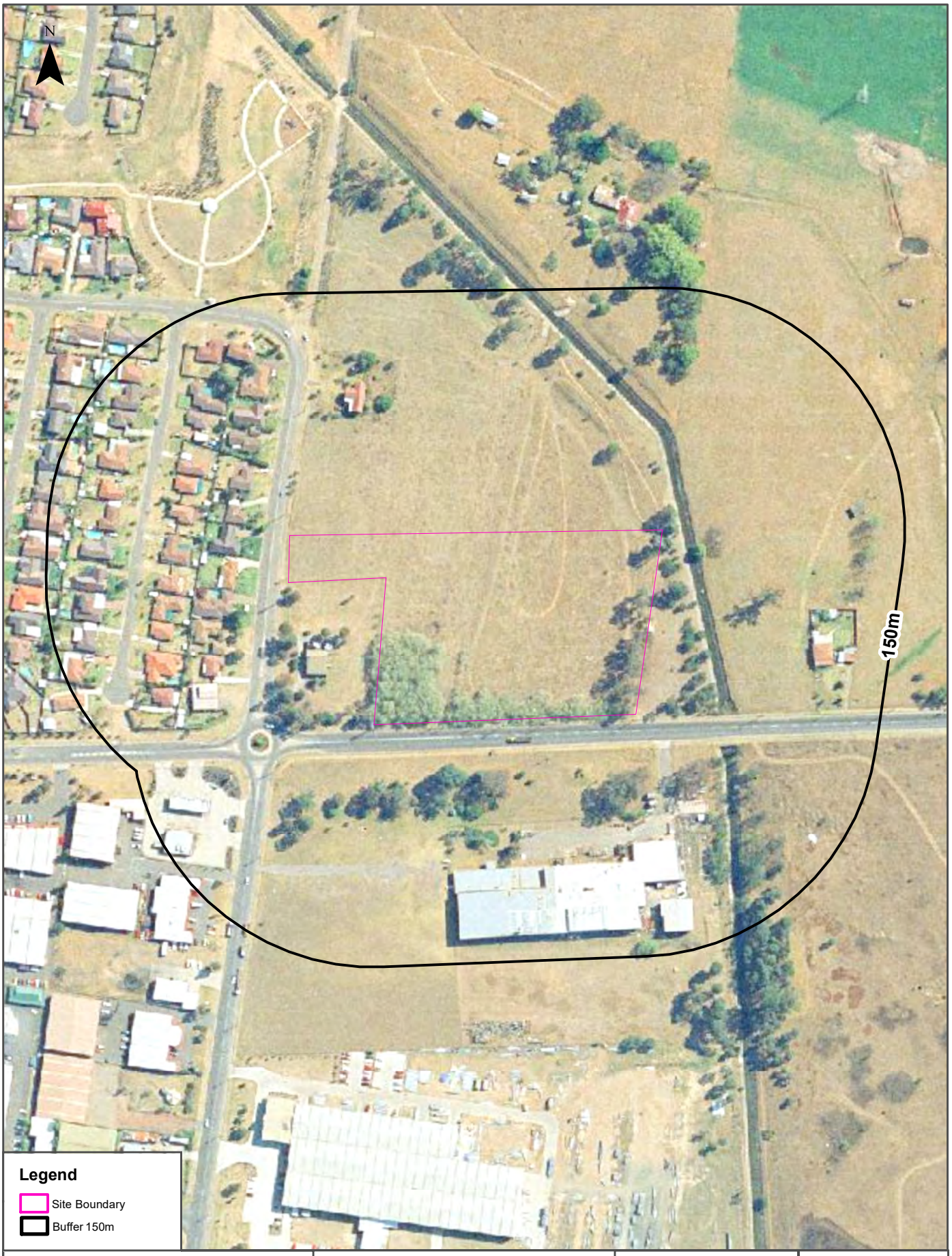
170 Russell Street, Emu Plains, NSW 2750

Aerial Imagery 2005

170 Russell Street, Emu Plains, NSW 2750

Aerial Imagery 1994

170 Russell Street, Emu Plains, NSW 2750



Aerial Imagery 1991

170 Russell Street, Emu Plains, NSW 2750

Aerial Imagery 1986

170 Russell Street, Emu Plains, NSW 2750

Aerial Imagery 1982

170 Russell Street, Emu Plains, NSW 2750

Scale:	Data Sources: Aerial Imagery:	Coordinate System:	Date: 11 April 2023
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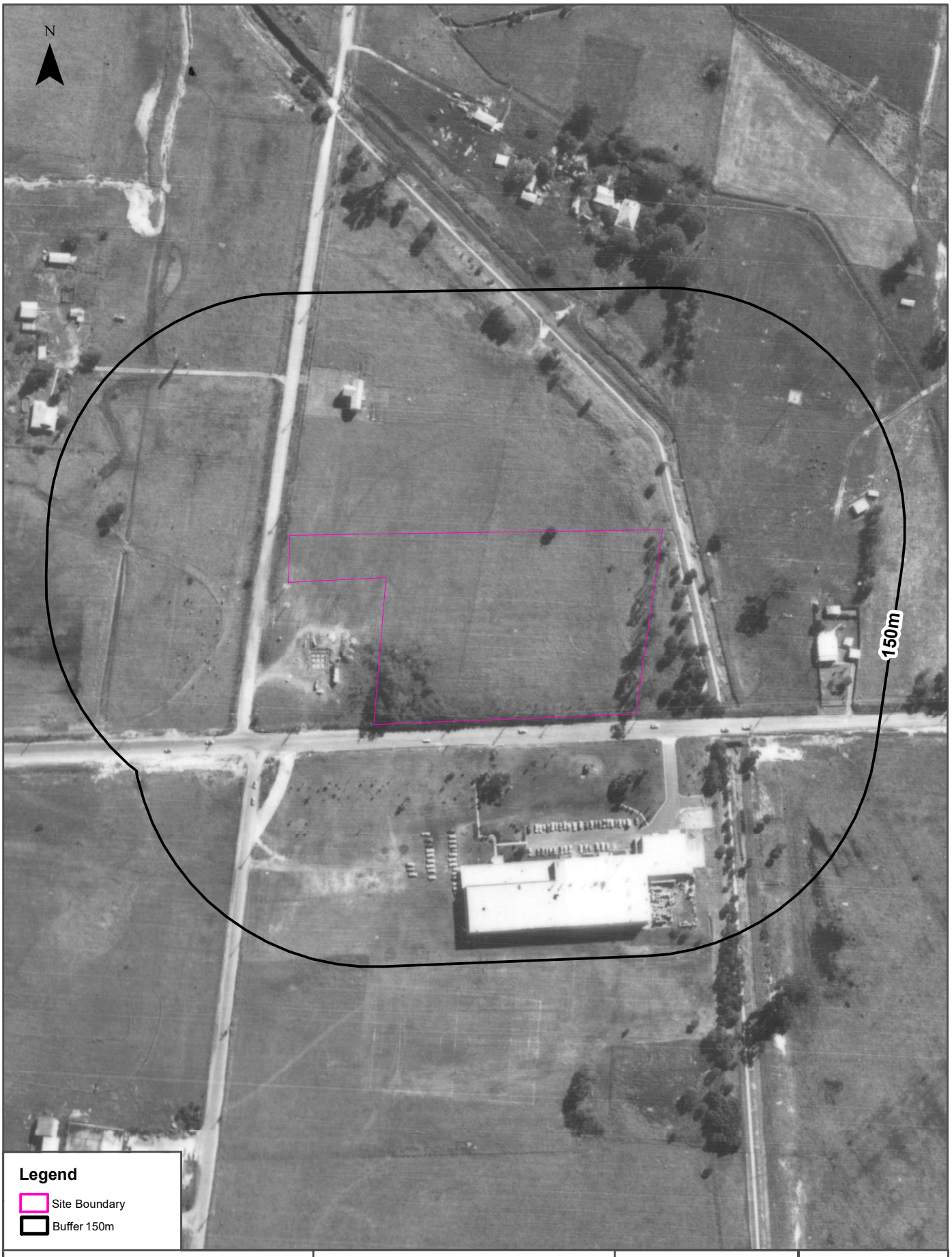
Aerial Imagery 1978

170 Russell Street, Emu Plains, NSW 2750



Aerial Imagery 1970

170 Russell Street, Emu Plains, NSW 2750

Scale:	Data Sources: Aerial Imagery:	Coordinate System:	Date: 11 April 2023
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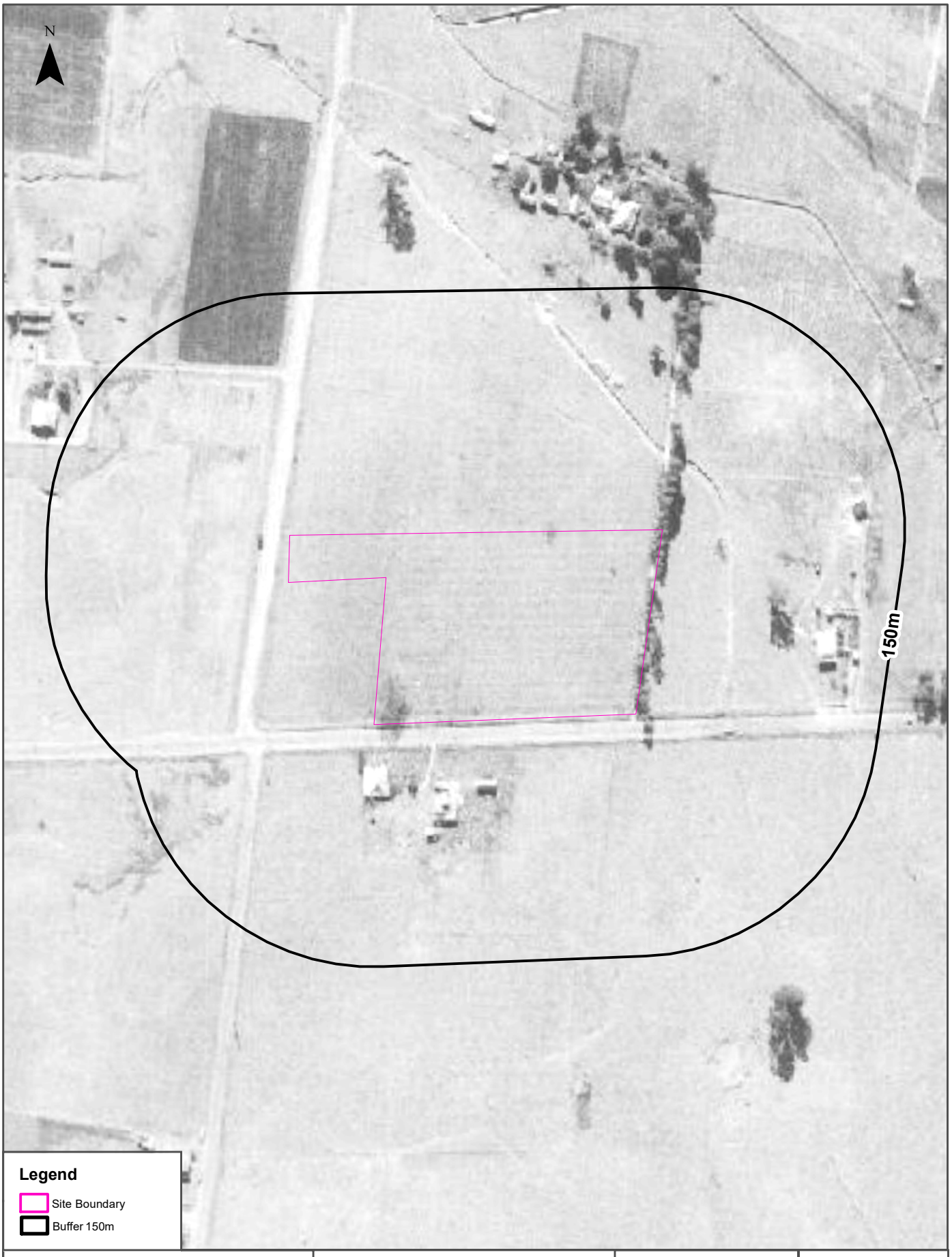
Aerial Imagery 1966

170 Russell Street, Emu Plains, NSW 2750



Aerial Imagery 1961

170 Russell Street, Emu Plains, NSW 2750

Scale:	Data Sources: Aerial Imagery:	Coordinate System:	Date: 11 April 2023
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Aerial Imagery 1955, 1956

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Scale:	Data Sources: Aerial Imagery:	Coordinate System:	Date: 11 April 2023
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Aerial Imagery 1949

170 Russell Street, Emu Plains, NSW 2750

Aerial Imagery 1943

170 Russell Street, Emu Plains, NSW 2750

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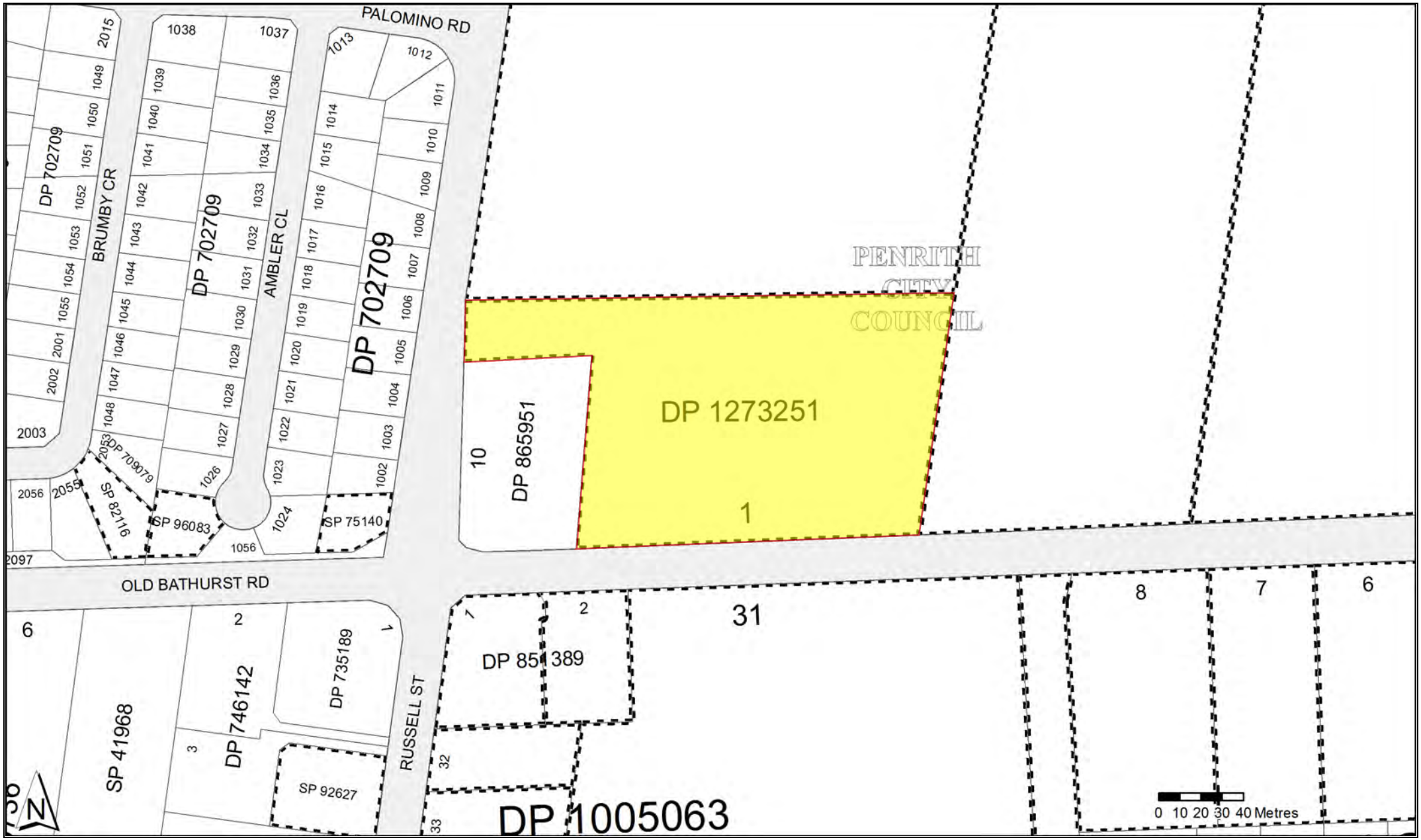
APPENDIX 3

Cadastral Records Enquiry Report : Lot 1 DP 1273251

Ref : LS042382_EA - 170 Russell

Locality : EMU PLAINS
Parish : STRATHDON
LGA : PENRITH
County : COOK



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Req:R419127 /Doc:DP 1273251 P /Rev:28-Sep-2021 /NSW LRS /Prt:17-Apr-2023 09:18 /Seq:1 of 8
© Office of the Registrar-General /Src:InfoTrack /Ref:LS042382_EA - 170 Russell

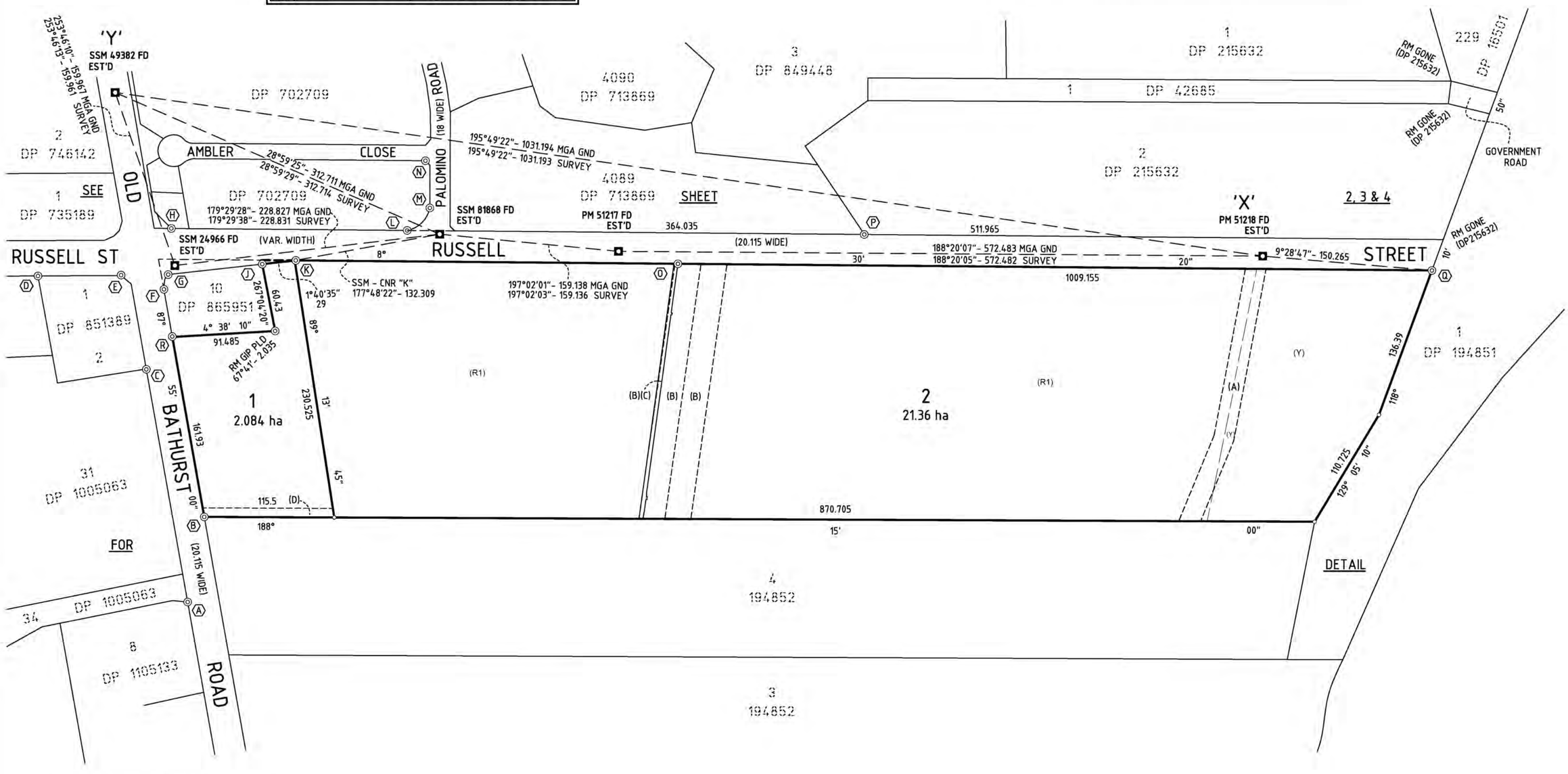
TABLE OF REFERENCE MARKS				
No.	REFERENCE		TYPE	ORIGIN
J	87°04'30"	0.455	RM GIP FD	(DP 574650)
K	116°33'	3.655	RM DH&W	PLACED
L	250°30'30"	15.66	RM DH&W FD RM DH&W GONE	(DP 702709) (DP 702709)
M	188°04'30"	3.385 &14.575	RM DH&W'S FD	(DP 702709)
N	188°31'30"	18.56	RM DH&W FD RM DH&W GONE	(DP 702709) (DP 702709)
O	106°35'20"	0.9 ME	RM GIP FD (DP635714)	BY ME
P	278°30'20"	0.455	RM GI SPIKE FD	(DP 635376)
Q	274°03'30"	1.525	RM DH&W	PLD IN ROCK
R	4°38'10"	16.61	RM DH&W FD	(DP 574650)

COORDINATES SCHEDULE						
MARK	M.G.A. CO-ORDINATES		CLASS	PU	METHOD	STATE
	EASTING	NORTHING				
SSM 24966	282800.897	6263947.009	B	-	SCIMS	FOUND
SSM 49382	282647.279	6263902.290	B	-	SCIMS	FOUND
PM 51217	282845.489	6264328.051	B	-	SCIMS	FOUND
PM 51218	282928.494	6264894.585	B	-	SCIMS	FOUND
SSM 81868	282798.864	6264175.867	B	-	SCIMS	FOUND

DATE OF SCIMS COORDINATES : 07/05/2021 MGA ZONE:56 MGA DATUM: GDA2020
COMBINED SCALE FACTOR : 1.000174

TABLE OF REFERENCE MARKS				
No.	REFERENCE		TYPE	ORIGIN
A	96°15'	23.86	RM DH&W FD	(DP 1105133)
B	10°22'10"	0.415	RM GI SPIKE FD	(DP 1005063)
C	180°52'	3.555	RM DH&W FD	(DP 1005063)
D	87°50'	4.04	RM DH&W FD	(DP 1005063)
E	184°29'	6.89	RM DH&W FD	(DP 851389)
F	33°05'35"	1.31	RM DH&W FD	(DP 865951)
G	28°46'35"	2.52	RM DH&W FD	(DP 865951)
H	314°42'25"	10.68 ME	RM DH&W FD (DP 1091351)	BY ME

M.G.A.2020
SCIMS



(R1) RESTRICTION(S) ON THE USE OF LAND (DP574650)
(Y) RESERVATIONS AND CONDITIONS - SEE CROWN GRANT(S)

(A) EASEMENT FOR TRANSMISSION LINE 18 WIDE (DP 452349) & (R547088)
(B) EASEMENT FOR TRANSMISSION LINE 45.72 WIDE (H546863)
(C) EASEMENT FOR WATER SUPPLY WORKS 3.5 WIDE & VARIABLE (DP 635714) & (W978326)
(D) RIGHT OF ACCESS 8 WIDE

SURVEYOR Name : GEORGE STOJANOVSKI Date : 18/05/2021 Reference : 18326	PLAN OF SUBDIVISION OF LOTS 1 & 2 DP 517958 AND LOTS 3 & 4 IN DP 574650	L.G.A : PENRITH Locality : EMU PLAINS Reduction Ratio : 1 : 2500 Lengths are in metres.	Registered 28/09/2021	DP1273251

(D) RIGHT OF ACCESS 8 WIDE
(R) ROAD WIDENING 54.28m² FORMERLY LOT 3 IN DP 574650
M.P.W 4B,1P MESH POST & WIRE FCE ABT 40 YRS
I.O.P.W IRREGULAR OLD POST & WIRE FENCE
R.I.O.P.W REMAINS OF IRREGULAR OLD POST & WIRE FENCE

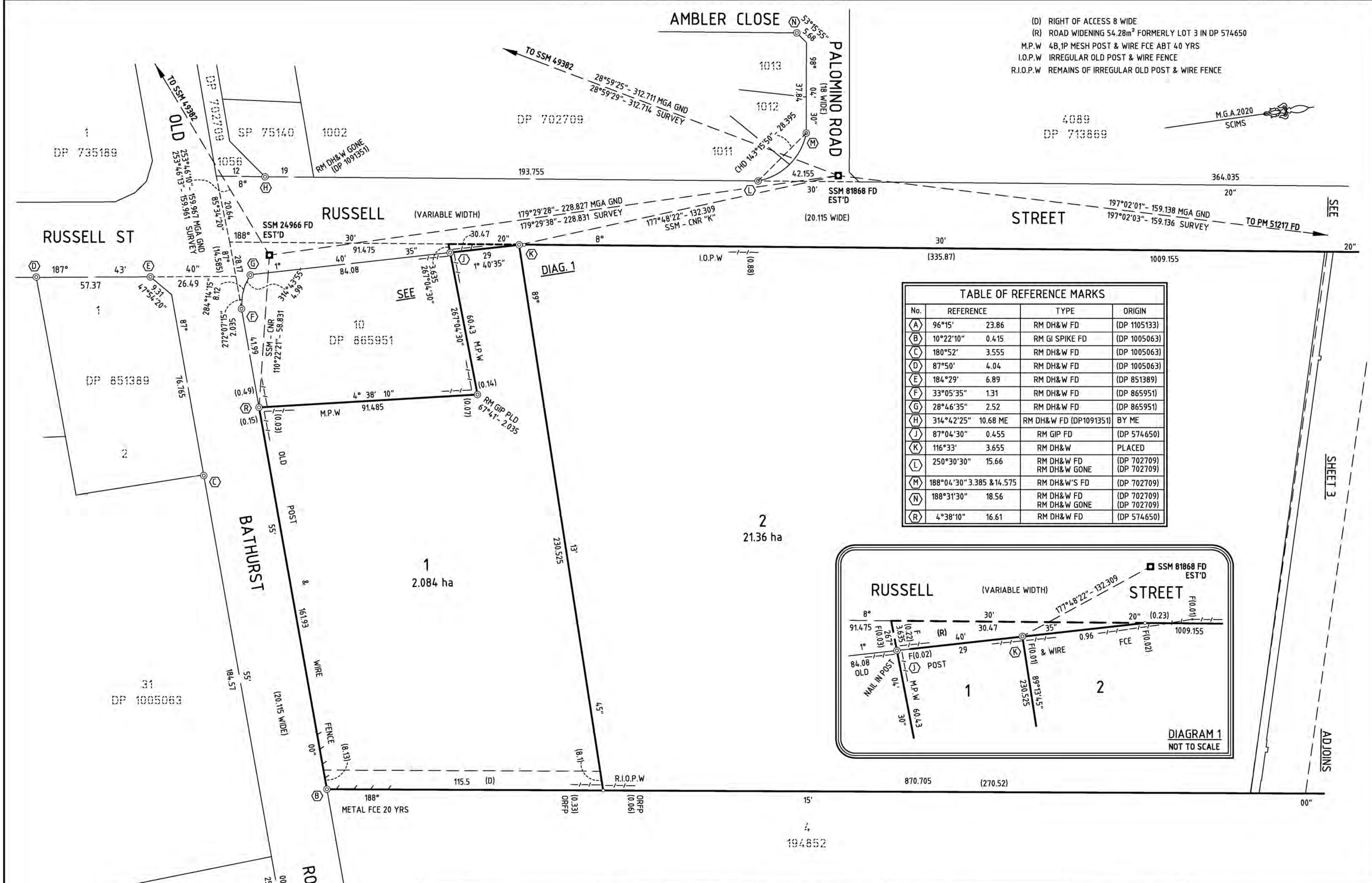


TABLE OF REFERENCE MARKS

No.	REFERENCE		TYPE	ORIGIN
A	96°15'	23.86	RM DH&W FD	(DP 1105133)
B	10°22'10"	0.415	RM GI SPIKE FD	(DP 1005063)
C	180°52'	3.555	RM DH&W FD	(DP 1005063)
D	87°50'	4.04	RM DH&W FD	(DP 1005063)
E	184°29'	6.89	RM DH&W FD	(DP 851389)
F	33°05'35"	1.31	RM DH&W FD	(DP 865951)
G	28°46'35"	2.52	RM DH&W FD	(DP 865951)
H	314°42'25"	10.68 ME	RM DH&W FD (DP1091351)	BY ME
J	87°04'30"	0.455	RM GIP FD	(DP 574650)
K	116°33'	3.655	RM DH&W	PLACED
L	250°30'30"	15.66	RM DH&W FD RM DH&W GONE	(DP 702709) (DP 702709)
M	188°04'30"	3.385 & 14.575	RM DH&W'S FD	(DP 702709)
N	188°31'30"	18.56	RM DH&W FD RM DH&W GONE	(DP 702709) (DP 702709)
R	4°38'10"	16.61	RM DH&W FD	(DP 574650)

SURVEYOR
Name : GEORGE STOJANOVSKI
Date : 18/05/2021
Reference : 18326

PLAN OF SUBDIVISION OF LOTS 1 & 2 DP 517958 AND LOTS 3 & 4 IN DP 574650

L.G.A : PENRITH
Locality : EMU PLAINS
Reduction Ratio : 1 : 2500
Lengths are in metres.

Registered 28/09/2021

DP1273251

Req:R419127 /Doc:DP 1273251 P /Rev:28-Sep-2021 /NSW LRS /Prt:17-Apr-2023 09:18 /Seq:2 of 8
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Req:R419127 /Doc:DP 1273251 P /Rev:28-Sep-2021 /NSW LRS /Prt:17-Apr-2023 09:18 /Seq:3 of 8
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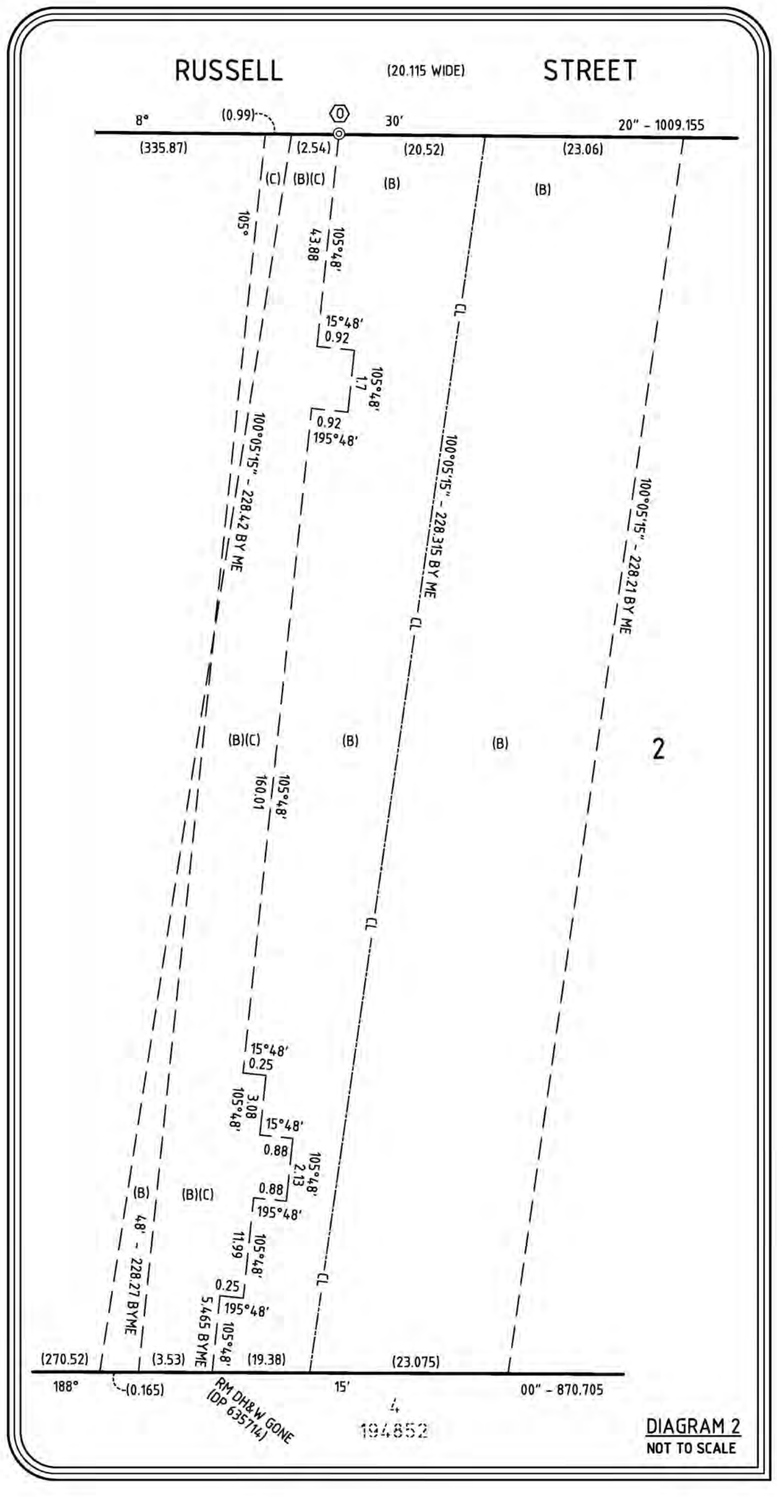
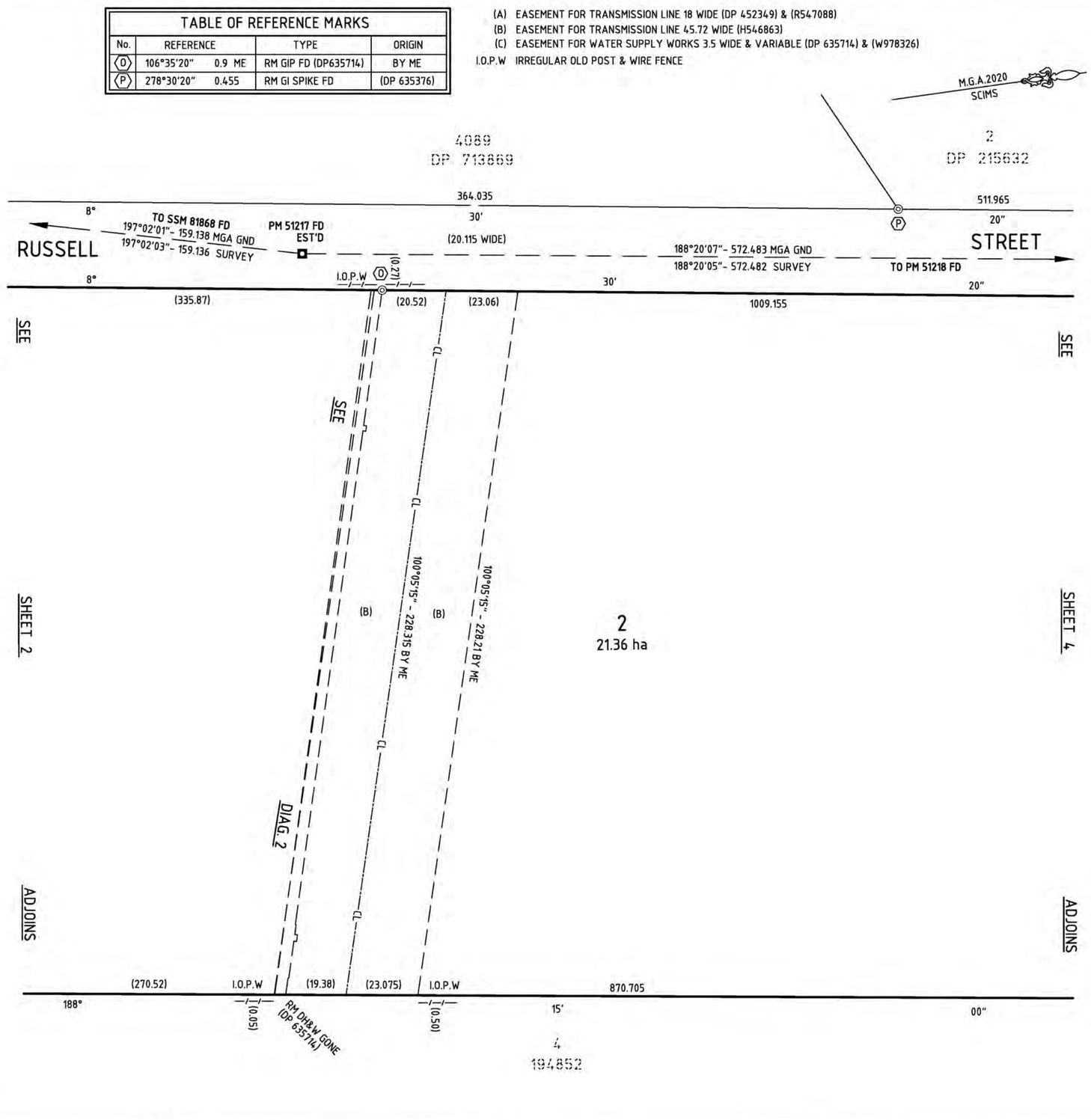
TABLE OF REFERENCE MARKS			
No.	REFERENCE	TYPE	ORIGIN
(O)	106°35'20" 0.9 ME	RM GIP FD (DP635714)	BY ME
(P)	278°30'20" 0.455	RM GI SPIKE FD	(DP 635376)

(A) EASEMENT FOR TRANSMISSION LINE 18 WIDE (DP 452349) & (R547088)
(B) EASEMENT FOR TRANSMISSION LINE 45.72 WIDE (H546863)
(C) EASEMENT FOR WATER SUPPLY WORKS 3.5 WIDE & VARIABLE (DP 635714) & (W978326)
I.O.P.W IRREGULAR OLD POST & WIRE FENCE





SURVEYOR Name : GEORGE STOJANOVSKI Date : 18/05/2021 Reference : 18326	PLAN OF SUBDIVISION OF LOTS 1 & 2 DP 517958 AND LOTS 3 & 4 IN DP 574650	L.G.A : PENRITH Locality : EMU PLAINS Reduction Ratio : 1 : 2500 Lengths are in metres.	Registered 28/09/2021	DP1273251

Req:R419127 /Doc:DP 1273251 P /Rev:28-Sep-2021 /NSW LRS /Prt:17-Apr-2023 09:18 /Seq:4 of 8
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TABLE OF REFERENCE MARKS				
No.	REFERENCE		TYPE	ORIGIN
P	278°30'20"	0.455	RM GI SPIKE FD	(DP 635376)
Q	274°03'30"	1.525	RM DH&W	PLD IN ROCK

(A) EASEMENT FOR TRANSMISSION LINE 18 WIDE (DP 452349) & (R547088)
I.O.P.W IRREGULAR OLD POST & WIRE FENCE

M.G.A.2020
SCIMS

TO SSM 49382 FD
195°49'22"- 1031.194 MGA GND
195°49'22"- 1031.193 SURVEY

4089
DP 713869

364.035
8°

P

RUSSELL STREET

TO PM 51217 FD
188°20'07"- 572.483 MGA GND
188°20'05"- 572.482 SURVEY

(20.115 WIDE)

8°
(50)
I.O.P.W
30'
1009.155

2
DP 215632

511.965

STAR PICKET
(0.06)
CENT. ORFP ON BDY
(12.84)
(132.5)
20"
RM GONE (DP 215632)

PM 51218 FD EST'D
(0.16)
STEEL POST
I.O.P.W
(18.285)
9°28'47"- 150.265
30'
20"
21.365
50"
Q
PEG GONE (DP 83267)
EASE. (147.345)
CALC. (DP517958 & DP452349)

(11.95)
(10.5)
(0.34)
FENCE POST
ORFP
(0.49)

SEE SHEET 4 ADJOINS

2
21.36 ha

108°40'20"
150.05
155.125
108°40'20"
(A)
120°24'10"
81.365
77.075 ME
120°24'10"
136.39
10'
118°
(3.9)
PEG GONE (DP 83267)
(0.92)
STAR PICKET
(3)
ORFP
(0.74)
10"
1
DP 194851
110.725
05'

SEE DIAG. 3
870.705
188°
15'
(18.93)
EASE (101.22) ME
00"
(80)
I.O.P.W
(14)
I.O.P.W
(3)
(0.50)
STEEL POST

SEE DIAG. 4
STEEL POST
2.175
129°
PEG GONE (DP 83267)

4
194852

DIAGRAM 3
NOT TO SCALE

2
120°24'10"
81.365
(A)
77.075 BY ME
120°24'10"
95°14'10"
1.10 BY ME
870.705
188°
15'
(18.93)
EASE (101.22) ME
00"
4
194852

DIAGRAM 4
NOT TO SCALE

2
110.725
10"
05'
870.705
188° 15' 30"
(0.91)
(2.01)
129°
2.175
STEEL POST
(0.25)
PEG GONE (DP 83267)
1
DP 194851
4
194852

SURVEYOR Name : GEORGE STOJANOVSKI Date : 18/05/2021 Reference : 18326	PLAN OF SUBDIVISION OF LOTS 1 & 2 DP 517958 AND LOTS 3 & 4 IN DP 574650	L.G.A : PENRITH Locality : EMU PLAINS Reduction Ratio : 1 : 2500 Lengths are in metres.	Registered 28/09/2021	DP1273251

Req:R419127 /Doc:DP 1273251 P /Rev:28-Sep-2021 /NSW LRS /Prt:17-Apr-2
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PLAN FORM 6 (2020)	**DEPOSITED PLAN ADMINISTRATION SHEET**	Sheet 1 of 4 sheet(s)

Office Use Only

Registered: 28/09/2021

Title System: TORRENS

Office Use Only

DP1273251

PLAN OF SUBDIVISION OF LOTS 1 & 2 IN DP 517958 AND LOTS 3 & 4 IN DP 574650

LGA: PENRITH
Locality: EMU PLAINS
Parish: STRATHDON
County: ~~CUMBERLAND~~ COOK

Survey Certificate

I, GEORGE STOJANOVSKI
of NORTH WESTERN SURVEYS PTY. LIMITED
a surveyor registered under the *Surveying and Spatial Information Act, 2002*, certify that:

*(a) The land shown in the plan was surveyed in accordance with the *Surveying and Spatial Information Regulation 2017, is accurate* and the survey was completed on: 18/05/2021, or

~~*(b) The part of the land shown in the plan(*being/*excluding** .....) was surveyed in accordance with the *Surveying and Spatial Information Regulation 2017*, the part surveyed is accurate and the survey was completed on ..... the part not surveyed was compiled in accordance with that Regulation, or~~

~~*(c) The land shown on this plan was compiled in accordance with the *Surveying and Spatial Information Regulation 2017*.~~

Datum Line: X - Y

Type: *Urban/~~*Rural~~

The terrain is ~~*Level-Undulating / *Steep-Mountainous.~~

Signature: ..... Dated: 28-05-2021

Surveyor Identification No: 3441

Surveyor registered under the *Surveying and Spatial Information Act 2002*

* Strike out inappropriate words.

**Specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey.

Crown Lands NSW/Western Lands Office Approval

I, ... (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given

Signature: .....

Date: .....

File Number: .....

Office: .....

Subdivision Certificate

I, Gavin Cherry, Authorised Person, certify that the provisions of s.6.15 of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to the proposed subdivision, new road or reserve set out herein.

Signature: Electronic signature affixed by me, or at my direction, on Thursday, 17 June 2021

Accreditation number: N/A

Consent Authority: Penrith City Council

Date of endorsement: Thursday, 17 June 2021

Subdivision Certificate number: SC21/0022

File Number: DA20/0158

* Strike through if inapplicable.

Plans used in the preparation of survey/~~compilation~~

DP 517958	DP 865951
DP 574650	DP 635714
DP 215632	DP 452349
DP 635376	DP 83267
DP 702709	DP 194852
DP 1091351	DP 42685
DP 1105133	DP 534504
DP 1005063	DP 194851
DP 851389	

Statements of intention to dedicate public roads, create public reserves and drainage reserves, acquire/resume land.

IT IS INTENDED TO DEDICATE
ROAD WIDENING (R)
TO THE PUBLIC AS PUBLIC ROAD

Surveyor's Reference: 18326

Signatures, Seals and Section 88B Statements should appear on PLAN FORM 6A

Req:R419127 /Doc:DP 1273251 P /Rev:28-Sep-2021 /NSW LRS /Prt:17-Apr-2
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PLAN FORM 6A (2019) **DEPOSITED PLAN ADMINISTRATION SHEET** Sheet 2 of 4 sheet(s)

Office Use Only

Registered : 28/09/2021

Office Use Only

DP1273251

PLAN OF SUBDIVISION OF LOTS 1 & 2
IN DP 517958 AND
LOTS 3 & 4 IN DP 574650

Subdivision Certificate No : SC21/0022
Date of Endorsement : 17/06/2021

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2017*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

PURSUANT TO SECTION 88B OF THE
CONVEYANCING ACT 1919, AS AMENDED,

IT IS INTENDED TO CREATE :

1. RIGHT OF ACCESS 8 WIDE (D)
2. RESTRICTION ON THE USE OF LAND (ARCHAEOLOGICAL ASSESSMENT)
3. RESTRICTION ON THE USE OF LAND (RESIDUE LOT)
4. POSITIVE COVENANT (BUSHFIRE)

TABLE OF STREET ADDRESSES

LOT	STREET No.	STREET NAME	STREET TYPE	LOCALITY
1	N/A	RUSSELL	STREET	EMU PLAINS
2	N/A	RUSSELL	STREET	EMU PLAINS

If space is insufficient use additional annexure sheet

Surveyor's Reference: 18326

Req:R419127 /Doc:DP 1273251 P /Rev:28-Sep-2021 /NSW LRS /Prt:17-Apr-2
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PLAN FORM 6A (2019) **DEPOSITED PLAN ADMINISTRATION SHEET** Sheet 3 of 4 sheet(s)

Office Use Only

Registered : 28/09/2021

Office Use Only

DP1273251

PLAN OF SUBDIVISION OF LOTS 1 & 2
IN DP 517958 AND
LOTS 3 & 4 IN DP 574650

Subdivision Certificate No : SC21/0022
Date of Endorsement : 17/06/2021

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2017*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

SIGNED IN MY PRESENCE BY BERNARD JEAN-YVES LE BOURSICOT
WHO IS PERSONALLY KNOWN TO ME

.....
SIGNATURE OF WITNESS

Ken KANJIAN
NAME OF WITNESS (BLOCK LETTERS)

Lvl 5 64 Castlereagh St Sydney
ADDRESS OF WITNESS

.....
BERNARD JEAN-YVES LE BOURSICOT

SIGNED IN MY PRESENCE BY LINNA LE BOURSICOT
WHO IS PERSONALLY KNOWN TO ME

.....
SIGNATURE OF WITNESS

Ken KANJIAN
NAME OF WITNESS (BLOCK LETTERS)

Lvl 5 64 Castlereagh St Sydney
ADDRESS OF WITNESS

.....
LINNA LE BOURSICOT

If space is insufficient use additional annexure sheet

Surveyor's Reference: 18326

Req:R419127 /Doc:DP 1273251 P /Rev:28-Sep-2021 /NSW LRS /Prt:17-Apr-2
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PLAN FORM 6A (2019) **DEPOSITED PLAN ADMINISTRATION SHEET** Sheet 4 of 4 sheet(s)

Office Use Only

Registered : 28/09/2021

Office Use Only

DP1273251

PLAN OF SUBDIVISION OF LOTS 1 & 2
IN DP 517958 AND
LOTS 3 & 4 IN DP 574650

Subdivision Certificate No : SC21/0022

Date of Endorsement : 17/06/2021

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2017*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

MORTGAGEE (AC498427)

Mortgagee under Mortgage No. AC 498427
Signed at CHATSWOOD NSW **this** 30th **day of** June
20 21 **for National Australia Bank Limited ABN 12 004 044 937**
by DANIEL KIM **its duly**
appointed Attorney under Power of Attorney No. 39 Book 4512
Attorney Signature, Level 2 **Attorney**
Witness Signature
Witness Name TITUS WANG
Witness Address 799 pacific HWY. CHATSWOOD NSW 2067

If space is insufficient use additional annexure sheet

Surveyor's Reference: 18326

Req:R419131 /Doc:CT 10271-250 CT /Rev:11-Feb-2011 /NSW LRS /Pgs:ALL /Prt:17-Apr-2023 09:19 /Seq:1 of 2
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10271250

[redacted]RTIFICATE OF TITLE

[redacted]OPERTY ACT, 1900, as amended.

NEW SOUTH WALES

Vol. 10271 Fol. 250

CANCELLED [A]

Edition issued 21-3-1966.

Appln. No. 33267

Prior Title Vol. 5050 Fol. 171

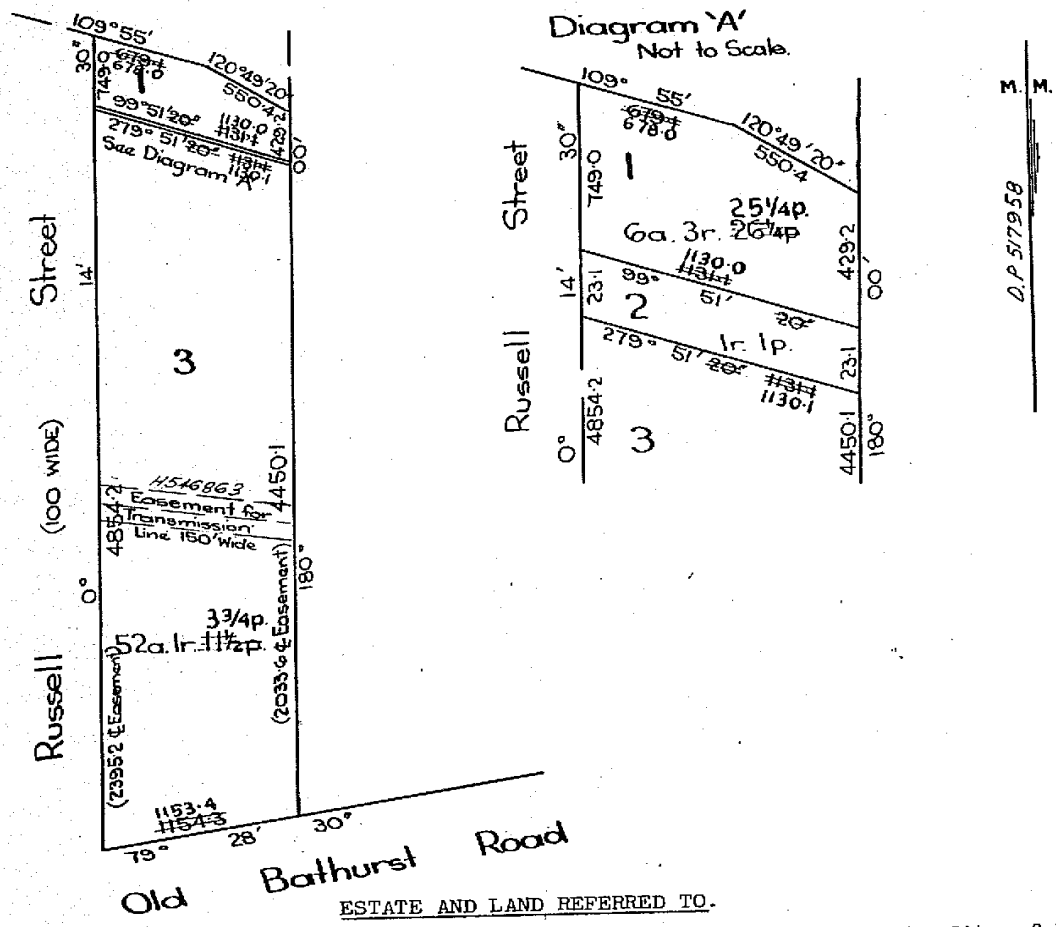
(Page 1) Vol. 10271 Fol. 250

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness J. Charles

Registrar General.

PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO.

Estate in Fee Simple in Lot 3 in Deposited Plan 517958 at Emu Plains in the City of Penrith Parish of Strathdon and County of Cook being part of Portion 149 granted to Charles York on 23-9-1833.

FIRST SCHEDULE (Continued overleaf)

~~HARRY ALBERT DOBSON, the Younger, of Emu Plains, Farmer, ANNIE MARGARET DOBSON, JESSIE LOUISE DOBSON and FLORENCE MARION DOBSON, all of Emu Plains, Spinsters, as Joint Tenants.~~

Registrar General.

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. ~~Mortgage No. G832344 to Albert Edward Flint of Penrith Retired. Entered 12-11-1957.~~ Discharged K397114
3. Easement for Transmission Line created by Notice of Resumption No. H546863 affecting the part of the land above described shown in the plan hereon as Easement for Transmission Line 150 feet wide.

Registrar General.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE

PT 1 ,17 V.C.N. Blight, Government Printer

K397114 -5 -6

L160474

ET6111X4

DP574650 prog prep (whole ex rd)

DP574650 @ 21/2/75

Vol. 10271 Fol 250

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
Blacktown & Districts Plumbing & Draining Co. Pty. Limited	Transfer	K397115	1-7-1966	15-8-1966	Jawatson
The name of the registered proprietor is now Carthona Properties Pty. Limited	Change of Name	DP&Po 514650		21-2-1975	Jawatson

This deed is cancelled as to the whole ex road

New Certificates of Title have issued on 19-3-1975.

for lots in Deposited Plan No. 574650. as follows:-

Lots 1, 3, 4 Vol. 12726 Fol 182 to 184 respectively.

Jawatson

REGISTRAR GENERAL

The residue of land in this folio comprises road

Entered 19th March 1975

Jawatson

REGISTRAR GENERAL

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		
Mortgage	K397116	1-7-1966	To Albert Edward Flint of Penrith Widow	15-8-1966	Jawatson	DISCHARGED	L160474	Jawatson
			THE INTEREST OF THE COUNCIL OF THE CITY OF PENRITH IN THE ADDITION TO EXISTING ROAD SHOWN ON D.P. 574650.	21.2.1975	Jawatson			
	P164501		Interests created pursuant to Section 88B Conveyancing Act, 1919, by the registration of Deposited Plan 574650	21.2.1975	Jawatson			

(Page 2 of 2 pages)

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

Req:R419131 /Doc:CT 10271-250 CT /Rev:11-Feb-2011 /NSW LRS /Pgs:ALL /Prt:17-Apr-2023 09:19 /Seq:2 of 2
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Req:R419126 /Doc:CT 12726-184 CT /Rev:18-Jan-2011 /NSW LRS /Pgs:ALL /Prt:17-Apr-2023 09:18 /Seq:1 of 2
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12726184

NEW SOUTH WALES

[redacted]ICATE OF TITLE

[redacted]. PROPERTY ACT, 1900

Vol. 12726 Fol. 184

Appln. No. 33267

Prior Title Vol.10271 Fol.250

Edition issued 10-3-1975.

12726 184 Vol. ..... Fol. .....

(Page 1)

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

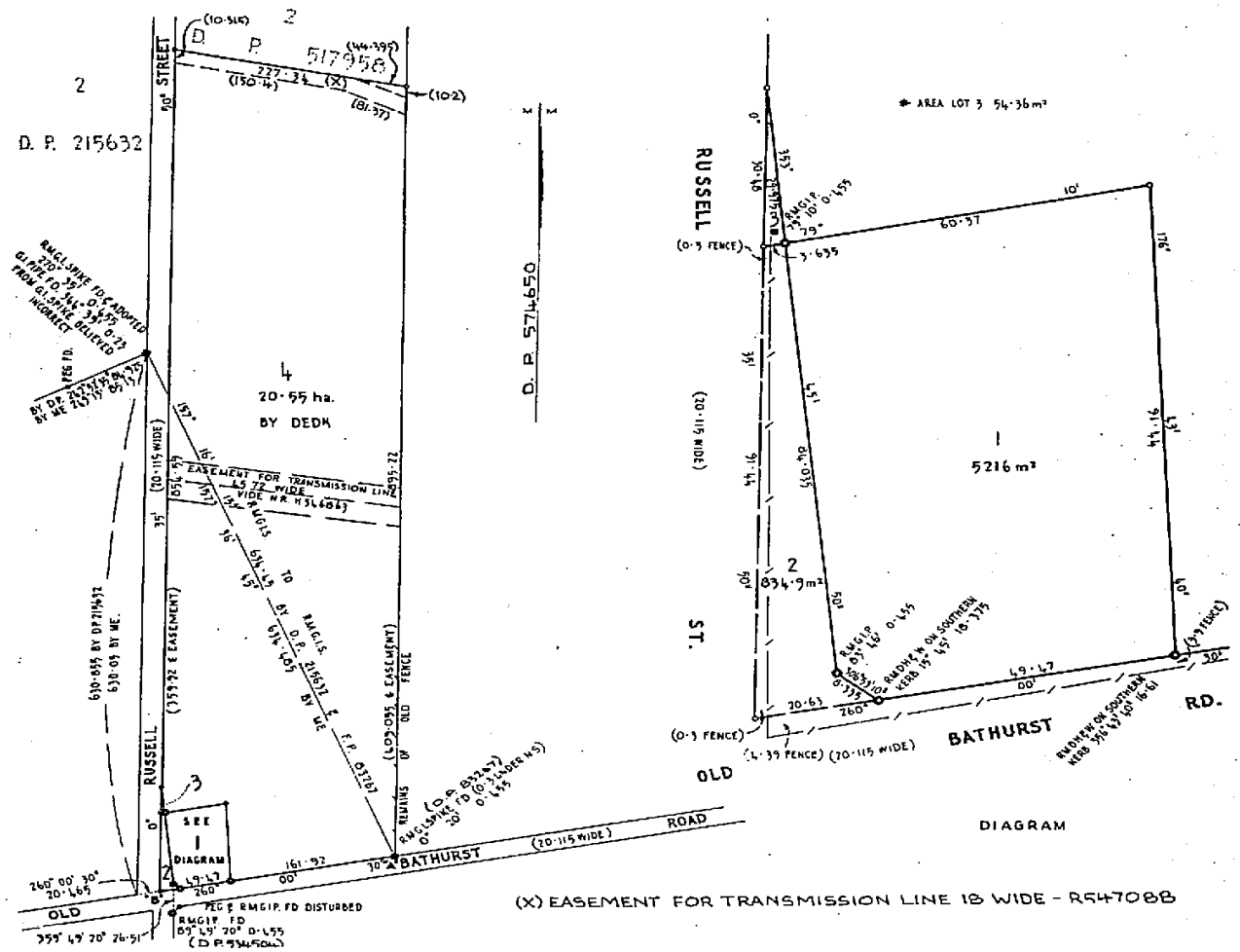
CANCELLED

SEE AUTO FOLIO

Registrar General.

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 4 in Deposited Plan 574650 at Emu Plains in the City of Penrith Parish of Strathdon and County of Cook being part of Portion 149 granted to Charles York on 23-9-1833.

FIRST SCHEDULE

CARTHONA PROPERTIES PTY. LIMITED.

SECOND SCHEDULE

GRY

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. ~~Easement for Transmission Line~~ created by Resumption No. H546863 affecting the part of the land above described 45.72 metres wide shown in the plan hereon.
3. Restriction as to user created by the registration of Deposited Plan 574650. See P164501.

ET(SB) RU

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.
PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON
NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

R547088 T
W978326 T

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
~~FOLIO CANCELLED NEW FOLIO IS [illegible]~~ 11/12/1987					
CANCELLED					
SEE AUTO FOLIO					

SECOND SCHEDULE (continued)

	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION
ET	~~Transfer~~	~~R547088~~	—	~~Easement for transmission line affecting the land shown so burdened in the plan lodged DP 452349~~	15-2-1980	[signature]	
EA	W978326 Transfer			~~Easement for Water Supply Works affecting that part of the land within described shown as 3.5 wide and variable width in DP635714. Registered 7.8.1987.~~			

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

Req:R419126 /Doc:CT 12726-184 CT /Rev:18-Jan-2011 /NSW LRS /Pgs:ALL /Prt:17-Apr-2023 09:18 /Seq:2 of 2
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LAND REGISTRY SERVICES Historical Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
17/4/2023 9:18AM

FOLIO: 4/574650

First Title(s): OLD SYSTEM
Prior Title(s): VOL 12726 FOL 184

Recorded	Number	Type of Instrument	C.T. Issue
6/11/1987	X131800	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	FOLIO CREATED EDITION 1
21/12/1987	X279536	DEPARTMENTAL DEALING	FOLIO CANCELLED
5/12/1988	X985527	DEPARTMENTAL DEALING	FOLIO RESTORED
23/1/1995	U852556	REQUEST	
1/4/2005	AB381257	CAVEAT	
27/4/2006	AC262110	DEPARTMENTAL DEALING	
27/4/2006	AC246526	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	EDITION 2
21/8/2006	AC498425	WITHDRAWAL OF CAVEAT	
21/8/2006	AC498426	TRANSFER	
21/8/2006	AC498427	MORTGAGE	EDITION 3
23/8/2018	AN603782	APPLICATION FOR RECORDING OF ACTION AFFECTING CROWN HOLDING	
9/9/2018	AN695392	DEPARTMENTAL DEALING	EDITION 4 CORD ISSUED
4/8/2020	AQ294846	DEPARTMENTAL DEALING	
28/9/2021	DP1273251	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

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Received: 17/04/2023 09:18:03

Req:R419114 /Doc:DL AC498426 /Rev:22-Aug-2006 /NSW LRS /Pgs:ALL /Prt:17-Apr-2023 09:18 /Seq:1 of 1
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Form: 01T
Release: 2.1
www.lpi.nsw.gov.au

(4)

TRANSFER

New South Wales
Real Property Act 1900

AC498426E

PRIVACY NOTE: this information is legally required and will become part of the public record

STAMP DUTY

Office of State Revenue use only

Office of State Revenue
NSW Treasury
Client No: 1390664 214
Duty: $2 Trans No: 2735227
Asst details:

(A) **TORRENS TITLE** 1/517958, 2/517958, 3/574650, 4/574650

RELODGED
(B) LODGED BY
10 AUG 2006
TIME: 1.30

Delivery Box	Name, Address or DX and Telephone	CODES
45A	LLPN: 1230110 National Australia Bank Limited 197 Prospect Highway Seven Hills NSW 2147 Tel: (02) 8825 0898 Reference: 06RA5802	T TW (Sheriff)

(C) **TRANSFEROR** Carthona Properties Pty Limited [ACN 000 378 665]

(D) **CONSIDERATION** The transferor acknowledges receipt of the consideration of $ 4,200,000.00 and as regards

(E) **ESTATE** the land specified above transfers to the transferee an estate in fee simple

(F) **SHARE TRANSFERRED**

(G) Encumbrances (if applicable):

(H) **TRANSFEREE** BERNARD JEAN-YVES LE BOURSICOT AND LINNA LE BOURSICOT

(I) **TENANCY:** Joint Tenants

(J) **DATE** 12th May 2006.

Certified correct for the purposes of the Real Property Act 1900 and executed on behalf of the corporation named below by the authorised person(s) whose signature(s) appear(s) below pursuant to the authority specified.
Corporation: Carthona Properties Pty Limited [ACN 000 378 665]
Authority: section 127 of the Corporations Act 2001

Signature of authorised person:

Name of authorised person: Annette Scarlett
Office held: Director

ANNETTE SCARLETT

Signature of authorised person:

Name of authorised person: J. Gibson
Office held: Director

JANET GIBSON

Certified for the purposes of the Real Property Act 1900 by the person whose signature appears below.

Signature:

Signatory's name: Ken Kanjian
Signatory's capacity: transferees' solicitor

All handwriting must be in block capitals.

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
17/4/2023 9:17AM

FOLIO: 1/1273251

First Title(s): OLD SYSTEM
Prior Title(s): 4/574650

Recorded	Number	Type of Instrument	C.T. Issue
28/9/2021	DP1273251	DEPOSITED PLAN	FOLIO CREATED EDITION 1 CORD ISSUED
25/1/2022	AR832062	CAVEAT	EDITION 2

*** END OF SEARCH ***

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Received: 17/04/2023 09:17:35

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/1273251

SEARCH DATE	TIME	EDITION NO	DATE
17/4/2023	9:17 AM	2	25/1/2022

LAND

LOT 1 IN DEPOSITED PLAN 1273251
AT EMU PLAINS
LOCAL GOVERNMENT AREA PENRITH
PARISH OF STRATHDON COUNTY OF COOK
TITLE DIAGRAM DP1273251

FIRST SCHEDULE

BERNARD JEAN-YVES LE BOURSICOT
LINNA LE BOURSICOT
AS JOINT TENANTS

SECOND SCHEDULE (7 NOTIFICATIONS)

---

1 DP574650 RESTRICTION(S) ON THE USE OF LAND
2 AC498427 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED
3 DP1273251 RIGHT OF ACCESS 8 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
4 DP1273251 RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (2) IN THE S.88B INSTRUMENT
5 DP1273251 RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (3) IN THE S.88B INSTRUMENT
6 DP1273251 POSITIVE COVENANT
* 7 AR832062 CAVEAT BY 1 OBR PTY LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

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Received: 17/04/2023 09:17:14

ABN: 36 092 724 251
Ph: 02 9099 7400
(Ph: 0412 199 304)

Level 14, 135 King Street, Sydney
Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

Report

NSW LRS **Sydney**

Re: - 114 to 116 Elizabeth Street, Riverstone

Description: - Lot 1 D.P. 1273251

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
14.11.1911 (1911 to 1916)	Martin Gilligan (Farmer)	Book 951 No. 83
25.07.1916 (1916 to 1917)	Annie Elizabeth Gilligan (Spinster)	Bok 1088 No. 42
04.04.1917 (1917 to 1949)	Annie Dobson (Married Woman)	Book 1107 No. 512 Now Volume 5050 Folio 171
06.12.1949 (1949 to 1963)	Harry Albert Dobson (Farmer) Edith Muriel Dobson (Spinster) Annie Margaret Dobson (Spinster) Jessie Louise Dobson (Spinster) Florence Marion Dobson (Spinster) (Transmission Application not investigated)	Volume 5050 Folio 171
20.06.1963 (1963 to 1966)	Harry Albert Dobson (Farmer) Annie Margaret Dobson (Spinster) Jessie Louise Dobson (Spinster) Florence Marion Dobson (Spinster) (Transmission Application not investigated)	Volume 5050 Folio 171 Now Volume 10271 Folio 250
01.07.1966 (1966 to 2006)	Blacktown & Districts Plumbing & Draining co. Pty Limited Now Carthona Properties Pty Limited	Volume 10271 Folio 250 Then Volume 12726 Folio 184 Now 4/574650
21.08.2006 (2006 to date)	# Bernard Jean -Yves Le Boursicott # Linna Le Boursicott	4/574650

# Denotes Current Registered Proprietors

Easements: -

- 28.09.2021 (D.P. 1273251) Right of Access 8 metres wide.

Leases: -

- 24.11.1954 to Metropolitan Water Sewerage and Drainage Board, of part of the land in Volume 5050 Folio 171 – now expired

Yours Sincerely
Mark Groll
17 April 2023

APPENDIX 4

Environmental Consulting Services
10 Fort Street
Petersham
NSW 2049

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Simon Caples**

Report **977648-S**
Project name EMU PLAINS
Received Date Apr 03, 2023

Client Sample ID			**EP1**	**EP2**	**EP3**	**EP4**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S23-Ap0002602**	**S23-Ap0002603**	**S23-Ap0002604**	**S23-Ap0002605**
Date Sampled			**Apr 03, 2023**	**Apr 03, 2023**	**Apr 03, 2023**	**Apr 03, 2023**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	129	135	142	145
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			EP1	EP2	EP3	EP4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S23-Ap0002602	S23-Ap0002603	S23-Ap0002604	S23-Ap0002605
Date Sampled			Apr 03, 2023	Apr 03, 2023	Apr 03, 2023	Apr 03, 2023
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	108	84	109	118
p-Terphenyl-d14 (surr.)	1	%	INT	103	128	132
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	< 0.1	-
Total PCB*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	106	-	83	-
Tetrachloro-m-xylene (surr.)	1	%	98	-	94	-
Heavy Metals						
Arsenic	2	mg/kg	2.7	2.2	2.7	4.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	6.8	< 5	8.3	6.8
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	8.5	< 5	11	11
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	5.4	5.4
Zinc	5	mg/kg	9.1	< 5	15	12
Sample Properties						
% Moisture	1	%	12	4.6	12	7.6

Client Sample ID			EP5	EP6	EP7	EP8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S23-Ap0002606	S23-Ap0002607	S23-Ap0002608	S23-Ap0002609
Date Sampled			Apr 03, 2023	Apr 03, 2023	Apr 03, 2023	Apr 03, 2023
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50

Client Sample ID			EP5	EP6	EP7	EP8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S23-Ap0002606	S23-Ap0002607	S23-Ap0002608	S23-Ap0002609
Date Sampled			Apr 03, 2023	Apr 03, 2023	Apr 03, 2023	Apr 03, 2023
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	140	76	141	136
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	116	97	97	76
p-Terphenyl-d14 (surr.)	1	%	137	108	145	99
Heavy Metals						
Arsenic	2	mg/kg	2.5	3.5	2.6	2.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	5.7	9.3	7.7	6.4
Copper	5	mg/kg	5.6	5.1	6.5	< 5
Lead	5	mg/kg	14	14	15	8.2
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	6.6	5.6	5.0
Zinc	5	mg/kg	21	18	23	8.7
Sample Properties						
% Moisture	1	%	11	11	11	10

Client Sample ID			EP9	EP10	EP SP1	EP SP2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S23-Ap0002610	S23-Ap0002611	S23-Ap0002612	S23-Ap0002613
Date Sampled			Apr 03, 2023	Apr 03, 2023	Apr 03, 2023	Apr 03, 2023
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	107	109	123	127
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	55	INT	80	112
p-Terphenyl-d14 (surr.)	1	%	68	71	99	144

Client Sample ID			EP9	EP10	EP SP1	EP SP2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S23-Ap0002610	S23-Ap0002611	S23-Ap0002612	S23-Ap0002613
Date Sampled			Apr 03, 2023	Apr 03, 2023	Apr 03, 2023	Apr 03, 2023
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	< 2	4.1	4.4	4.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	11	14	12
Copper	5	mg/kg	< 5	< 5	8.0	14
Lead	5	mg/kg	7.6	15	11	16
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	8.8	9.8
Zinc	5	mg/kg	6.1	15	25	50
Sample Properties						
% Moisture	1	%	8.6	12	8.5	11

Client Sample ID			EPD
Sample Matrix			Soil
Eurofins Sample No.			S23-Ap0002614
Date Sampled			Apr 03, 2023
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	122
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5

Client Sample ID			EPD
Sample Matrix			Soil
Eurofins Sample No.			S23-Ap0002614
Date Sampled			Apr 03, 2023
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	85
p-Terphenyl-d14 (surr.)	1	%	87
Polychlorinated Biphenyls			
Aroclor-1016	0.1	mg/kg	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1
Total PCB*	0.1	mg/kg	< 0.1
Dibutylchlorendate (surr.)	1	%	102
Tetrachloro-m-xylene (surr.)	1	%	82
Heavy Metals			
Arsenic	2	mg/kg	2.1
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	6.4
Copper	5	mg/kg	< 5
Lead	5	mg/kg	7.4
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	11
Sample Properties			
% Moisture	1	%	12

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Apr 11, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Apr 11, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Apr 11, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Apr 11, 2023	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Polycyclic Aromatic Hydrocarbons	Sydney	Apr 11, 2023	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Apr 11, 2023	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Polychlorinated Biphenyls	Sydney	Apr 11, 2023	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
% Moisture	Sydney	Apr 03, 2023	14 Days
- Method: LTM-GEN-7080 Moisture			

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne
6 Monterey Road
Dandenong South
VIC 3175
Tel: +61 3 8564 5000
NATA# 1261 Site# 1254

Geelong
19/8 Lewalan Street
Grovedale
VIC 3216
Tel: +61 3 8564 5000
NATA# 1261 Site# 25403

Sydney
179 Magowar Road
Girraween
NSW 2145
Tel: +61 2 9900 8400
NATA# 1261 Site# 18217

Canberra
Unit 1,2 Dacre Street
Mitchell
ACT 2911
Tel: +61 2 6113 8091
NATA# 1261 Site# 25466

Brisbane
1/21 Smallwood Place
Murarrie
QLD 4172
Tel: +61 7 3902 4600
NATA# 1261 Site# 20794

Newcastle
1/2 Frost Drive
Mayfield West NSW 2304
Tel: +61 2 4968 8448
NATA# 1261
Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
Tel: +61 8 6253 4444
NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland
35 O'Rorke Road
Penrose,
Auckland 1061
Tel: +64 9 526 45 51
IANZ# 1327

Christchurch
43 Detroit Drive
Rolleston,
Christchurch 7675
Tel: 0800 856 450
IANZ# 1290

Company Name: Environmental Consulting Services
Address: 10 Fort Street
Petersham
NSW 2049

Project Name: EMU PLAINS

Order No.:
Report #: 977648
Phone: 02 9518 1161
Fax:

Received: Apr 3, 2023 2:02 PM
Due: Apr 12, 2023
Priority: 5 Day
Contact Name: Simon Caples

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Asbestos - AS4964	Polychlorinated Biphenyls	Moisture Set	Eurofins Suite B7
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	EP1	Apr 03, 2023		Soil	S23-Ap0002602	X	X	X	X
2	EP2	Apr 03, 2023		Soil	S23-Ap0002603	X		X	X
3	EP3	Apr 03, 2023		Soil	S23-Ap0002604	X	X	X	X
4	EP4	Apr 03, 2023		Soil	S23-Ap0002605	X		X	X
5	EP5	Apr 03, 2023		Soil	S23-Ap0002606	X		X	X
6	EP6	Apr 03, 2023		Soil	S23-Ap0002607	X		X	X
7	EP7	Apr 03, 2023		Soil	S23-Ap0002608	X		X	X
8	EP8	Apr 03, 2023		Soil	S23-Ap0002609	X		X	X
9	EP9	Apr 03, 2023		Soil	S23-Ap0002610	X		X	X
10	EP10	Apr 03, 2023		Soil	S23-Ap0002611	X		X	X
11	EP SP1	Apr 03, 2023		Soil	S23-Ap0002612	X		X	X
12	EP SP2	Apr 03, 2023		Soil	S23-Ap0002613	X		X	X
13	EPD	Apr 03, 2023		Soil	S23-Ap0002614	X	X	X	X
Test Counts						13	3	13	13

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

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

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	127			70-130	Pass	
TRH C10-C14	%	92			70-130	Pass	
TRH C6-C10	%	119			70-130	Pass	
TRH >C10-C16	%	83			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	110			70-130	Pass	
Toluene	%	87			70-130	Pass	
Ethylbenzene	%	108			70-130	Pass	
m&p-Xylenes	%	110			70-130	Pass	
o-Xylene	%	109			70-130	Pass	
Xylenes - Total*	%	109			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	123			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	78			70-130	Pass	
Acenaphthylene	%	71			70-130	Pass	
Anthracene	%	84			70-130	Pass	
Benz(a)anthracene	%	79			70-130	Pass	
Benzo(a)pyrene	%	73			70-130	Pass	
Benzo(b&j)fluoranthene	%	78			70-130	Pass	
Benzo(g.h.i)perylene	%	80			70-130	Pass	
Benzo(k)fluoranthene	%	97			70-130	Pass	
Chrysene	%	92			70-130	Pass	
Dibenz(a.h)anthracene	%	73			70-130	Pass	
Fluoranthene	%	87			70-130	Pass	
Fluorene	%	81			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	72			70-130	Pass	
Naphthalene	%	82			70-130	Pass	
Phenanthrene	%	72			70-130	Pass	
Pyrene	%	79			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	85			70-130	Pass	
Aroclor-1260	%	80			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	100			80-120	Pass	
Cadmium	%	102			80-120	Pass	
Chromium	%	91			80-120	Pass	
Copper	%	89			80-120	Pass	
Lead	%	103			80-120	Pass	
Mercury	%	107			80-120	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nickel			%	102			80-120	Pass	
Zinc			%	100			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	S23-Ap0007857	NCP	%	90			70-130	Pass	
TRH C6-C10	S23-Ap0007857	NCP	%	96			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S23-Ap0007857	NCP	%	90			70-130	Pass	
Toluene	N23-Ap0004884	NCP	%	72			70-130	Pass	
Ethylbenzene	S23-Ap0007857	NCP	%	89			70-130	Pass	
m&p-Xylenes	S23-Ap0007857	NCP	%	93			70-130	Pass	
o-Xylene	S23-Ap0007857	NCP	%	99			70-130	Pass	
Xylenes - Total*	S23-Ap0007857	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S23-Ap0007857	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	R23-Ap0000730	NCP	%	96			70-130	Pass	
Acenaphthylene	R23-Ap0000730	NCP	%	91			70-130	Pass	
Anthracene	R23-Ap0000730	NCP	%	98			70-130	Pass	
Benz(a)anthracene	R23-Ap0000730	NCP	%	72			70-130	Pass	
Benzo(a)pyrene	R23-Ap0000730	NCP	%	83			70-130	Pass	
Benzo(b&j)fluoranthene	S23-Ap0007390	NCP	%	79			70-130	Pass	
Benzo(g.h.i)perylene	R23-Ap0000730	NCP	%	89			70-130	Pass	
Benzo(k)fluoranthene	R23-Ap0000730	NCP	%	110			70-130	Pass	
Chrysene	R23-Ap0000730	NCP	%	104			70-130	Pass	
Dibenz(a.h)anthracene	R23-Ap0000730	NCP	%	74			70-130	Pass	
Fluoranthene	R23-Ap0000730	NCP	%	90			70-130	Pass	
Fluorene	R23-Ap0000730	NCP	%	94			70-130	Pass	
Indeno(1.2.3-cd)pyrene	R23-Ap0000730	NCP	%	73			70-130	Pass	
Naphthalene	R23-Ap0000730	NCP	%	95			70-130	Pass	
Phenanthrene	R23-Ap0000730	NCP	%	88			70-130	Pass	
Pyrene	R23-Ap0000730	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	R23-Ap0000730	NCP	%	123			70-130	Pass	
Aroclor-1260	R23-Ap0000730	NCP	%	77			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S23-Ap0002604	CP	%	96			75-125	Pass	
Cadmium	S23-Ap0002604	CP	%	102			75-125	Pass	
Chromium	S23-Ap0002604	CP	%	88			75-125	Pass	
Copper	S23-Ap0002604	CP	%	88			75-125	Pass	
Lead	S23-Ap0002604	CP	%	100			75-125	Pass	
Mercury	S23-Ap0002604	CP	%	103			75-125	Pass	
Nickel	S23-Ap0002604	CP	%	100			75-125	Pass	
Zinc	S23-Ap0002604	CP	%	98			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C10-C14	S23-Ap0002613	CP	%	96			70-130	Pass	
TRH >C10-C16	S23-Ap0002613	CP	%	98			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S23-Ap0002614	CP	%	89			70-130	Pass	
Acenaphthylene	S23-Ap0002614	CP	%	89			70-130	Pass	
Anthracene	S23-Ap0002614	CP	%	80			70-130	Pass	
Benz(a)anthracene	S23-Ap0002614	CP	%	75			70-130	Pass	
Benzo(a)pyrene	S23-Ap0002614	CP	%	86			70-130	Pass	
Benzo(b&j)fluoranthene	S23-Ap0002614	CP	%	80			70-130	Pass	
Benzo(g.h.i)perylene	S23-Ap0002614	CP	%	74			70-130	Pass	
Benzo(k)fluoranthene	S23-Ap0002614	CP	%	94			70-130	Pass	
Chrysene	S23-Ap0002614	CP	%	96			70-130	Pass	
Dibenz(a.h)anthracene	S23-Ap0002614	CP	%	72			70-130	Pass	
Fluoranthene	S23-Ap0002614	CP	%	81			70-130	Pass	
Fluorene	S23-Ap0002614	CP	%	88			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S23-Ap0002614	CP	%	74			70-130	Pass	
Naphthalene	S23-Ap0002614	CP	%	90			70-130	Pass	
Phenanthrene	S23-Ap0002614	CP	%	74			70-130	Pass	
Pyrene	S23-Ap0002614	CP	%	84			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	R23-Ap0000727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	R23-Ap0000727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	R23-Ap0000727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	R23-Ap0000727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	R23-Ap0000727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	R23-Ap0000727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	R23-Ap0000727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	R23-Ap0000727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	R23-Ap0000727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S23-Ap0002603	CP	mg/kg	2.2	< 2	54	30%	Fail	Q15
Chromium	S23-Ap0002603	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S23-Ap0002603	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S23-Ap0002603	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S23-Ap0002603	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Nickel	S23-Ap0002603	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S23-Ap0002603	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	S23-Ap0002606	CP	%	11	12	8.4	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S23-Ap0002610	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S23-Ap0002610	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S23-Ap0002610	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S23-Ap0002610	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C6-C10	S23-Ap0002610	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S23-Ap0002610	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S23-Ap0002610	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S23-Ap0002610	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S23-Ap0002610	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S23-Ap0002610	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S23-Ap0002610	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S23-Ap0002610	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S23-Ap0002610	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S23-Ap0002610	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S23-Ap0002610	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S23-Ap0002612	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S23-Ap0002612	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S23-Ap0002612	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S23-Ap0002612	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C6-C10	S23-Ap0002612	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S23-Ap0002612	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S23-Ap0002612	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S23-Ap0002612	CP	mg/kg	< 100	< 100	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S23-Ap0002612	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S23-Ap0002612	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S23-Ap0002612	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S23-Ap0002612	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S23-Ap0002612	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S23-Ap0002612	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S23-Ap0002612	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S23-Ap0002613	CP	mg/kg	4.3	2.9	41	30%	Fail	Q15
Cadmium	S23-Ap0002613	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S23-Ap0002613	CP	mg/kg	12	8.5	37	30%	Fail	Q15
Copper	S23-Ap0002613	CP	mg/kg	14	9.4	38	30%	Fail	Q15
Lead	S23-Ap0002613	CP	mg/kg	16	11	39	30%	Fail	Q15
Mercury	S23-Ap0002613	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S23-Ap0002613	CP	mg/kg	9.8	7.7	25	30%	Pass	
Zinc	S23-Ap0002613	CP	mg/kg	50	36	33	30%	Fail	Q15

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Bonnie Pu	Analytical Services Manager
Mickael Ros	Senior Analyst-Metal
Sayeed Abu	Senior Analyst-Asbestos
Roopesh Rangarajan	Senior Analyst-Volatile
Raymond Siu	Senior Analyst-Volatile
Roopesh Rangarajan	Senior Analyst-Organic

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

Environmental Consulting Services
10 Fort Street
Petersham
NSW 2049

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention:	Simon Caples
Report	977648-AID
Project Name	EMU PLAINS
Received Date	Apr 03, 2023
Date Reported	Apr 14, 2023

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name EMU PLAINS
Project ID
Date Sampled Apr 03, 2023
Report 977648-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
EP1	23-Ap0002602	Apr 03, 2023	Approximate Sample 44g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EP2	23-Ap0002603	Apr 03, 2023	Approximate Sample 66g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EP3	23-Ap0002604	Apr 03, 2023	Approximate Sample 35g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EP4	23-Ap0002605	Apr 03, 2023	Approximate Sample 47g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EP5	23-Ap0002606	Apr 03, 2023	Approximate Sample 66g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EP6	23-Ap0002607	Apr 03, 2023	Approximate Sample 76g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EP7	23-Ap0002608	Apr 03, 2023	Approximate Sample 38g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EP8	23-Ap0002609	Apr 03, 2023	Approximate Sample 59g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
EP9	23-Ap0002610	Apr 03, 2023	Approximate Sample 64g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EP10	23-Ap0002611	Apr 03, 2023	Approximate Sample 85g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EP SP1	23-Ap0002612	Apr 03, 2023	Approximate Sample 60g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EP SP2	23-Ap0002613	Apr 03, 2023	Approximate Sample 81g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
EPD	23-Ap0002614	Apr 03, 2023	Approximate Sample 79g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Apr 03, 2023	Indefinite

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne
6 Monterey Road
Dandenong South
VIC 3175
Tel: +61 3 8564 5000
NATA# 1261 Site# 1254

Geelong
19/8 Lewalan Street
Grovedale
VIC 3216
Tel: +61 3 8564 5000
NATA# 1261 Site# 25403

Sydney
179 Magowar Road
Girraween
NSW 2145
Tel: +61 2 9900 8400
NATA# 1261 Site# 18217

Canberra
Unit 1,2 Dacre Street
Mitchell
ACT 2911
Tel: +61 2 6113 8091
NATA# 1261 Site# 25466

Brisbane
1/21 Smallwood Place
Murarrie
QLD 4172
Tel: +61 7 3902 4600
NATA# 1261 Site# 20794

Newcastle
1/2 Frost Drive
Mayfield West NSW 2304
Tel: +61 2 4968 8448
NATA# 1261
Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
Tel: +61 8 6253 4444
NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland
35 O'Rorke Road
Penrose,
Auckland 1061
Tel: +64 9 526 45 51
IANZ# 1327

Christchurch
43 Detroit Drive
Rolleston,
Christchurch 7675
Tel: 0800 856 450
IANZ# 1290

Company Name: Environmental Consulting Services
Address: 10 Fort Street
Petersham
NSW 2049

Project Name: EMU PLAINS

Order No.:
Report #: 977648
Phone: 02 9518 1161
Fax:

Received: Apr 3, 2023 2:02 PM
Due: Apr 12, 2023
Priority: 5 Day
Contact Name: Simon Caples

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Asbestos - AS4964	Polychlorinated Biphenyls	Moisture Set	Eurofins Suite B7
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	EP1	Apr 03, 2023		Soil	S23-Ap0002602	X	X	X	X
2	EP2	Apr 03, 2023		Soil	S23-Ap0002603	X		X	X
3	EP3	Apr 03, 2023		Soil	S23-Ap0002604	X	X	X	X
4	EP4	Apr 03, 2023		Soil	S23-Ap0002605	X		X	X
5	EP5	Apr 03, 2023		Soil	S23-Ap0002606	X		X	X
6	EP6	Apr 03, 2023		Soil	S23-Ap0002607	X		X	X
7	EP7	Apr 03, 2023		Soil	S23-Ap0002608	X		X	X
8	EP8	Apr 03, 2023		Soil	S23-Ap0002609	X		X	X
9	EP9	Apr 03, 2023		Soil	S23-Ap0002610	X		X	X
10	EP10	Apr 03, 2023		Soil	S23-Ap0002611	X		X	X
11	EP SP1	Apr 03, 2023		Soil	S23-Ap0002612	X		X	X
12	EP SP2	Apr 03, 2023		Soil	S23-Ap0002613	X		X	X
13	EPD	Apr 03, 2023		Soil	S23-Ap0002614	X	X	X	X
Test Counts						13	3	13	13

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (**% w/w**)
F/fld	Airborne fibre filter loading as Fibres (**N**) per Fields counted (**n**)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (**C**)
g, kg	Mass, e.g. of whole sample (**M**) or asbestos-containing find within the sample (**m**)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (**V = r x t**)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (**r**)
min	Time (**t**), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration: $C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$

Asbestos Content (as asbestos): $\%\, w/w = \frac{(m \times P_A)}{M}$

Weighted Average (of asbestos): $\%_{WA} = \sum \frac{(m \times P_A)_x}{x}$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix. May be derived from knowledge or experience of the material, informed by HSG264 *Appendix 2*, else assumed to be 15% in accordance with WA DOH *Appendix 2* (**P_A**).
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to “non-bonded / friable”.
AFM	Airborne Fibre Monitoring, e.g. by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total % w/w asbestos content in asbestos-containing finds in a soil sample (**% w/w**).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
HSG248	UK HSE HSG248, *Asbestos: The Analysts Guide*, 2nd Edition (2021).
HSG264	UK HSE HSG264, *Asbestos: The Survey Guide* (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (**K**) as derived from the effective filter area of the given AFM membrane used for collecting the sample (**A**) and the projected eyepiece graticule area of the specific microscope used for the analysis (**a**).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
Sampling	Unless otherwise stated Eurofins are not responsible for sampling equipment or the sampling process.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (updated 2021), including Appendix Four: *Laboratory analysis*
Weighted Average	Combined average % w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (**$\%_{WA}$**).

Comments

The samples received were not collected in an approved asbestos bag and was therefore sub-sampled from the 250mL glass jar. Valid sub-sampling procedures were applied so as to ensure that the sub-samples to be analysed accurately represented the samples received.

Sample Integrity

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

Asbestos Counter/Identifier:

Chamath JHM Annakkage	Senior Analyst-Asbestos

Authorised by:

Sayeed Abu	Senior Analyst-Asbestos

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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eurofins | Environment Testing

www.eurofins.com.au EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne
6 Monterey Road
Dandenong South
VIC 3175
Tel: +61 3 8564 5000
NATA# 1261 Site# 1254

Geelong
19/8 Lewalan Street
Grovedale
VIC 3216
Tel: +61 3 8564 5000
NATA# 1261 Site# 25403

Sydney
179 Magowar Road
Girraween
NSW 2145
Tel: +61 2 9900 8400
NATA# 1261 Site# 18217

Canberra
Unit 1,2 Dacre Street
Mitchell
ACT 2911
Tel: +61 2 6113 8091
NATA# 1261 Site# 25466

Brisbane
1/21 Smallwood Place
Murarrie
QLD 4172
Tel: +61 7 3902 4600
NATA# 1261 Site# 20794

Newcastle
1/2 Frost Drive
Mayfield West NSW 2304
Tel: +61 2 4968 8448
NATA# 1261
Site# 25079 & 25289

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
Tel: +61 8 6253 4444
NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland
35 O'Rorke Road
Penrose,
Auckland 1061
Tel: +64 9 526 45 51
IANZ# 1327

Christchurch
43 Detroit Drive
Rolleston,
Christchurch 7675
Tel: 0800 856 450
IANZ# 1290

Sample Receipt Advice

Company name:	Environmental Consulting Services
Contact name:	Simon Caples
Project name:	EMU PLAINS
Project ID:	Not provided
Turnaround time:	5 Day
Date/Time received	Apr 3, 2023 2:02 PM
Eurofins reference	977648

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 24 degrees Celsius.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Bonnie Pu on phone : or by email: BonniePu@eurofins.com

Results will be delivered electronically via email to Simon Caples - simon@ecsgroup.com.au.

Global Leader - Results you can trust

ENVIRONMENTAL CONSULTING SERVICES

Chain of Custody

Project: EMU PLAINS

Environmental Consulting Services Pty Ltd | Manager: Simon Caples | Ph: 0415 225 474 | Email: simon@ecsgroup.com.au

Event Number:

Lab Number	Sample Number	Sample Date	Matrix: Soil	Water	Other	Analysis: BTEX	TPH	PAH	Phenol	Metals	Asbestos	Suite B7	Suite B10	Suite R16	PCB
	EP 1	3/4	✓								✓	✓			✓
	EP 2	3/4	✓								✓	✓			
	EP 3		✓								✓	✓			✓
	EP 4		✓								✓	✓			
	EP 5		✓								✓	✓			
	EP 6		✓								✓	✓			
	EP 7		✓								✓	✓			
	EP 8		✓								✓	✓			
	EP 9		✓								✓	✓			
	EP 10		✓								✓	✓			
	EP SP1		✓								✓	✓			
	EP SP2		✓								✓	✓			
	EP D	3/4	✓								✓	✓			✓

Turn Around Time: 5 DAYS | Comments:

Relinquished By: Tom Caples | Signed: | Date: 3/4 | Received By: [illegible] 24.3 | Signed: | Date: 24/3/24 2:02pm

#977648