



**Transport
for NSW**

Preliminary Site Investigation

Bungendore Rail Corridor

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Preliminary Site Investigation

Bungendore Rail Corridor



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Acronyms and Abbreviations

Name	Description
ACM	Asbestos Containing Material
ACT EPA	Australian Capital Territory Environment Protection Authority
AHD	Australian Height Datum
AMG	Australian Map Grid
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CoPC	Contaminant of Potential Concern
CRN	Country Regional Rail Network
CSM	Conceptual Site Model
DP	Deposited Plan
DPI	Department of Primary Industries
DQO	Data Quality Objective
DSI	Detailed Site Investigation
EPA	Environment Protection Authority
ERM	Environmental Resources Management Australia Pty Ltd
ESA	Environmental Site Assessment
ha	Hectare
JHR	John Holland Rail Pty Ltd
m	Metre
m AHD	Metres above Australian Height Datum
m bgl	Metres Below Ground Level
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NSW	New South Wales
OCP	Organochlorine Pesticides
OPP	Organophosphorus Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance and Quality Control
RAP	Remedial Action Plan
SAP	Sampling Analysis Plan
SAQP	Sampling and Analysis Quality Plan
TfNSW	Transport for NSW
TRH	Total Recoverable Hydrocarbons

EXECUTIVE SUMMARY

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by Country Regional Network John Holland Rail Pty Ltd (JHR) to undertake a Preliminary Site Investigation (PSI) with supplementary shallow soil assessment for a portion of rail corridor and adjoining areas of historically associated land that extend through the township of Bungendore, New South Wales (the Site).

John Holland Rail is currently managing rail operations and maintenance services for the Country Regional Rail Network (CRN) on behalf of Transport for NSW (TfNSW). The CRN is made up of over 5,800 kilometres (km) of operational and non-operational track throughout regional NSW and the ACT, including approximately 27,000 hectares (ha) of land upon which potentially contaminating activities may have occurred. The Bungendore Rail Corridor and Sidings which are included in this assessment form part of the CRN. For the purposes of the assessment, all CRN lands within the Bungendore Township are included. The Site has been divided into a number of Sub-Areas for the purposes of the PSI, including; Woolshed/Former Rail Yard (Area A), Former Rail Fork (Area B), Trucking Yard (Area C) and all lands within the active rail corridor from chainage 293.000 km (Turallo Creek Bridge) to 295.677 km (Ellendon Street Level Crossing).

The objectives of the PSI were to collect Site information that is sufficient to:

- *identify potential sources of contamination and determine potential contaminants of concern;*
- *identify areas of potential contamination;*
- *identify potential human and ecological receptors;*
- *identify potentially affected media; and*
- *assess the nature and extent of identified key contaminants (heavy metals) of potential concern in surface soils.*

Additionally, as required, the preliminary conceptual site model can be used to assess potential implications for notification to the New South Wales Environment Protection Authority (NSW EPA) under Section 60 of the Contaminated Land Management Act 1997 (CLM Act) and to assess and manage potential liabilities in relation to ongoing human health and/or environmental risks. In order to meet the objectives the scope of work included desktop database searches and reviews and a site inspection which was supplemented with a limited shallow soil investigation.

The Site is zoned as Infrastructure (SP2) and has been utilised for rail activities since 1885. Although minor changes to the Site infrastructure appear to have occurred over the Site's history, the primary infrastructure such as the rail line, Woolshed and Truck yard have existed in their current layout since at least 1944 (earliest available aerial photography).

Although a number of potentially contaminating activities may have occurred at the Site in association with the long term rail usage, the primary potentially contaminating activities historically undertaken onsite appear to be the transport of lead ore by rail. Lead ore was historically transported via Bungendore within uncovered wagons from the Captains Flat Mine, located approximately 35 km to the south, and was transferred larger wagons at the Woolshed area. There is potential that this activity has resulted in the presence of lead at the Site (primarily in soils). No previous formal investigations have been published in relation to the Site.

The soil sampling completed as part of this preliminary investigation consisted of 119 shallow soil sampling locations applying a combination of systematic and judgemental sampling patterns. Results were screened against Tier 1 criteria which were selected based on the identified Site receptors. Lead concentrations were found to be broadly elevated immediately adjacent to or within the rail ballast beneath the rail lines. Both the magnitude of lead concentrations and extent of impact was increased in areas where trains are required to slow down, stop and/ or load/ unload. Concentrations were generally observed to decrease significantly with distance from the rail line. Based on the

relatively low concentrations of lead at the boundary and the pattern of significant decrease in lead concentrations with distance from the Rail Line, which is evident across the Site, it is considered unlikely that significant lead impacts in shallow soil extends offsite along the majority of the corridor.

Through the works described herein and the development of a preliminary conceptual site model, ERM has undertaken an assessment of potential:

- *sources of contamination,*
- *potential contaminants of concern; and*
- *potential human and ecological receptors.*

From this assessment, ERM considers that a number of potentially complete Source – Pathway – Receptor (SPR) linkages may exist at the Site, including for onsite commercial/industrial, intrusive maintenance workers and recreational users (trespassers to Site). However, it is noted that these risks could be managed through the implementation of appropriate institutional controls. Additional potential SPR linkages may exist for offsite groundwater bore users and offsite ecological receptors, however these issues have not been comprehensively assessed through groundwater and surface water assessment at this time.

Based on the identified lead impact in surface soils at the Site, and the potentially complete SPR Linkages present, a duty to notify the NSW EPA under S.60 of the CLM Act (1997) is considered to be triggered. As part of the notification process, it is recommended that the NSW EPA should be engaged to discuss whether additional data collection and further assessment of potentially complete SPR Linkages may be beneficial in the NSW EPA's assessment of the Site.

1. INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by John Holland Rail Pty Ltd (JHR) to undertake a Preliminary Site Investigation (PSI) with supplementary shallow soil assessment for a portion of rail corridor land that extends through the township of Bungendore, New South Wales (NSW) and adjoining siding areas of historically associated rail lands which form part of the Country Regional Rail Network (CRN).

For the purposes of the assessment, all CRN lands within the Bungendore Township are included and referred to herein as the 'Site'. The Site has been divided into a number of Sub-Areas for the purposes of the PSI as follows:

- Area A – Woolshed/Former Rail Yard;
- Area B – Southern Fork;
- Area C – Trucking Yard Lane; and
- Bungendore Rail Corridor – all lands within the active rail corridor from chainage 293.000 kilometres (km) (Turallo Creek Bridge) to 295.677 km (Ellendon Street Level Crossing).

These areas are part of the broader Bungendore rail precinct which is owned by the Transport Asset Holding Entity (TAHE). The precinct also includes the Bungendore Station, which is outside the CRN and is managed by Sydney Trains and will be covered under a separate PSI.

A Site Location Map is provided as *Figure 1 of Appendix A* and the various Areas of the Site as described above are shown in *Figure 2, Appendix A*.

1.1 Background

John Holland Rail is currently managing rail operations and maintenance services for the CRN on behalf of Transport for NSW (TfNSW). The CRN is made up of over 5,800 km of operational and non-operational track throughout regional NSW and the ACT, including approximately 27,000 hectares (ha) of land upon which potentially contaminating activities may have occurred. The purpose of this PSI was to assess whether there were any environmental or human health risks associated potential lead contamination within the Bungendore rail corridor.

The Bombala Line which passes through the Bungendore Rail Corridor forms part of the CRN. The Bombala Line was historically linked with the Captains Flat Line to the south of Bungendore. These lines were historically used to transport lead ore from the Captains Flat mine, located approximately 35 km to the south. The lead ore was reloaded into larger wagons at Bungendore for shipment to Port Kembla. The Bombala Line ceased to be used for goods traffic in 1989, however the Bungendore Rail Corridor remains part of an operational passenger line for Countrylink services between Sydney and Canberra (NSW State Heritage Inventory, 2021).

Given the historical transport of lead ore through the Site, there is potential that lead impacts are present in soils at the Site. This PSI was therefore required to assist JHR, the landowner (TAHE) and TfNSW to assess whether historical Site uses have resulted in contamination and associated potential risks to human health and / or the environment. The focus of the assessments is the Bungendore Rail Corridor, which is approximately 2.7 km in length, extending south from Turallo Creek. This corridor includes the Woolshed/Former Rail Yard immediately south of Bungendore Train Station, the eastern former Rail Triangle immediately adjacent to the Woolshed/Former rail yard, and Trucking Yard Lane, which extends west from the rail corridor to the south of Bungendore. The Site is currently zoned for infrastructure, however, it is largely surrounded by low density residential housing.

An Environmental Site Assessment was undertaken by Ramboll Australia Pty Ltd (Ramboll) on behalf of JHR/TfNSW in the vicinity of the Bungendore Station and Queanbeyan Palerang Regional Council offices (Ramboll 2021), which indicated that lead may be present in surface soils within the rail corridor. The findings have been considered as part of this PSI.

The Site is listed on the POEO register under EPL 13421, which regulates the entire CRN for the operation of railway systems and activities.

1.2 Objectives

The objective of the PSI was to collect Site information sufficient to:

- assess potential sources of contamination and identify key potential contaminants of concern;
- assess areas of potential contamination;
- identify potential human and ecological receptors; and
- assess the nature and extent of identified key contaminants (heavy metals) of potential concern in surface soils.

This information will be used to develop a preliminary Conceptual Site Model (CSM) which provides a representation of site-related contamination sources, receptors and exposure pathways between these sources and receptors.

Additionally, as required, the preliminary CSM can be used to assess potential implications for notification to the NSW Environment Protection Authority (EPA) under Section 60 of the *Contaminated Land Management Act* (1997) (CLM Act) and to assess and manage potential liabilities in relation to ongoing human health and/or environmental risks.

1.3 Scope of Works

The PSI included a preliminary desktop review to collect basic site information and a site walkover, supplemented by shallow soil sampling. This information was used to develop the conceptual site model. Specific tasks associated with each stage of work are presented in the following subsections.

1.3.1 Desktop Searches and Review

An understanding of the Site and environmental setting is necessary for developing the conceptual site model, to do this the report has taken into consideration the following:

- site description;
- site activities (current and historic);
- site history;
- geology;
- hydrogeology; and
- hydrology.

Review of background information relating to the Site, including:

- Historical aerial photographs;
- Contaminated land register;
- Groundwater bore register;
- Environmental permit/license registers; and
- Australian heritage databases.

1.3.2 Site Visit Including Shallow Soil Sampling

Site investigation works comprised a site walkover prior to the collection of shallow soil samples. This stage of works included the following tasks:

- health and safety preparation including:
 - review of “Dial Before You Dig”/service plans;
 - development of an overarching Health, Safety and Environment Plan;
 - consideration of a site-specific Sampling Analysis Plan (SAP);
- site walkover to identify potential areas of environmental concern associated with historical transport and handling of lead ore at the Site and to allow for necessary adjustments to the investigation design;
- identification of key features, potential contamination sources and any areas where evidence of environmental impact associated with former site uses were observed;
- collection of 119 primary shallow soil samples. Samples were collected using a stratified approach, that is a combination of systematic (grid based) and judgemental (targeted) sampling;
- each sample was collected from a depth of approximately 0.05 - 0.1 metres below ground level (m bgl) using hand tools;
- samples were submitted under chain of custody (COC) documentation to a National Association of Testing Authorities (NATA) accredited laboratory; and
- samples were analysed for a combination of contaminants of potential concern (COPCs) (heavy metals).

2. SITE IDENTIFICATION AND SETTING

2.1 Site Identification

The Site identification information is presented within Table 2.1 below:

Table 2-1: Site Identification

Item	Description
Site Owner	Transport for New South Wales
Site Occupier / Usage	JHR / Railway corridor and sidings
Site Address	Bungendore, NSW, 2621
Legal Description	Lot 4 DP830878, Lot 1 DP814520, & public infrastructure lands (railway corridor).
Current Zoning	Infrastructure (SP2)
Site Perimeter	6,530 m
Site Area ¹	174,958 m ²
Elevation	690-710 m Australian Height Datum (AHD)
Site Location and Site Layout	Figures 1 - 2 Appendix B

2.2 Site Description and Use

This Site is owned by Transport for New South Wales (TfNSW) and managed by JHR as part of the CRN. The surrounding area is relatively flat, however within the Site area, the rail corridor cuts through slight rises and is artificially built up with ballast above the lower natural landforms to maintain a consistent elevation for the rail passage. The main portion of the Site is comprised of an active railway corridor. The Rail Corridor defined within the Site for the purposes of this PSI includes the portion of the corridor passing the township of Bungendore from Turallo Creek Railway Bridge (chainage 290.000 km) to the Hoskinstown Road Level Crossing (295.677 km)

The Rail Corridor is approximately 40-50 m wide along its length and includes two level crossings; Hoskinstown Road bordering the south of the Site, and the Kings Highway passing to the south of the station. The bulk of the Site is vacant, vegetated with grasses, invasive weeds, and the occasional tree on the eastern side of the railway.

In addition to the Rail Corridor, the Site also includes three rail sidings, described as follows:

- Area A: Adjacent to the corridor lies Bungendore Railway Station, historical goods loading siding between Forster and Gibraltar streets, a historic 'Woolshed' building and yard which as constructed in 1884 perpendicular to Rutledge Street was previously used to load and unload goods from the rail. The area is cleared and has a number of soil stockpiles and scrap materials present. The Woolshed is currently utilised by the 'Men's Shed' organisation and is used as a workshop;
- Area B: Decommissioned railway triangle to the east of the Woolshed formerly known as the 'Southern Fork'. The area is currently vacant however historically included a fork of the Bombala Line to Captains Flat. Railway infrastructure was removed from Area B in 1972; and
- Area C: Former cattle loading yard in line with trucking yard lane. This area is fenced from the main Rail Corridor and is accessible to the public. The Area is over grown with grasses and is largely vacant, however dilapidated timber cattle pens and loading ramps are present.

The Site layout is illustrated in *Figure 2, Appendix A*, as well as in the *Lotsearch Historical Dataset, Appendix C*.

The Site is fenced with chain wire on the western boundary and the north eastern boundary along Powell Street to maintain separation between the residential and municipal areas of Bungendore from the active Rail Corridor. The south western boundary is fenced with barbed wire along rural properties to contain livestock. All fencing was noted to be in generally good condition, however evidence of illegal access was noted whereby the fences were damaged and walking tracks passed through the Site to the north of the Bungendore Station.

Further details regarding site observations made during the site inspection are presented in *Section 4*.

2.3 Surrounding Land Use

The Site is predominately surrounded by low-density residential zoned and rural land. The key land use surrounding the Site are illustrated on *Figure 1, Appendix A* and are summarised below:

Table 2-2: Surrounding Land Uses

Direction	Land use
North – East	Low density residential (R2) and primary production (RU1), with a small parcel of recreational zoning (RE1) bordering the north of the Site is the Turallo Creek which is situated within a parcel of environmental conservation (E2) zoned land.
South – East	Primary production (RU1), with a small parcel zoned for National Parks/Nature reserves (E1) to the south of the Site, a small parcel to the east zoned for Water supply infrastructure (SP2), and a strip zoned for road infrastructure (SP2).
South – West	Low density residential (R2) and primary production (RU1), with a small parcel of industrial zoning (IN2) fringing the centre of the Site.
North - West	A mixture of general residential (R1), recreational (RE1), local centre (B2), road infrastructure (SP2), and mixed use (B4) zoned land.

Source: NSW DPIE (2021)

2.4 Desktop Regulatory Records Search

For the purpose of the desktop review of publically available regulatory information. The background information was reviewed and assessed in the context of this PSI. A summary of the relevant background information is presented in the following subsections and is presented in full in *Appendix C*.

2.4.1 Hazardous Chemicals Information

No bulk hazardous chemicals are currently known to be stored within the Site. During the Site inspection (refer to *Section 4*) no indications of historical above or below ground fuel storage were observed. A search of the Dangerous Goods Register was not undertaken as part of this PSI due to the focus being primarily on heavy metals. The potential for use or storage of hazardous chemicals at the Site was also assessed by aerial photograph analysis (See *Appendix C* and *Section 2.5.2*). The National Liquid Fuel Facilities databases did not indicate any instances of chemical storage onsite, although there are three bulk fuel storage facilities located in Bungendore (all petrol stations). Based on review of historical aerial photographs, it is considered unlikely that the historical storage of bulk above ground hazardous chemicals occurred on the Site. Historical aerial photographs showed that the Site has remained mostly consistent with its current layout dating back as far as 1944.

Although there is no indication the that underground storage tanks (USTs) were historically present at the Site, it is noted that goods loading sidings such as the Area B Woolshed commonly included USTs across the CRN and the historical presence of USTs at Area B is a possibility.

2.4.2 Regulatory Agency Search

Key findings from searches of NSW EPA databases of Contaminated Sites, and of the National Waste Management Site database are presented below:

- The NSW EPA Contaminated Land List is a database of sites that have been notified to the NSW EPA under Section 60 of the CLM Act (1997) and are either under assessment or have been confirmed to present an immediate or long-term risk of harm to human health and/or the environment under the CLM Act and are currently under NSW EPA regulation. The register shows all current and former sites on the list in NSW. As presented in *Appendix C*, there is no portion of the Site identified on the register. A former timber treatment plant (located on the corner of King and Bulmaroo Streets) bordering the Site that has been classified as 'contamination formerly regulated under the CLM Act';
- The National Waste Management Site database lists the locations of Australia's known landfills, waste transfer stations and a large number of waste reprocessing facilities. As presented in *Appendix C*, the Site does not appear in this database and there are no identified waste management site within a 1,000 m distance of the Site; and
- The NSW Protection of the Environment Operations (POEO) Act 1997 establishes a licensing and monitoring requirement for certain activities where there is a potential risk to the environment if not managed appropriately. The Site is listed on the POEO register under EPL 13421, which regulates the entire CRN for the operation of railway systems and activities. There are no other licensed activities under the POEO Act (1997) occurring within 1,000 m of the Site.

2.4.3 Ecological Constraints

A search for Groundwater Dependant Ecosystems (GDEs) identified Turallo Creek, which is present at the Site's most northern boundary, as a 'high potential GDE'. An area of Southern Forests (parcel of grassy woodlands/grasslands) exists approximately 600 m to the south of the Site.

A search for Endangered and Vulnerable Species identified on the NSW BioNet Atlas database as potentially occurring within 10 km of the Site identified 35 species of flora or fauna that are either endangered or vulnerable, refer to *Appendix C* for a list of species. Considering the nature of the species listed, it is considered unlikely that the Site would form significant habitat for these species given the limited vegetation across the site and the location of the Site within an operational railway corridor area.

2.5 Site History

A summary of the site history as interpreted from available background sources is presented in the following subsections.

2.5.1 Historical Potentially Contaminating Activities

Information obtained from JHR during the completion of the PSI confirmed that the Bombala Line which passes through the Site was used to transport lead ore from the Captains Flat mine with likely uncovered wagons of unknown integrity. The lead ore was also historically transferred to larger wagons at the Woolshed (Area A). The Woolshed was historically used in the loading and unloading of various other goods.

Although lead ore handling is the primary potentially contaminating activity, the Site's long term use as rail yard and lines may have resulted in a number of contaminating activities including (but not limited to) pesticide use, hydrocarbon spills, potential historical hydrocarbon storage, use of contaminated building materials (lead based paints and asbestos), deterioration of asbestos based braking systems, storage and loading of various materials, use of PCB oils and potential historical onsite fires.

2.5.2 Historical Aerial Photographs

Aerial Photograph 1944

The 1944 photograph represents the earliest aerial evidence of the Sites layout. Most of the current day roadways are existing in the 1944 image whilst residences sparsely populate the township. The rail infrastructure is clearly in place in the 1944 photograph, including the 'Woolshed' in Area A, the rail fork within Area B, the stockyards in Area C and the Station Masters and Signaller's Cottages. One additional structure approximately the size of a typical residence is present within the Rail Corridor to the west of the rail line at King Street. The Area A 'Woolshed' building is present. An unknown long narrow structure (possibly a rail carriage) is also present in the southern portion of Area A of the Site. It appears that the Area C Trucking Yard is operational, with the stockyards near Trucking Yard Road visible.

Aerial Photograph 1959

The resolution of the 1959 aerial image is low, although, there appears to be no significant change to the Site itself. The rail carriage-like structure in Area A has been removed. There is an apparent increase in the number of residential properties within the Bungendore Township from the 1944 photograph. The most profound change is the development of a number of farmhouses to the southwest of the site, and their accompanying private dams.

Aerial Photograph 1961

The 1961 photograph displays a sharp increase in the number of buildings within the township and Site surrounds, with the most significant being the construction of the timberworks to the south west of Area A. There appear to be no changes to the site other than the development of some small structures at the northern portion of Area A neighbouring the Bungendore Station.

Aerial Photograph 1968

Similar to the changes in 1961, the 1968 photograph displays an increase in the number of structures in the town, along with the preparation of land for development directly north-east and south west of the Area B railway triangle.

Aerial Photograph 1976

The southern fork of the triangle at Bungendore, (as part of the line to Captains Flat) has been removed in the 1976 photograph. The structure within the corridor at the end of King Street has also been removed, however the remaining Site remains consistent with previous photographs. The sewage works to the west of Bungendore are visible in the 1976 image, and there is development on the cleared land (north-east and south west of the Area B railway triangle) visible in the 1968 image. Houses and a lumber yard also begin to extend south from Bungendore on the western side of the rail corridor. Residential density also continues to increase.

Aerial Photograph 1985

No significant changes to the Site are evident in the 1985 image. Residential development is again the most notable change, particularly to the immediate north-east of the Site. There is continued development to the sewage works west of town, along with other local industrial activity closer to the Site. A small body of water is visible to the south of the sewage works.

Aerial Photograph 1992

The 1992 photograph is limited to the area of the Site to the south of Area A. The continued residential expansion of Bungendore is evident, particularly south west of the corridor and close to Trucking Yard Lane, whilst housing density increases within the town. Further development of the Kings Highway is visible. The sewage works capacity has expanded and the body of water to the

south of the sewage works grows similarly. Large structures bordering the north west of rail corridor have been erected, and a road has been graded along the north-west of the site. Further industrial premises appear to the Sites' west.

Aerial Photograph 2002

In the 2002 photograph the Site is largely unchanged, although minor alterations to the structures within Area A at the south of the Bungendore Station are evident. Bungendore's residential expansion has continued, particularly to the south-west, whilst the woolshed area onsite appears partially redeveloped where a new structure is visible near train station and the road has been altered.

Aerial Photograph 2009

The Site is in its current configuration, with the structures in Area A to the south of the Bungendore Station removed. Notably, the 2009 photograph displays the new Queanbeyan Palerang Regional Council (QPRC) offices to the Site's immediate west. It also shows the construction of a residential estate to the north of the Site, including two small lakes. The road bordering the most north-western section of rail corridor has been upgraded to accommodate this. To the south-west, development continues around trucking yard lane where numerous more houses are visible, and further land is being prepared for housing.

Aerial Photograph 2015 and 2021

The Site is in its current configuration.

2.5.3 Heritage

Local and State Heritage

A review of the search results relating to state and local heritage items (*Appendix C*) found that the portion of the Site extending from Turallo Terrace to Rutledge Street is covered by State heritage, and is defined as the 'Bungendore Railway Station & Yard Group'. Items of local heritage are also present on Site, including the aforementioned Railway and Yard group along with the Bungendore Stationmasters Cottage (perpendicular to Gibraltar street to the north of the Bungendore Station, outside of the CRN), and Bungendore Common (bordering the Site and straddling Turallo Terrace).

A total of 67 further sites of local heritage exist within the 1000 m buffer zone of the site (*Appendix C*). The heritage search also identified major additions and changes to the railway precinct/yard at Bungendore prior to the aerial photograph record. These included the installation of a 12 ton cart weighbridge (1891, removed at an unknown date), carriage shelter shed/engine shed (1902, relocated to Coffs Harbour in 1918), and loading bank (1909). It is unknown whether these features were located within CRN lands.

The stockyards within Area C were constructed in 1887, modified in 1913 and ceased to be used in 1989 (NSW State Heritage Inventory, 2021).

National and Commonwealth Heritage

Review of National and Commonwealth Heritage database listings (*Appendix C*) has not identified the site as an item of natural, historic, or Indigenous place of outstanding significance to the Nation or Commonwealth.

2.5.4 Title Deed Information

A review of heritage information (*Appendix C*) identified that the Site has been operated as a railway line since 1885. No historical title search was completed as part of this investigation as the heritage information is considered sufficient to determine that the Site history has not altered from rail use.

2.6 Summary of Previous Investigations

As mentioned in Section 1.1, Ramboll undertook an unpublished Environmental Site Assessment in 2021 on behalf of JHR/TfNSW of the Bungendore Station in order to assess the likelihood of lead impacts being present within their investigation area. The investigation included a survey with X-Ray Fluorescence (XRF) which semi-quantitatively identified lead concentrations in surface soils and at depths to 0.1 m.

The Ramboll investigation focussed on areas which are within the Bungendore Rail Precinct (Bungendore Railway Station) but primarily outside of the Site. However a small number of samples were taken within the rail corridor north of the Station building. Of the samples analysed within the corridor, lead concentrations (measured in the field using XRF) reportedly ranged from 65 mg/kg up to 5740 mg/kg, and eight of the eleven samples analysed exceeded the selected Commercial/Industrial (HIL D) screening criteria. Field measurements taken from surface soils at the Bungendore Station area also indicated that lead was present above land use criteria (commercial/industrial and recreational open space), in particular at the southern portion of the Station area, nearest to the Wool Shed (up to 10,770 mg/kg). Ramboll noted that concentrations appeared to decrease significantly at 0.1 m bgl when compared to those taken at surface, indicating that the primary lead impact may be present in surface soils.

3. ENVIRONMENTAL SETTING

The following description of the site's environmental setting is based on a site visit undertaken on 2 August 2021 and information provided in *Appendix C* which was obtained from publically available databases and reference sources.

3.1 Local Topography and Hydrology

According to topographical information obtained from the Department of Finance, Services, and Innovation, presented in *Appendix C*, the Site is located at an elevation of approximately 700m AHD. The Site area is generally flat with the broader area surrounding the Site generally sloping gently from the south-east towards the north-west.

Stormwater and associated runoff is directed offsite through drainage channels at two locations towards Turallo Creek, to the north and into municipal drainage at King Street. Where draining is not present, surface water is generally expected to either infiltrate directly through the soil profile or flow across the ground surface in a north-westerly direction away from the railway line.

3.2 Geology and Soils

According to the mapping units provided by the NSW Department of Industry, Resources and Energy and presented in *Appendix C*, the Site is underlain by three primary units of canozoic geology. These include; fluvial deposits of gravel, sand, silt, and clay, fanglomerates and poorly cemented conglomerates of colluvium gravel and sand, and coarse sand and gravel existing in strandlines. A small portion at the northernmost edge of the Site is underlain by a turbiditic sequence of sandstone, mudstone, shale, quartzite, quartz phyllite, phyllite, and slate. A fault running north-west exists south of the Site.

The soils observed during the sampling event generally consisted of sandy, gravelly, and occasionally clayey brown silts, with occasional yellow to red components.

The Atlas of Australian Acid Sulfate Soils maps, as presented in *Appendix C*, shows that the site contains of sodosol soils, with a 'Low (6% - 70%)' probability of occurrence of acid sulfate soils which aligns with the inland and elevated location of the Site.

3.3 Hydrogeology

A review of the groundwater bore information presented in *Appendix C* identified 82 boreholes within a 1,000 m radius of the Site. The five nearest bores are shown on *Figure 5, Appendix A*. These bores are 400418 (adjacent to the Site boundary on Trucking Yard Lane), 403876 (12 m south), 403878 (12 m south), 416600 (63 m north) and 403783 (79 m north). Note that multiple other bores are located within 500 m of the Site, as illustrated and listed in *Appendix C*). Four of the five nearest bores are registered for domestic use. The other is monitoring bore 416600, which was installed in 2015 and is located 63 m to the north of Site. It was installed to 5.1 m bgl, and has a recorded standing water level of 4.35 m bgl. Domestic bore 400418, which is located onsite, although not a monitoring bore, reports a relatively consistent water depth of 7.0 m bgl.

The water supply for the township of Bungendore is via municipal extraction bores and therefore it is assumed that the bores within close proximity to the Site may be potable and used for drinking purposes.

Depth to groundwater and groundwater flow direction at the Site has not been confirmed through the installation of groundwater monitoring wells. However, based on the location of Turallo Creek, and the local topography, it is anticipated that groundwater would generally flow in a north to north-west direction, depending on the location on site, towards the creek. It is important to note that groundwater flow direction can be influenced locally and regionally by not only surface topography, but recharge and discharge areas, horizontal and vertical inconsistencies in the types, location and orientation of subsurface soils, fill or bedrock and proximity to groundwater extraction wells.

4. SITE INSPECTION

A site inspection was conducted by ERM and JHR representative John Barber on 2 August 2021 comprising a site walkover. John Barber was also a person knowledgeable of the Site, and was available for interview regarding current or historic use of the Site at the time of the inspection (as discussed in *Section 2.5.1*). The overall purpose of the site inspection was to gather anecdotal information and consolidate the findings of the desktop review through physical inspection of contaminant sources, pathways and receptors as an assessment of surface (and potential subsurface) Site conditions, with a specific focus on the historical handling of lead ore. Observations made during the Site Inspection were used for the description of the current site layout and usage is presented in *Section 2.2*. The following section details information gathered at the time of the site visit. A photographic log is provided in *Appendix F*.

4.1 Site Observations

Key observations noted during the site inspection and soil sampling included:

- A disused, overgrown access road runs the length of the eastern side of the corridor;
- The eastern site boundary is generally sparsely vegetated with trees, whilst the western side is clear, with only low grasses running parallel with Majara St. The bulk of the vegetation present appeared to be native grasses and invasive weeds (noting ecological survey was not undertaken);
- A railway cutting (approximately 2 m high) was evident north of the station, whilst another (3m high) exists perpendicular to Area C. Towards Turallo Creek the line exits the cutting and is built up on ballast at the approaches to the Turallo Creek Railway Bridge;
- Large angular grey ballast stones were present beneath the rail tracks and extended laterally generally from 1 to 3 metres;
- The railway is considerably raised from ground level on ballast and fill throughout the corridor with the exception of the area from Forster to Gibraltar St, and around the railway crossings;
- A maintained access road on the western side of the corridor runs south from the Kings Highway rail crossing;
- Evidence of illegal access was noted at portions of the Site at the intersections of Gibraltar and Powell and Majara streets, and in Area B at the rear of a number of residences;
- Asbestos was not observed in the Woolshed's external construction or at any other area of the Site, however note that a detailed hazardous building materials survey was not undertaken as it was beyond the scope of this assessment;
- A series of fill stockpiles along with waste steel, plastic and timber were present in Area A;
- Area C contained dilapidated wooden structures historically used as a stockyard and cattle loading facility;
- The former Station Masters Cottage is located adjacent to the Bungendore Station to the north and borders the Site
- The former Signalman's Cottage borders the Site, being sited at above the cutting which the Rail Line passes through;
- Multiple culverts exist along the railway draining water from the eastern side of the corridor into the west;
- Stormwater enters the corridor north of Area B on the eastern side of the corridor, and run under the railway, exiting the Site at the intersection of Majra St and the Kings Hwy;
- A series of waterlogged depressions exists above the rail line along the eastern side of the corridor; and
- Pooling surface water was evident following rainfall along the western side of the corridor, south of Area A. Some pools drained offsite.

5. PRELIMINARY SHALLOW SOIL SAMPLING

5.1 General

Following the Site inspection on 2 August 2021 a limited shallow soil sampling investigation was undertaken on 4 and 5 August 2021. All works were conducted in general accordance with ERM Proposal (P0540681) and ERM Standard Operating Procedures (SOPs).

5.2 Data Quality Objectives

Data quality objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in *Section 1.2*. The DQOs have been prepared in line with the seven-step approach outlined in *National Environment Protection (Assessment of Site Contamination) Measure (the ASC NEPM)* (NEPC, 1999) (as amended 2013). The seven steps of the DQO process, and how they were applied to the preliminary shallow soil sampling, are presented in *Appendix D*. The DQO process is validated, in part, by the quality assurance and quality control (QA/QC) procedures and assessment presented in *Appendix E* of this report.

5.3 Contaminants of Concern

Based on the initial desktop review and observations made during the Site Inspection the key contaminants of concern for the Site are heavy metals (in particular lead), due to the historical transport of lead ore along the Rail Line by uncovered wagons of unknown integrity and was transferred larger wagons at the Woolshed area.

Additionally, based on the extensive historical use of the Site as a railway precinct and the limited understanding of the historical practices undertaken, a broad suite of COPCs are also considered relevant including;

- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Phenols;
- Organochlorine and Organophosphate (OC/OP) pesticides; and
- Asbestos.

Although a wide range of COPCs have been identified, heavy metals were focused on for the shallow sampling. Additional COPCs should be considered for subsequent scopes of work.

5.4 Rationale for Sampling Design

The primary potentially contaminating activity historically undertaken within the investigation area was the transport of lead ore by rail. It is possible that dust from wagons and transferring of lead ore between carriages, as well as potential spills along the rail line and sidings have resulted in the presence of heavy metals such as lead, as well as hydrocarbons and other contaminants associated with rail machinery and equipment in shallow soils onsite.

Given the preliminary nature of the investigation and the large investigation area, soil sampling design and spread were focussed upon gaining a representative understanding of the condition of surface soils (upper 0.1 m) with relation to distance from the rail line along the entire Site Investigation Area. By focusing on the surface soils only, an assessment of the potential exposure to lead for identified receptors can be made under a preliminary CSM (refer to *Section 6*). Sampling locations are illustrated in *Figure 2 - 4* and also presented in *Tables 3 - 4*.

The strategy for soil sampling was as follows:

- Rail Corridor – As the length of the corridor is approximately 2.7 km, sampling was undertaken in a number of transects perpendicular to the Rail Line. Transects were at approximately 200 m intervals along the corridor. Where sufficient space allowed, three samples were collected from each side of the tracks at each transect. Samples were collected adjacent to the track, between the track and corridor boundary, and at the corridor boundary;
- Areas A, B and C – the remaining areas represent three former rail sidings along the corridor. Surface soil samples at these areas were sampled on a ~25 m herringbone grid pattern; and
- An allowance was made to collect nine additional soil samples at Areas of Interest (AOI) identified during the site visit, such as surface water drainage lines, barren areas where vegetation has not grown etc.

The sampling was designed to provide an initial assessment of potential soil contamination issues to the extent practicable and is considered appropriate for the purposes of this report. Assessment of soils below 0.2 m below ground level (bgl) and groundwater was not included within the sampling design.

The analytical suite for soil samples focused on only the key COPCs, including 15 heavy metals (arsenic, boron, barium, beryllium, cadmium, chromium, cobalt, copper, manganese, nickel, lead, selenium, vanadium, zinc and mercury).

5.5 Soil Sampling Method

A total of 119 surface soil samples were collected. The following methodology was adopted as part of the soil sampling activities:

- investigation locations were sampled using a trowel or collected directly by hand to a depth of 0.1 m bgl;
- soils at each location were logged in general accordance with AS1726 (Australian Standards, 2017), with any evidence of potential contamination noted if observed;
- a single soil sample was collected from each location into laboratory supplied sample bags which were sealed, appropriately labelled, and placed in a cooler on ice for transport to the laboratory; and
- to reduce the potential for cross contamination between sampling locations, nitrile gloves were changed between the collection of each sample and non-disposable investigation equipment was decontaminated by wire brush prior to the commencement of each location.

5.6 Field Observations

During the fieldwork sampling program the following observations were made during soil sampling:

- Soils found were generally consistent across the majority of the rail corridor length;
- Fill soils which included varying amount of ballast and other gravels were found in close proximity to the rail lines;
- Natural sandy silts were observed in samples that were outside of the rail lines. Vehicle access tracks were also observed on both sides of the rail line. No attempt was made to excavate deeper than 0.1 m bgl to observe lithological changes; and
- No noticeable staining or odours were noted in materials were observed across the Site;

Field descriptions of each sample collected are provided in *Table 3, Appendix B*.

5.7 Laboratory Analysis

The laboratory used for the investigation was accredited by the National Association of Testing Authorities (NATA), Australia. The primary laboratory used for soil analysis, including intra-laboratory duplicate samples, was Australian Laboratory Services (ALS). The secondary laboratory used for the analysis of inter-laboratory duplicate samples was NATA accredited Eurofins. The analytical methods used by each laboratory is provided in the laboratory certificates provided as *Appendix H*.

All samples were analysed for the suite of heavy metals listed in *Section 5.4*.

5.8 Waste

No soil waste was generated as a result of soil sampling activities, and each investigation location was backfilled using the soil cuttings removed and surrounding surface materials. General waste associated with disposable sampling equipment (e.g. gloves and zip lock bags) was removed from the Site and disposed off-site appropriately as general waste.

5.9 Analytical Results

5.9.1 Soil Screening Criteria

The Tier 1 screening criteria for soil data has been selected based on a review of the ASC NEPM (2013 update): Schedule B1: Guideline on the Investigation Levels for Soil and Groundwater. Health Investigation Levels (HILs) for human health – direct contact and Ecological Investigation Levels (EIL's) were applied. Given the broad area of investigation, criteria for various land uses were applied based on the identified Site receptors as described in *Section 6.5*. The Screening Criteria were applied as follows:

- Commercial/Industrial (HIL D and EIL) - all samples were screened against commercial/industrial criteria, due to the Sites' use as a rail corridor;
- Open Space/ Recreation (HIL-C) – all samples were additionally screened against HIL C criteria due to the evidence of trespassing via illegal access to the Rail Corridor (communal walking tracks through the multiple areas); and
- Residential (HIL A) and EIL (Urban Residential & Open Space) – selected samples that were located on the Sites boundaries were additionally screened against residential criteria as an indication of whether any offsite risks may be plausible.

In order to nominate an appropriate EIL for certain analytes, Site specific data for certain parameters. The specific data is not available, and therefore conservative assumptions have been made based on Site observations. A low clay content of 1% was used based on the silty gravelly soil observed onsite. Conservative values of 5 pH and 10 cmol/kg Cation Exchange Capacity (CEC) were adopted. The EILs also make an allowance for a background level of a certain contaminant to be present and the background concentration is added to the screening level. Based on a review of the concentrations observed at Area C (Trucking Yard) appeared to represent background conditions as the results to samples collected appeared to be relatively low and consistent for all metals and therefore were likely to be un-impacted. An average of these samples was calculated and added to the Added Contaminant Limit (ACL) as specified in NEPM (2013).

The screening criteria are summarised in the header portion of the analytical results *Table 4*, *Appendix B*.

5.10 Soil Analytical Results

A total of 119 primary soil samples were analysed for heavy metals. A summary of analytical data that has applied the relevant screening criteria is presented in *Table 4*, *Appendix B*. Laboratory certificates of analysis are provided in *Appendix H*. Exceedances of screening criteria are illustrated in *Figures 3a-3d* and are summarised in *Table 5.1* below.

Table 5-1: Soil Exceedances

Area	Analyte	Applicable Primary Samples	No of Exceedances	Criteria Exceeded
Rail Corridor	Lead	88	16	HIL-D (Commercial /Industrial)
		88	29	HIL-C (Recreational Open Space)
		24	1	HIL-A (Residential)
		88	16	EIL (Commercial Industrial)
	Arsenic	88	2	HIL-C
		88	10	EIL (Commercial Industrial)
	Copper	88	45	EIL (Commercial Industrial)
	Zinc	88	36	EIL (Commercial Industrial)
		24	4	EIL (Urban Residential & Open Space)
Area A (Woolshed Siding)	Lead	18	3	HIL-D (Commercial /Industrial)
		18	12	HIL-C (Recreational Open Space)
		18	3	EIL (Commercial Industrial)
	Arsenic	18	1	EIL (Commercial Industrial)
	Copper	18	10	EIL (Commercial Industrial)
	Zinc	18	10	EIL (Commercial Industrial)
Area B (Former Rail Fork)	Arsenic	5	1	EIL (Urban Residential & Open Space)
	Zinc	5	1	EIL (Urban Residential & Open Space)
Area C (Trucking Yard)	N/A	8	No Exceedances	N/A

Given that lead is the primary COPC for the Site on the basis of the primary contaminating activities involving movements of lead ore, a concentration map which uses the observed concentrations of lead to estimate potential concentrations across the Site has been included as Figure 4, Appendix A.

It is noted that samples T3-W1 and T3-W2 were collected within marginally outside the CRN boundary in the portion of the rail corridor managed by Sydney Trains.

5.11 Quality Assurance / Quality Control Evaluation

A detailed QA/QC report including field procedures, laboratory methods and an analysis of QA/QC results from the investigation is provided in *Appendix E*.

In summary, field and laboratory QA/QC data were reported generally free of systematic and method biases and were assessed to be of sufficient quality for the purposes of this investigation.

6. PRELIMINARY CONCEPTUAL SITE MODEL

An understanding of potential exposure scenarios is necessary to evaluate the suitability of a site for a particular land use, being the current approved or potential future land use. Potential exposure pathways are evaluated for completeness based on the existence of:

- a source of contamination/impact;
- a mechanism for release of contaminants from identified sources;
- a contaminant retention or transport medium (e.g. soil, air, groundwater, etc.);
- potential receptors of contamination; and
- a mechanism for chemical intake by the receptors at the point of exposure.

Whenever one or more of the above elements is missing, the source/pathway/receptor linkage is incomplete and there is therefore there can be no risk to the identified receptor.

6.1 Potential Sources of Contamination

The current and historic potential sources of on and off-site soil contamination identified through this PSI which are considered to represent a potential environmental liability include the following:

- **Historical handling of lead ore:** the operation of the rail infrastructure within and immediately adjacent to the Site represents a potential contamination source with respect to potential lead ore spillage and dust from cargoes and their deposition throughout the corridor.
- **Stockpiling of potential contaminated soils:** the use of the Woolshed yard for stockpiling materials could represent a potential contamination source as the source of the materials historically stockpiled in this location is unknown.
- **Use of lead based paint on structures:** heritage structures are known to have commonly been painted with lead based paints, which can enter soils within the dilapidation footprint.
- **Historical operation of railway lands (various):** the Sites long term use as rail yard and lines may have resulted in a number of additional contaminating activities which were not readily observable during the Site Inspections including (but not limited to) pesticide use, hydrocarbon spills, potential historical hydrocarbon storage, use of contaminated building materials (asbestos), deterioration of asbestos based braking systems, use of PCB oils and potential historical onsite fires.
- **Former Timber Treatment Plant (Offsite Source):** bordering the Site (located on the corner of King and Bulmaroo Streets) that has been classified as contaminated formerly regulated under the CLM act. Shallow soil arsenic concentrations at the former plant have been reported to exceed screening criteria, whilst other metal concentrations have been reported above ecological investigation levels. This contamination has the potential to have impacted the Site.

6.2 Nature and Extent of Impact

The primary COPC for the Site is lead, based on the historical movements of lead ore through the Site via the Rail Corridor. As information on other COPCs has not been collected, this CSM focuses primarily on the SPR linages for lead.

As no historical investigations have been completed at the Site, the data reported herein represents the information used to assess the extent of impacts. Based on the results of the sampling undertaken as part of this PSI, lead is broadly present in surface soils at the Site at concentrations which would be considered above background. Other heavy metals (arsenic, copper and zinc) were noted to

exceed ecological criteria, however these exceedances were broadly observed in similar areas to where lead was present. Note that the arsenic exceedances do not appear to have an observable direct relationship with the former Timber Treatment Plant adjacent to the Site as the distribution of impacts appears to be similar to the lead concentrations rather than from an additional offsite source.

The observed distribution of the lead concentrations has been mapped in Figure 4, Appendix A. As illustrated in the concentration map, lead concentrations are broadly elevated immediately adjacent to or within the rail ballast beneath the rail lines (as identified in samples with W1 and E1 identifiers) with a number of samples over an order of magnitude above commercial/ industrial human health (HIL D) screening criteria. Concentrations were generally observed to decrease significantly with distance to the rail line, with all samples taken at the Site boundary below HIL-D and only a single minor HIL-A exceedance.

Both the magnitude of lead concentrations and extent of impacts appeared to be increased in areas where trains may have been required to slow down, stop and/ or load/ unload, such as the Area B loading platform and the Bungendore Station. The areas at the southern and northern extents of the rail corridor, along with the Trucking Yard (Area C) and the Fork Rail Fork (Area B) did not appear to be significantly impacted by lead. It is noted however, that these locations were generally within areas of frequent slowing/ stopping as mentioned above.

A number of samples were taken from soils at the base of drainage channels and pooling surface water to assess the potential for these areas to act as deposition and transport environments. The majority of these features present at the Site were targeted. This investigation did not identify significantly elevated concentrations within these locations and therefore it does not appear that lead or the other heavy metals analysed are concentrated in surface water drainage lines in the locations sampled. It is however acknowledged that immediately prior to the investigation, rainfall resulted in ponds and large puddles being formed, which limited field staff access to the deepest sample locations in several instances.

6.3 Potential Pathways

The primary potential exposure pathways of concern at the Site are:

- Dermal contact and / or incidental ingestion with impacted soils / sediments, surface water);
- Home grown produce (residential only);
- Inhalation of dust (from impacted soils);
- Contact with groundwater via abstraction bores; and
- Inhalation of vapours (volatile constituents only).

6.4 Potential Receptors

The following potential receptors have been identified relevant to the Site:

Human Receptors:

- On/off-site commercial/industrial workers and users of the Men's Shed which operates from the Woolshed building at Area A;
- Onsite Intrusive Maintenance Workers;
- Users of the Bungendore Station (public open space setting);
- Trespassers illegally accessing the Site ;
- Offsite residents;
- Recreational users of the downstream waterways; and

- Potential users of groundwater.

Ecological Receptors:

- Offsite freshwater receptors; and
- On and offsite terrestrial receptors.

Offsite sensitive receptors within 100 m of the Site are illustrated on *Figure 5, Appendix A*.

6.5 Qualitative Evaluation of Environmental Risk

6.5.1 Onsite Human Health

The primary Site receptors are considered to be onsite commercial/industrial rail workers, those who use the Men's Shed facility which operates from the Area A Woolshed and also intrusive maintenance workers completing works at the Site. Trespassers who access the Site are also considered relevant receptors, although it is noted that the Site is not intended for recreational use. The path for both commercial / industrial and recreational trespassers is by direct contact with impacted soils. This SPR linkage is considered to be potentially complete. The commercial / industrial direct contact risk may be effectively managed through institutional controls and trespasser access could be eliminated or restricted by improving Site security.

Dust inhalation is considered to be a potential SPR linkage for both commercial / industrial and recreational users, particularly given that the lead impacted area generally contained minimal vegetation coverage which may restrict dust generation. It is unlikely that significant dust would be generated from the soils within the track ballast, where the majority of lead is present. It is noted that the exposure under this SPR linkage would be highly incidental based on the infrequent nature of weather events which may generate significant dust plumes.

The potential for contamination to have migrated to onsite groundwater has not been assessed, however given the depth of groundwater (likely approximately 7 m), it is considered unlikely that the identified current onsite receptors would contact groundwater. No significant sources of volatile contaminants have been identified and therefore vapour inhalation is considered unlikely to represent a complete exposure pathway.

6.5.2 Offsite Human Health

Lead concentrations in shallow soils at the boundary of the Site indicate that impacts largely do not extend a significant distance from the rail line. Although a limited number of exceedances of residential criteria were noted at the Site boundary, it is considered unlikely that these represent significant offsite concentrations given the low magnitude of the exceedances reported and the pattern of significant decrease of concentration with distance from the rail line which is evident across the Site.

Dust inhalation is considered to be a potentially complete SPR linkage for offsite receptors, although the data collected as part of this PSI is not sufficient to confirm this pathway. It is noted that at present, the exposure under this SPR linkage would be expected to be incidental based on the infrequent nature of weather events which may generate significant dust plumes.

A number of registered domestic groundwater bores exist in close proximity to the Site. Groundwater has not been assessed as part of this PSI, and lead concentrations have not been vertically delineated. Potential exists for lead to have mobilised vertically to groundwater and caused impacts which extend to the offsite bores.

6.5.3 Onsite Ecological

Exceedances of ecologically based criteria were noted for a number of heavy metals across the Site. The Site is also potentially accessible to various fauna from the eastern agricultural land bounded by a low barbed wire fence. Based on this, it is possible that areas of the Site where concentrations of heavy metals are elevated are not supportive of ecological receptors and therefore if any ecological receptors are present a risk may exist. Despite this, it is recognised that the Site is not intended to be supportive of ecological communities given its use as a Rail Corridor and sidings. Under the current Site use, ecological receptors are actively managed by removal or exclusion such that there is no interference with the trains utilising the corridor.

6.5.4 Offsite Ecological

Turallo Creek is a High Potential Groundwater Dependant Ecosystem, which may be connected to onsite groundwater. However, lead concentrations in the vicinity of Turallo Creek are comparatively low compared to other areas of the Site and therefore a significant groundwater plume connecting to the surface water body is considered unlikely.

It is considered a possibility that identified lead concentrations in shallow soil may mobilise in surface water runoff during rainfall and could migrate offsite into drainage channels which connect to offsite surface water receptors such as Turallo Creek. Offsite surface water has not been assessed as part of this PSI, and as such a potential SPR linkage cannot be excluded from further consideration. However, soils at the base of a number of drainage channels onsite were assessed and heavy metals concentrations were not significantly elevated and therefore there is evidence that surface water runoff is may not be a significant pathway.

6.6 Potentially Complete Exposure Pathways

A Source-Pathway-Receptor (SPR) linkage is considered to be present when a pathway links a source with a receptor. These linkages explain when there may be risks to the receptor, either now or in future. Based on information reviewed as part of this PSI, the following potentially complete SPR linkages currently exist:

- Onsite commercial / industrial worker, intrusive maintenance workers and Men's Shed users through direct contact and/or dust inhalation. This risk may be managed through institutional controls;
- Trespassers through direct contact and/or dust inhalation. This risk may be managed by further restricting illegal access to the Site;
- Offsite abstraction bore users if lead is present in groundwater and extends to offsite domestic bores;
- Onsite ecological receptors in areas of elevated heavy metals, noting that the Site is not intended to be supportive of ecological communities given its commercial / industrial use as a Rail Corridor and sidings; and
- Offsite ecological receptors in surface water, noting the surface water has not been assessed as part of this PSI.

7. CONCLUSIONS

Based on the results of the investigation works completed for the Site and reported upon within this PSI report, the overall objectives are considered to have been met and a preliminary understanding of potential sources of contamination, receptors and potential exposure pathways has been established.

The Site is zoned as Infrastructure (SP2) has been utilised for rail activities since 1885. The primary potentially contaminating activity identified was the historical use of the Site as a rail corridor/active railway transporting lead ore via uncovered wagons from the Captains Flat Mine and was transferred larger wagons at the Woolshed area. No previous formal investigations have been completed at the Site. Based on the background information reviewed, a number of additional potentially contaminating historical activities have been identified relating to the long term railway use of the Site.

Soil sampling completed as part of this preliminary investigation focused on heavy metals in shallow soils (<0.1m bgl) in order to provide additional information on the impact of historical lead ore handling at the Site. Based on the data collected, concentrations of lead in shallow soils (<0.1 m bgl) were present above applicable screening criteria at a number of locations. The distribution of lead in shallow soils at the Site can be summarised as follows:

- Lead concentrations in soil were broadly elevated immediately adjacent to or within the rail ballast beneath the rail lines;
- Both the magnitude of lead concentrations and extent of impacts was increased in areas where trains may have been required to slow down, stop and/or transfer lead ore between wagons, such as the Woolshed area and Bungendore Station;
- Concentration were generally observed to decrease rapidly with distance from the rail line. Based on the low relatively low concentrations of lead at the boundary and the pattern of significant decrease of concentrations with distance from the Rail Line which is evident across the Site, it is considered unlikely that the significant shallow soil impact extends offsite along the majority of the corridor;
- The areas at the southern and northern extents of the rail corridor, along with the Trucking Yard (Area C) and the Fork Rail Fork (Area B) did not appear to be impacted by lead. The presence of lead and other heavy metals within surface soils removed from the rail line itself was commonly associated with areas barren of vegetation. It is noted however, that these locations were likely within areas of frequent slowing/ stopping as mentioned above; and
- A number of samples were taken within drainage channels and pooling surface water onsite to assess the potential for these areas to act as deposition and transport environments. This investigation did not identify significantly elevated concentrations within these locations and therefore it does not appear that lead and heavy metals are concentrated in the sediments within surface water drainage lines.

Through the development of a preliminary Conceptual Site Model ERM have concluded that that a number of potentially complete SPR linkages at the Site relating specifically to lead. These are considered potential as further assessment is required in order to confirm if a risk exists. The identified potential SPR linkages include:

- Onsite commercial / industrial worker, intrusive maintenance workers and Men's Shed users through direct contact and/or dust inhalation. This risk may be managed through institutional controls and management of hotspot areas;
- Onsite recreational users (trespassers) through direct contact and/or dust inhalation. This risk may be managed by further restricting recreational access to the Site;
- Offsite human health through potential dust inhalation;
- Offsite abstraction bore users if lead is present in groundwater and extends to offsite domestic bores;

- Onsite ecological receptors in areas of elevated heavy metals, noting that the Site is not intended to be supportive of ecological communities given its use as a Rail Corridor and sidings; and
- Offsite ecological receptors in surface water, noting the surface water has not been assessed as part of this PSI.

Based on the identified lead impact in surface soils at the Site, and the potentially complete SPR Linkages present, a duty to notify the NSW EPA under S.60 of the CLM Act (1997) is considered to be triggered. As part of the notification process, it is recommended that the NSW EPA should be engaged to discuss whether additional data collection and further assessment of potentially complete SPR Linkages may be beneficial in the NSW EPA's assessment of the Site.

8. STATEMENT OF LIMITATIONS

This report was prepared in accordance with the scope of work outlined within this report and subject to the applicable cost, time and other constraints. ERM performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental profession. ERM makes no warranty concerning the suitability of the Site for any purpose or the permissibility of any use, development or re-development of the Site. Except as otherwise stated, ERM's assessment is limited strictly to identifying specified environmental conditions associated with the subject site and does not evaluate structural conditions of any buildings on the subject site. Lack of identification in the report of any hazardous or toxic materials on the subject site should not be interpreted as a guarantee that such materials do not exist on the Site.

This assessment is based on site inspection conducted by ERM personnel, sampling and analyses described in the report, and information provided by John Holland Rail Pty Ltd ('JHR' or 'the client') or other people with knowledge of the site conditions. All conclusions and recommendations made in the report are the professional opinions of the ERM personnel involved with the project and, while normal checking of the accuracy of data has been conducted, ERM assumes no responsibility or liability for errors in data obtained from such sources, regulatory agencies or any other external sources, nor from occurrences outside the scope of this project.

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9. REFERENCES

Australian Standards (2017), AS 1726:2017 - Geotechnical site investigations

National Environment Protection Council (1999), National Environment Protection (Assessment of Site Contamination) Measure (the ASC NEPM) (as amended 2013)

NSW EPA (2017), Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd edition)

NSW EPA (1997), NSW Protection of the Environment Operations (POEO) Act, 1997

Heritage NSW (2021), State Heritage Register Heritage Item: Bungendore Railway Station and yard group

NSW EPA (2021), List of NSW contaminated sites notified to the EPA

NSW EPA (2021), Contaminated Lands Records of Notice

Geoscience Australia (2021), National Waste Management Facilities Database

Geoscience Australia (2021), National Liquid Fuel Facilities

NSW EPA (2021), Licensed Activities under the POEO Act 1997

NSW Department of Industry Planning & Environment (DPIE) (2021), Environmental Planning Instrument Land Zoning

CSIRO (2017), Atlas of Australian Acid Sulfate Soils

NSW DPIE (2020) Soil Landscapes of Central and Eastern NSW Groundwater Dependent Ecosystems – BOM

NSW Department of Finance, Services, and Innovation (2019), Topographic Data

NSW DPIE (2014), Geological Units 1:250,000

NSW DPIE (2014), Geological Structures 1:250,000

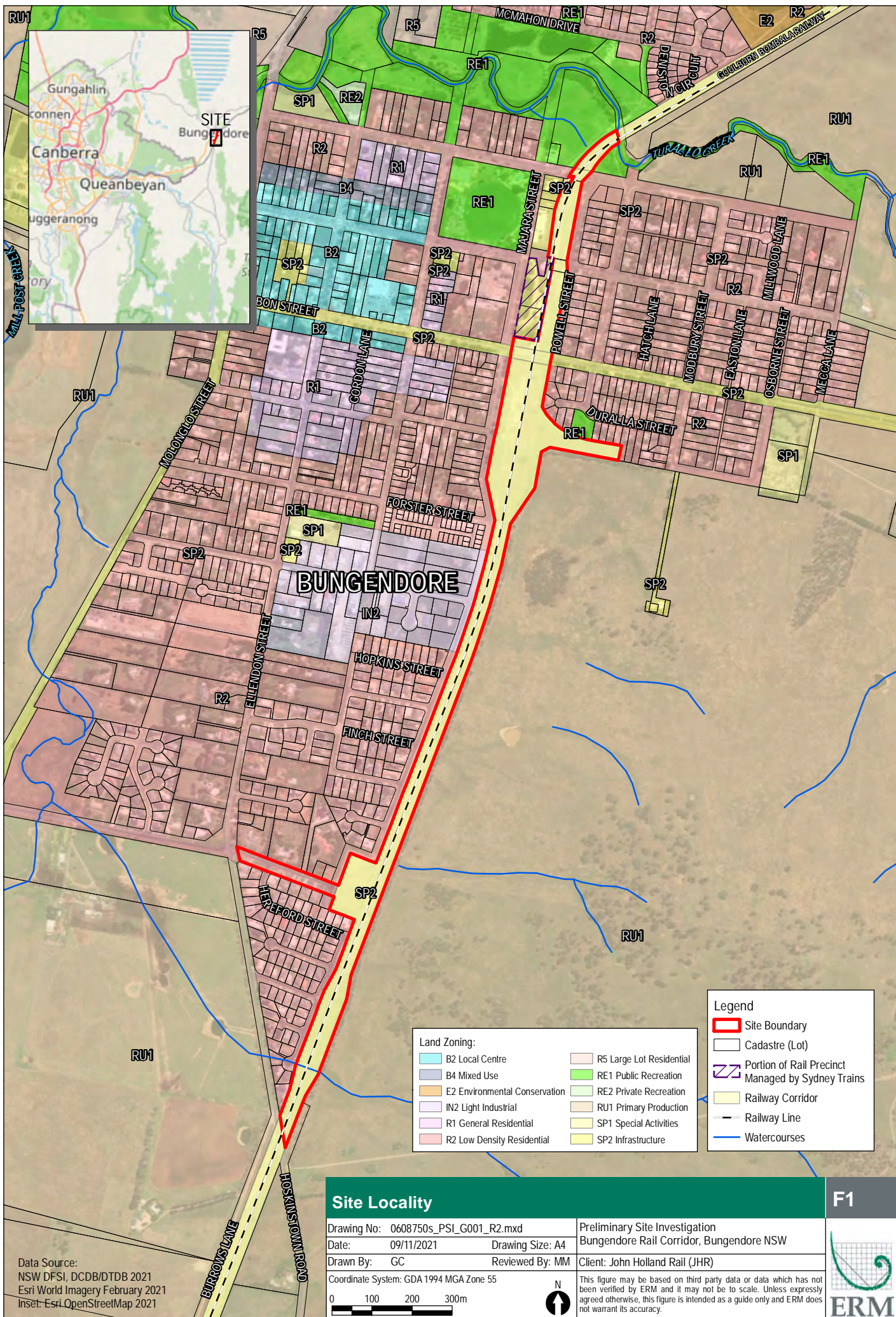
NSW Government Spatial Services (2021), Tanks (Areas)

NSW DPIE (2021), Environmental Planning Instrument Local

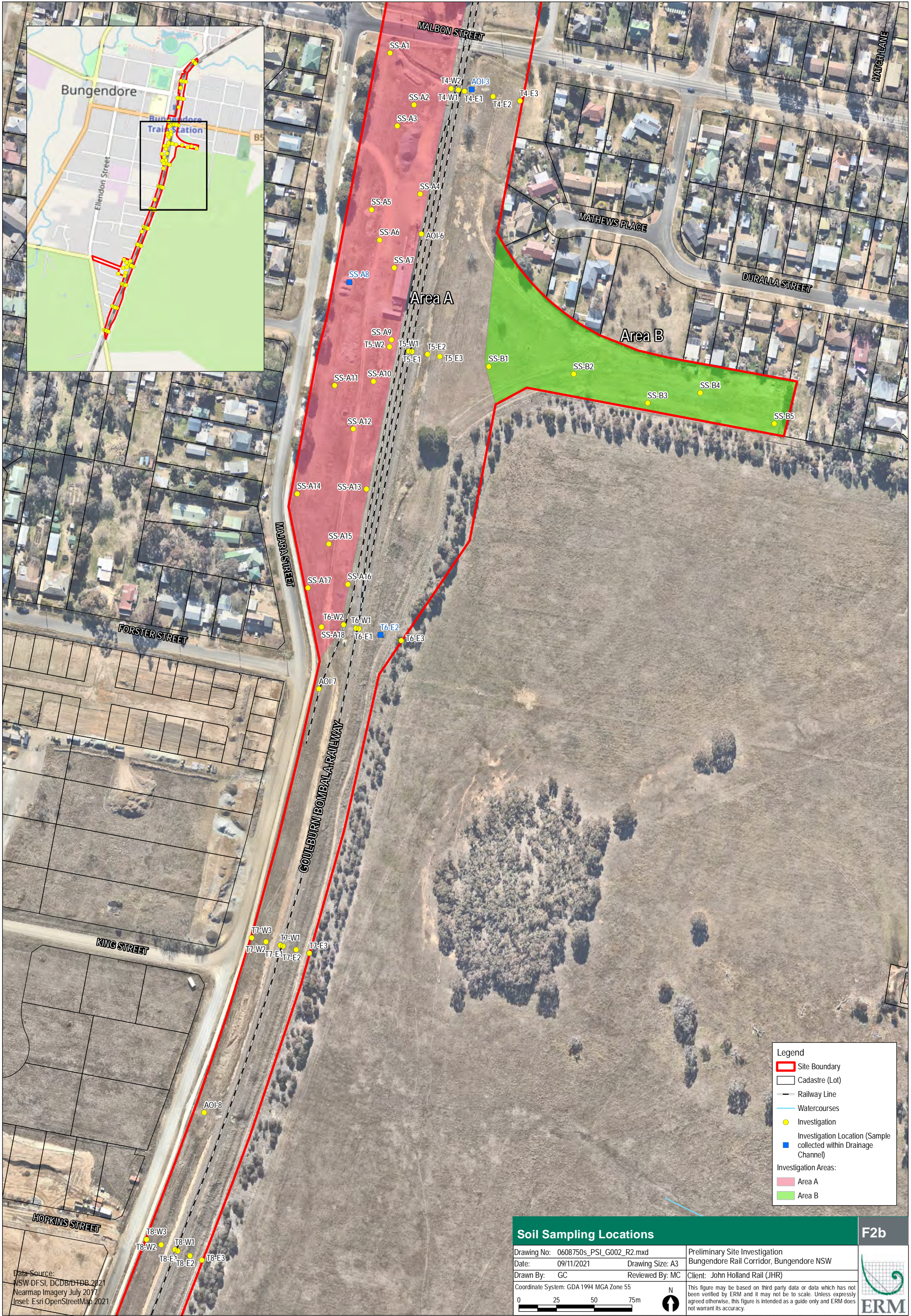
NSW Office of Environment & Heritage (2021), NSW BioNet Species Sightings

Ramboll Australia Pty Ltd (2021) Bungendore Train Station Environmental Site Assessment. 318001025-T11-01



APPENDIX A FIGURES

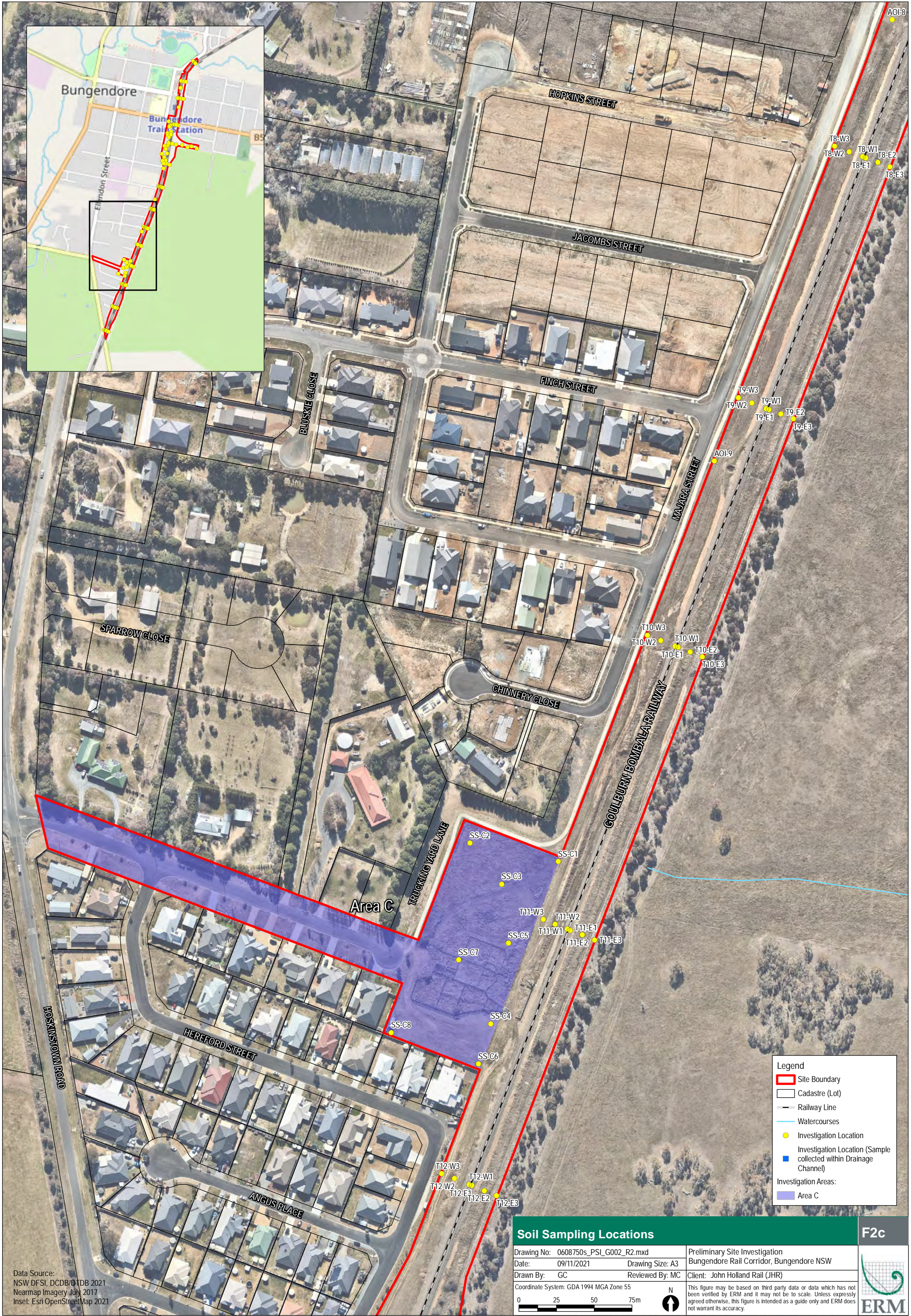


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Esri World Imagery February 2021
Inset: Esri OpenStreetMap 2021



Data Source:
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Nearmap Imagery July 2017
Inset: Esri OpenStreetMap 2021

Soil Sampling Locations		F2b
Drawing No: 0608750s_PSI_G002_R2.mxd	Preliminary Site Investigation	
Date: 09/11/2021	Drawing Size: A3	Bungendore Rail Corridor, Bungendore NSW
Drawn By: GC	Reviewed By: MC	Client: John Holland Rail (JHR)
Coordinate System: GDA 1994 MGA Zone 55		<div>This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.</div> 
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Data Source:
NSW DFSI, DCDB/DTDB 2021
Nearmap Imagery July 2017
Inset: Esri OpenStreetMap 2021



Data Source:
NSW DFSI, DCDB/DTDB 2021
Nearmap Imagery July 2017
Inset: Esri OpenStreetMap 2021

Soil Sampling Locations

Drawing No: 0608750s_PSI_G002_R2.mxd	Preliminary Site Investigation
Date: 09/11/2021	Bungendore Rail Corridor, Bungendore NSW
Drawn By: GC	Reviewed By: MC
Client: John Holland Rail (JHR)	

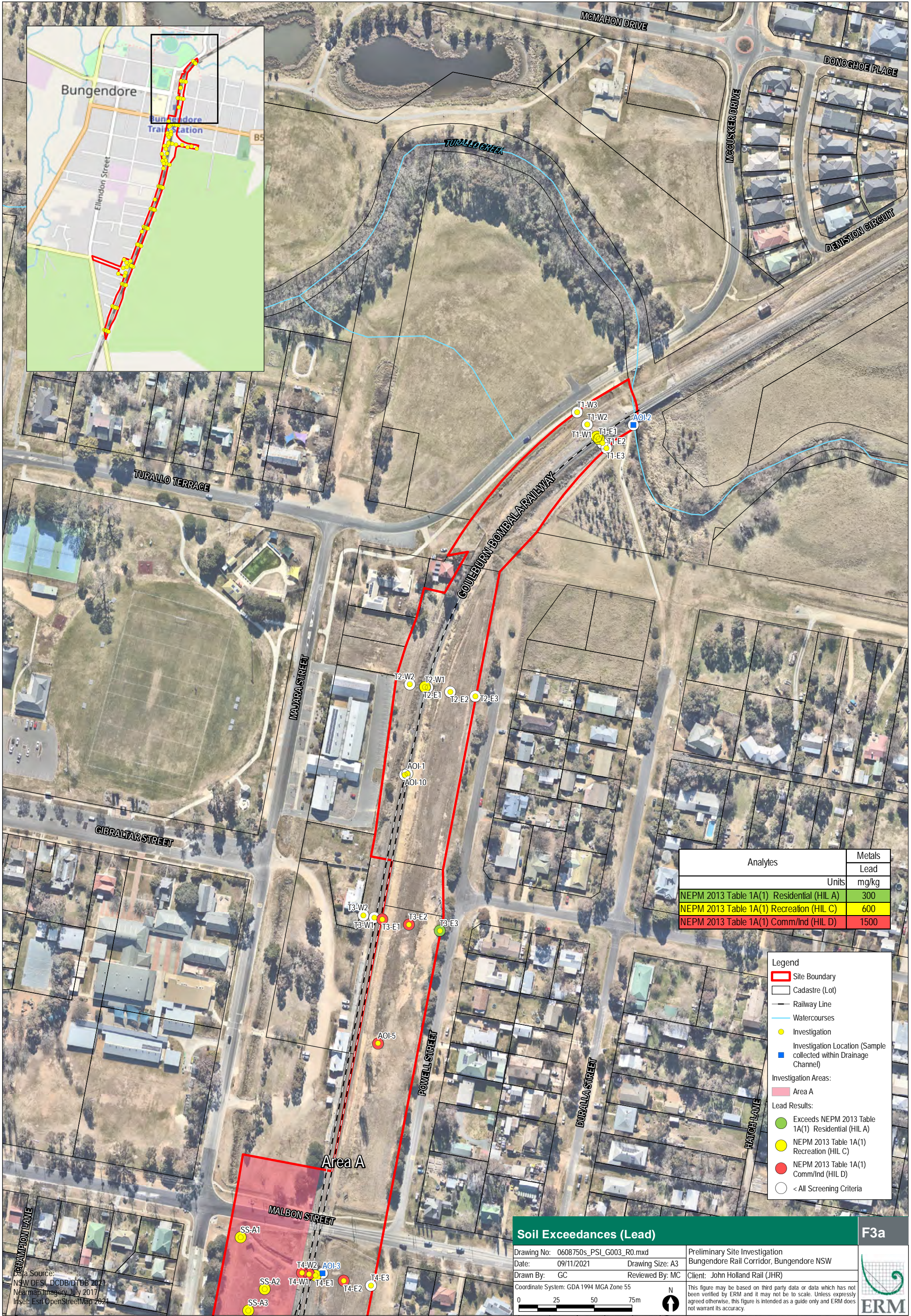
Coordinate System: GDA 1994 MGA Zone 55



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F2d





Analytes	Metals
	Lead
Units	
mg/kg	
NEPM 2013 Table 1A(1) Residential (HIL A)	300
NEPM 2013 Table 1A(1) Recreation (HIL C)	600
NEPM 2013 Table 1A(1) Comm/Ind (HIL D)	1500

- Legend**
- Site Boundary
 - Cadastre (Lot)
 - Railway Line
 - Watercourses
 - Investigation
 - Investigation Location (Sample collected within Drainage Channel)
 - Investigation Areas:
 - Area A
 - Lead Results:
 - Exceeds NEPM 2013 Table 1A(1) Residential (HIL A)
 - NEPM 2013 Table 1A(1) Recreation (HIL C)
 - NEPM 2013 Table 1A(1) Comm/Ind (HIL D)
 - < All Screening Criteria

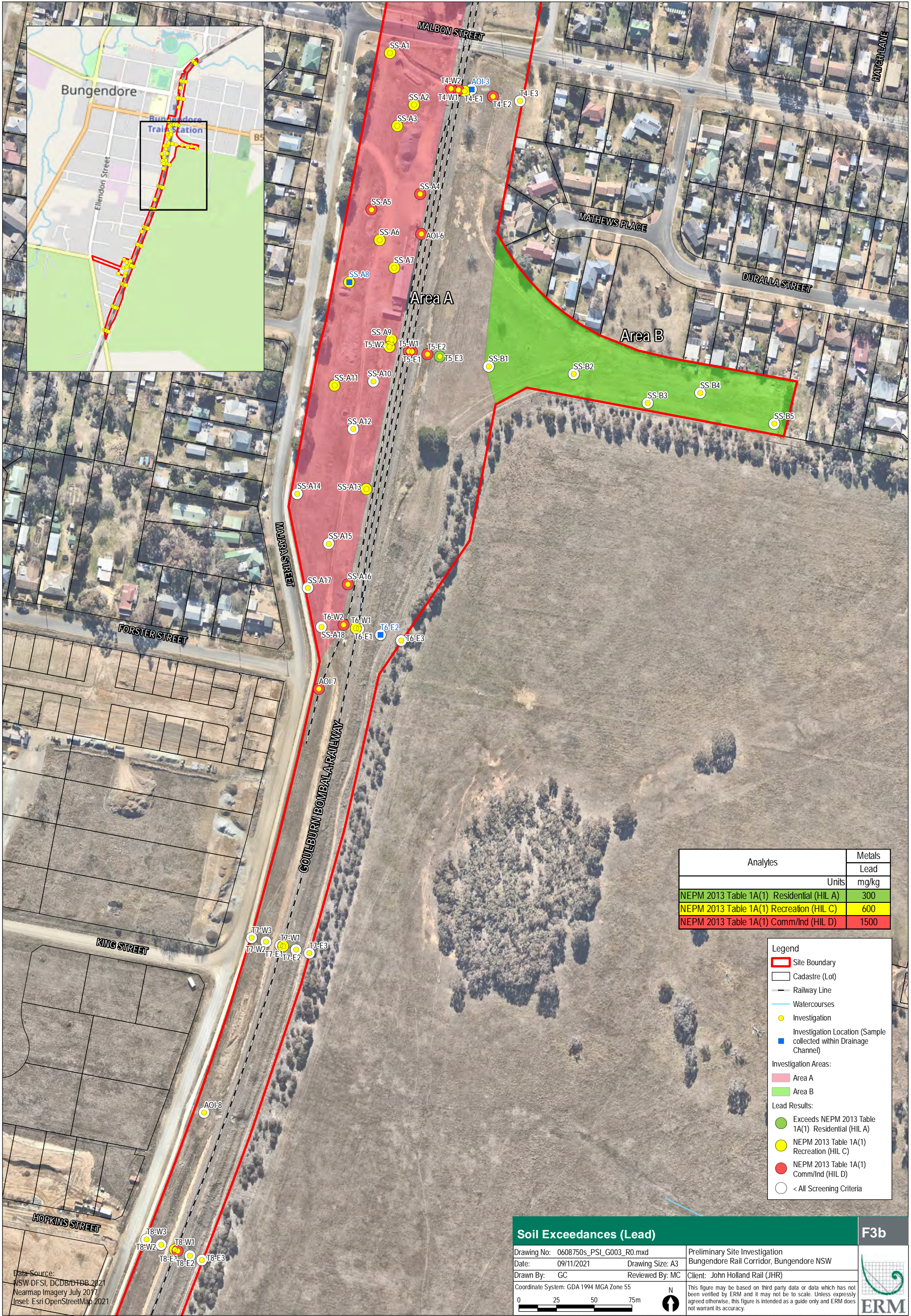
Soil Exceedances (Lead)

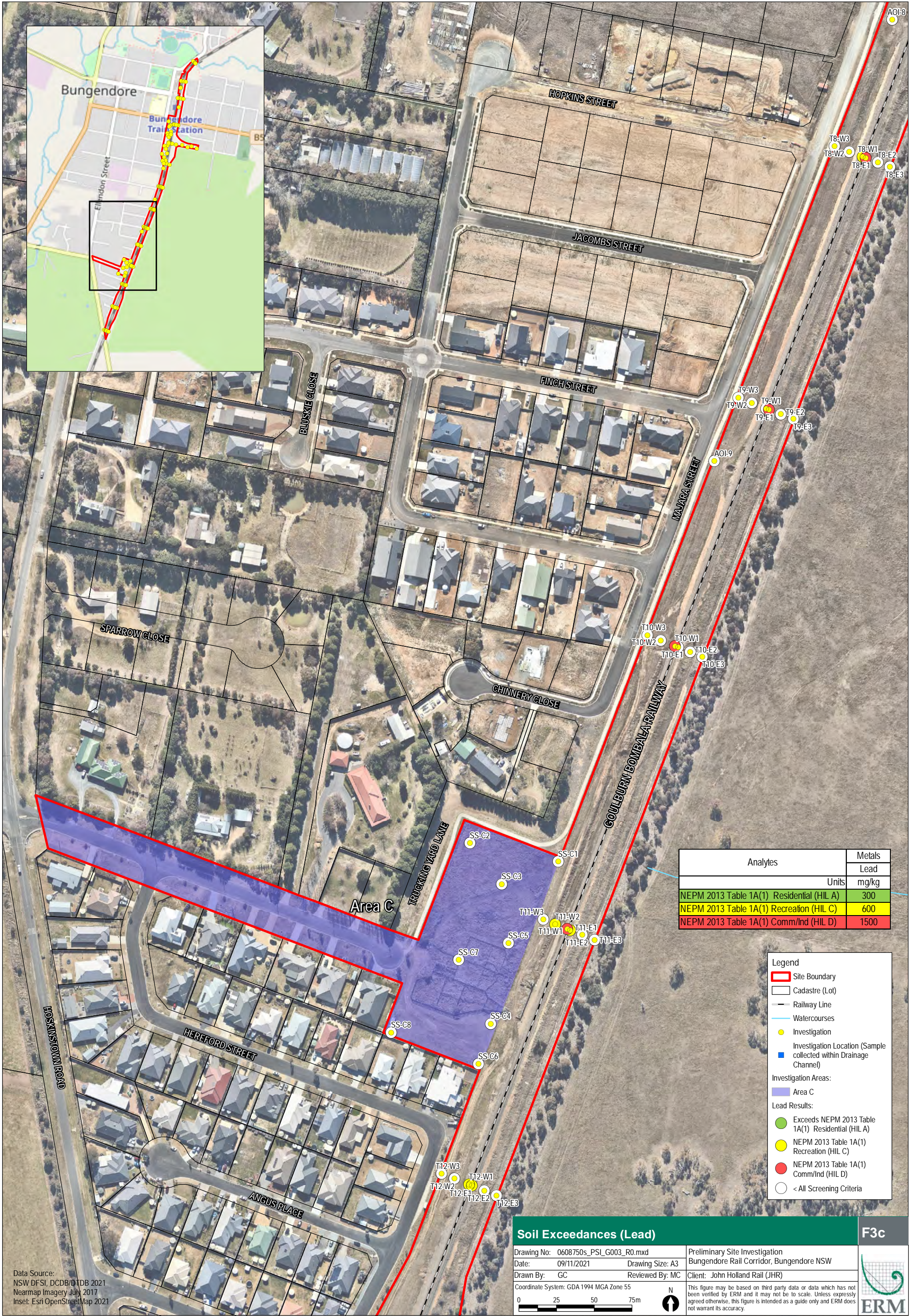
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Drawn By: GC	Reviewed By: MC
Client: John Holland Rail (JHR)	
Coordinate System: GDA 1994 MGA Zone 55	
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F3a





Analytes	Metals
	Lead
	Units
	mg/kg
NEPM 2013 Table 1A(1) Residential (HIL A)	300
NEPM 2013 Table 1A(1) Recreation (HIL C)	600
NEPM 2013 Table 1A(1) Comm/Ind (HIL D)	1500

Legend

- Site Boundary
- Cadastre (Lot)
- Railway Line
- Watercourses
- Investigation
- Investigation Location (Sample collected within Drainage Channel)

Investigation Areas:

- Area C

Lead Results:

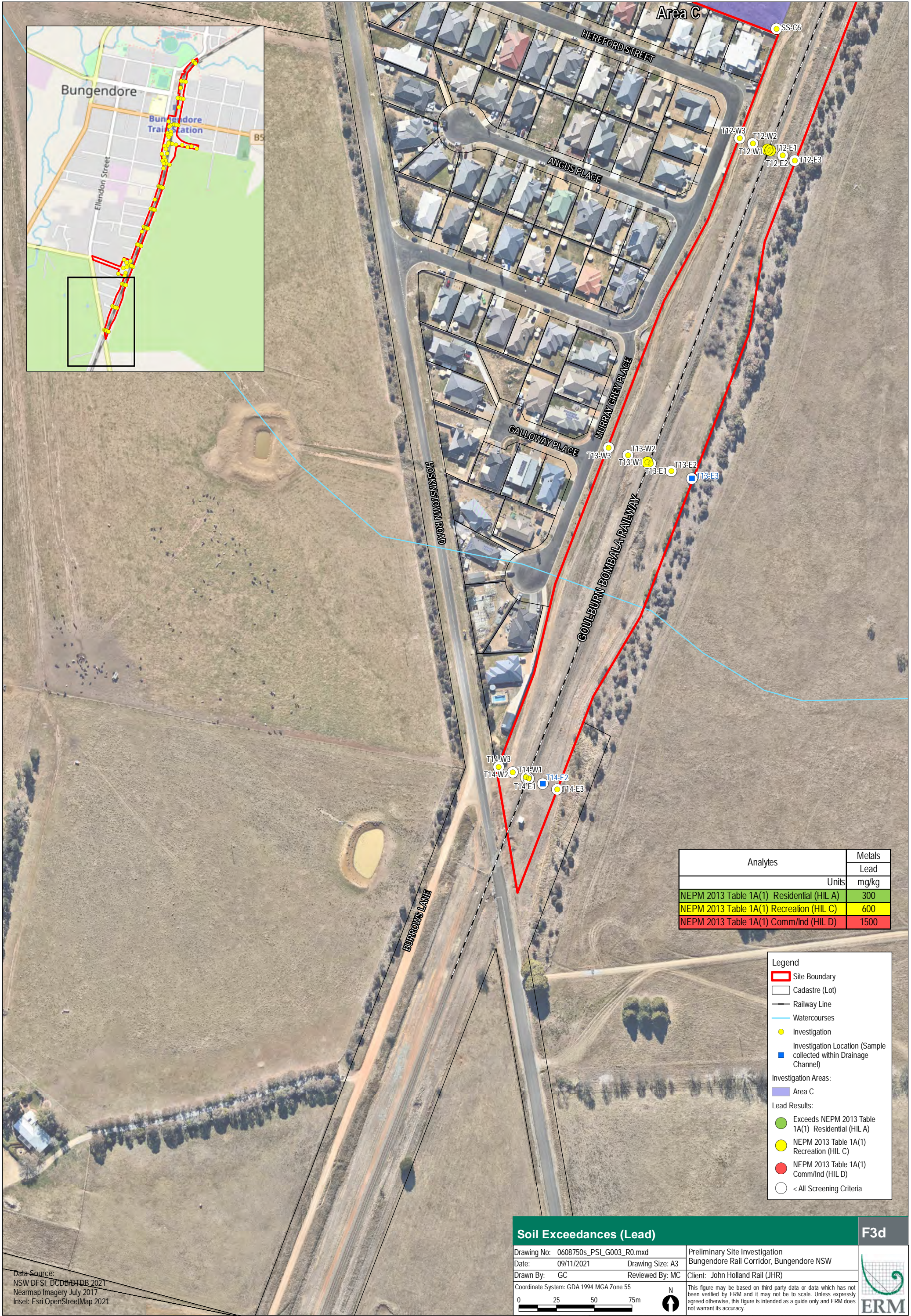
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- NEPM 2013 Table 1A(1) Recreation (HIL C)
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- < All Screening Criteria

Soil Exceedances (Lead)

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Drawn By: GC	Reviewed By: MC
Client: John Holland Rail (JHR)	
Coordinate System: GDA 1994 MGA Zone 55	
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	This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

F3c





Analytes	Metals
	Lead
	Units
	mg/kg
NEPM 2013 Table 1A(1) Residential (HIL A)	300
NEPM 2013 Table 1A(1) Recreation (HIL C)	600
NEPM 2013 Table 1A(1) Comm/Ind (HIL D)	1500

Legend

- Site Boundary
- Cadastre (Lot)
- Railway Line
- Watercourses
- Investigation
- Investigation Location (Sample collected within Drainage Channel)

Investigation Areas:

- Area C

Lead Results:

- Exceeds NEPM 2013 Table 1A(1) Residential (HIL A)
- NEPM 2013 Table 1A(1) Recreation (HIL C)
- NEPM 2013 Table 1A(1) Comm/Ind (HIL D)
- < All Screening Criteria

Soil Exceedances (Lead)

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Date: 09/11/2021

Drawn By: GC

Coordinate System: GDA 1994 MGA Zone 55

Drawing Size: A3

Reviewed By: MC

Scale: 0 25 50 75m

North Arrow

Preliminary Site Investigation

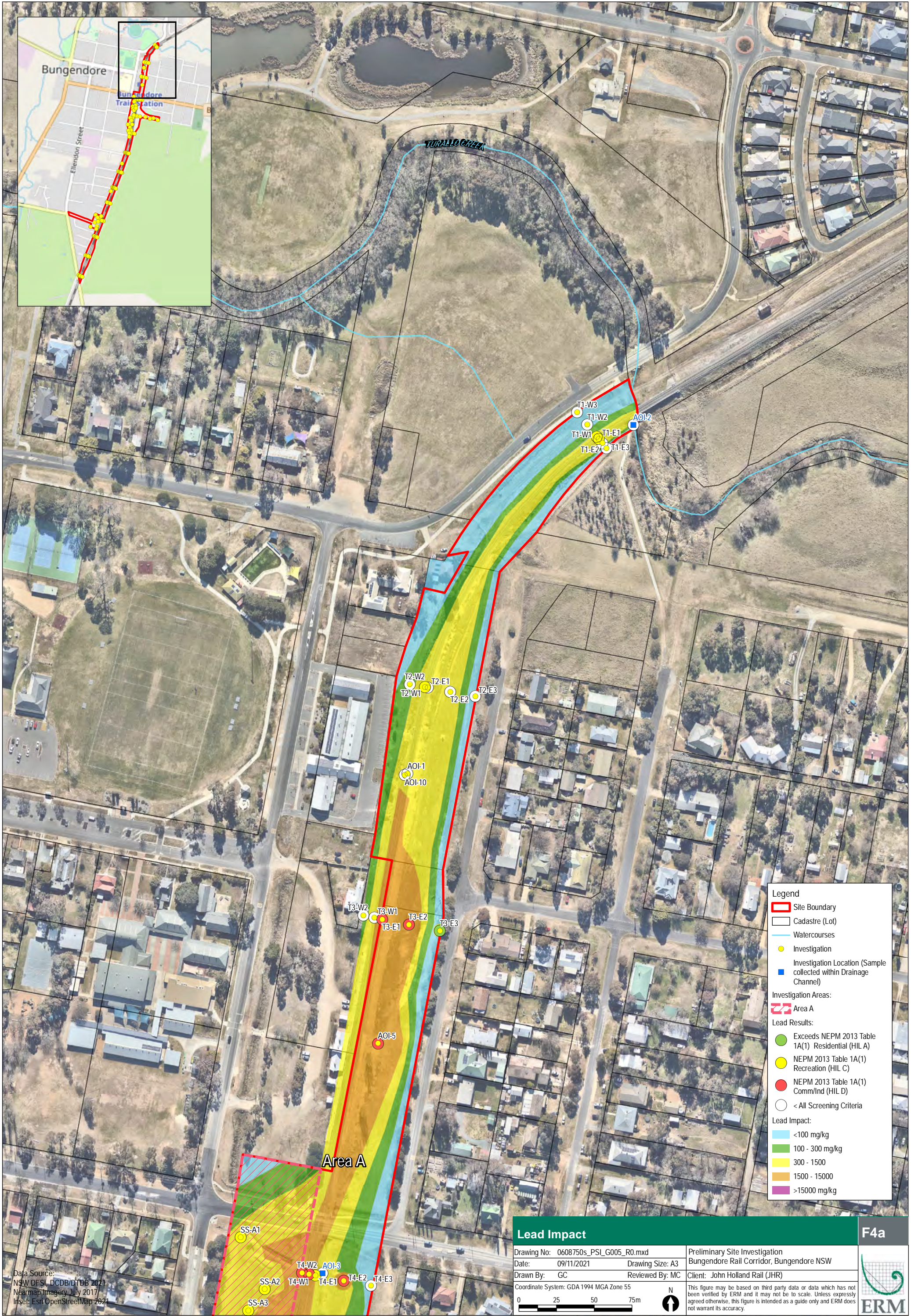
Bungendore Rail Corridor, Bungendore NSW

Client: John Holland Rail (JHR)

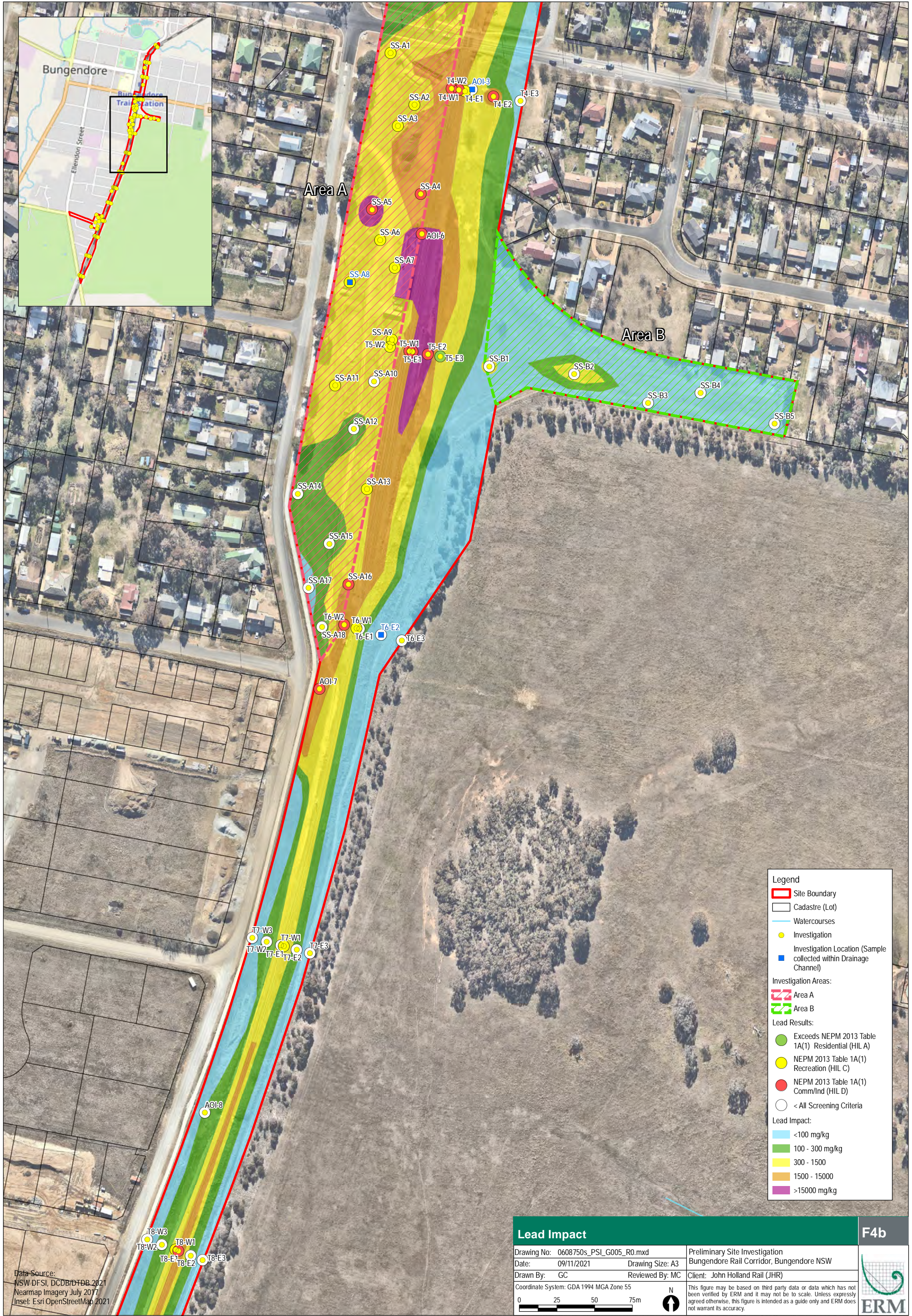
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F3d

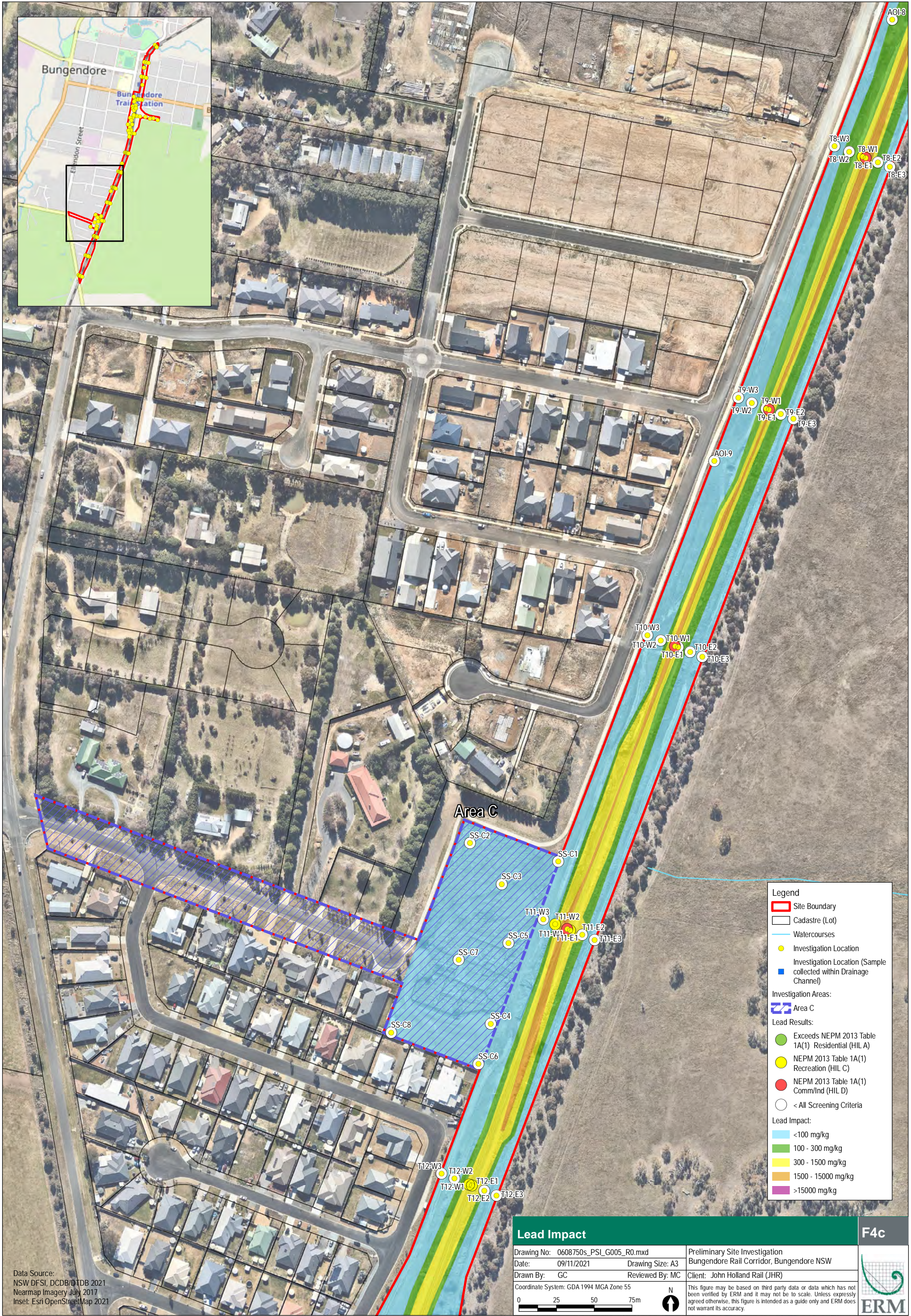
ERM



Data Source:
NSW DESI, DCDB/DTDB 2021
Nearmap Imagery July 2017
Inset: Esri OpenStreetMap 2021



Data Source:
NSW DFSI, DCDB/DTDB 2021
Nearmap Imagery July 2017
Inset: Esri OpenStreetMap 2021



Data Source:
NSW DFSI, DCDB/DTDB 2021
Nearmap Imagery July 2017
Inset: Esri OpenStreetMap 2021

Lead Impact

Drawing No: 0608750s_PSI_G005_R0.mxd
Date: 09/11/2021
Drawing Size: A3
Drawn By: GC
Reviewed By: MC

Preliminary Site Investigation
Bungendore Rail Corridor, Bungendore NSW
Client: John Holland Rail (JHR)

Coordinate System: GDA 1994 MGA Zone 55

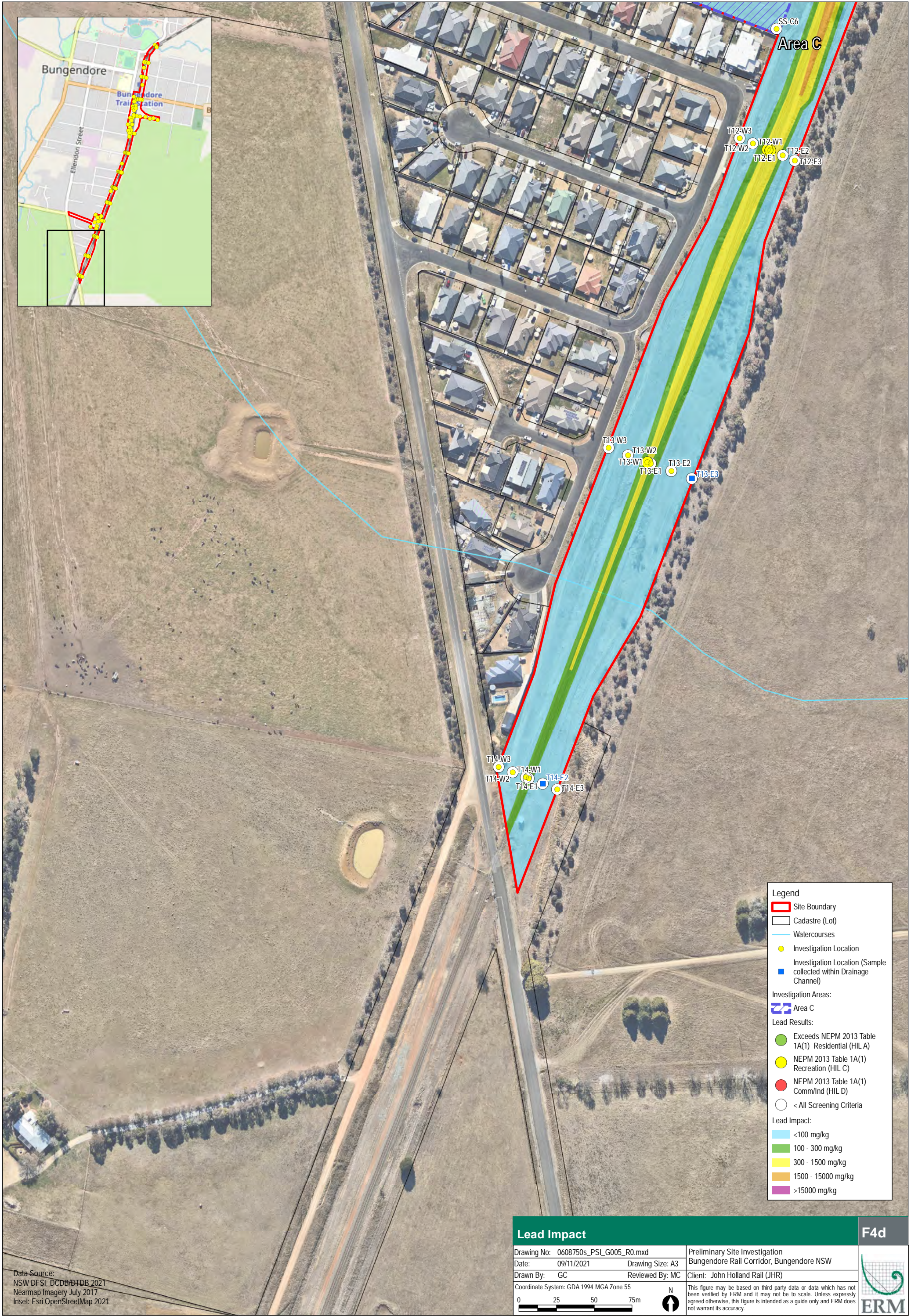
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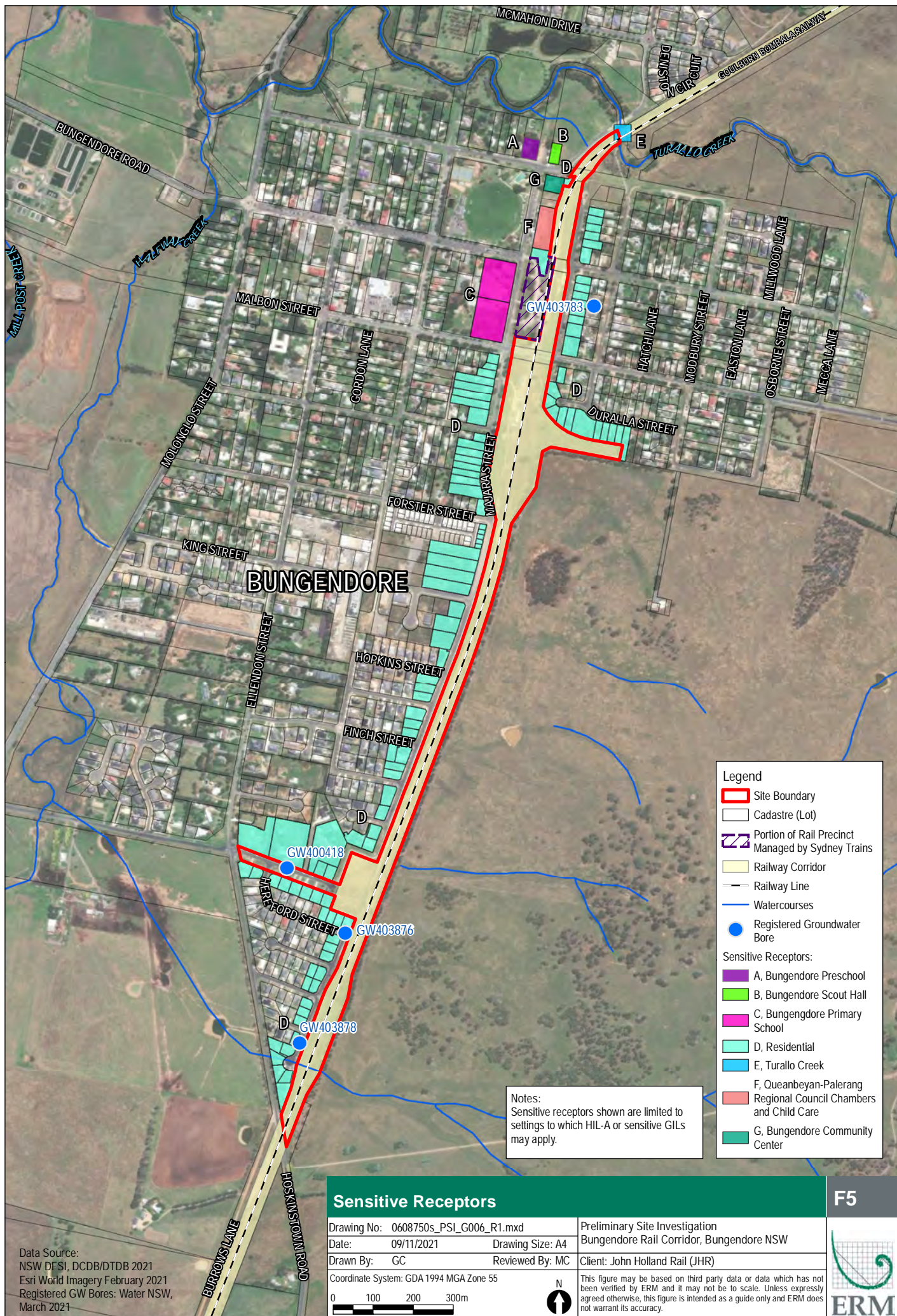


This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

F4c







Legend

Site Boundary

Cadastre (Lot)

Portion of Rail Precinct
Managed by Sydney Trains

Railway Corridor

Railway Line

Watercourses

Registered Groundwater
Bore

Sensitive Receptors:

A, Bungendore Preschool

B, Bungendore Scout Hall

C, Bungendore Primary
School



D, Residential

E, Turrallo Creek

F, Queanbeyan-Palerang
Regional Council Chambers
and Child Care

G, Bungendore Community
Center

Notes:
Sensitive receptors shown are limited to
settings to which HIL-A or sensitive GILs
may apply.

Sensitive Receptors			F5
Drawing No: 0608750s_PSI_G006_R1.mxd		Preliminary Site Investigation	
Date: 09/11/2021	Drawing Size: A4	Bungendore Rail Corridor, Bungendore NSW	
Drawn By: GC	Reviewed By: MC	Client: John Holland Rail (JHR)	
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Data Source:
NSW DESI, DCDB/DTDB 2021
Esri World Imagery February 2021
Registered GW Bores: Water NSW,
March 2021

APPENDIX B DATA TABLES

	Site Information
Site Identification	JHR Bungendore Rail Corridor and Sidings
Site Location	Bungendore, NSW, 2621
Latitude/Longitude ¹	Latitude 35.847778, Longitude 149.446389
Property Description ²	Lot 4 DP830878, Lot 1 DP814520, & Public Infrastructure (Railway Corridor).
Site Area (Ha) ³	17.49 Ha
Site Elevation (m AHD)	690-710m
Ownership of Site ²	Transport for NSW
Current Zoning ⁴	Infrastructure (SP2)□
Source of Information:	1. Google Earth 2. Six Maps 3. LotSearch 4. NSW Crown Lands - Planning and Environment



Table 2. Site Activities
Preliminary Site Investigation
JHR Bungendore Rail Corridor and Sidings - 0608750

Date	Site Activities
2 August 2021	Initial Site Walk and Inspection
3-5 August 2021	Site Investigation and Soil Sampling

Location	Sampling Location	Sample Type	Sampling Date	Duplicate/Triplicate	Sample Depth (m bgl)	Analysis	Comments
Corridor - Transect 1	T1 - E1	Soil	5/ Aug/ 21		0.1	Heavy Metals	Silty clay fill with gravels, 1m below rail. Under rail ballast.
	T1 - E2		5/ Aug/ 21		0.1	Heavy Metals	Silt, dark brown with organics, under vegetated area, 3m below rail at base of slope.
	T1 - E3		5/ Aug/ 21		0.1	Heavy Metals	Clayey silt, brown, with organics, under grass.
	T1- W1		5/ Aug/ 21		0.1	Heavy Metals	Silt fill with gravels, reddish brown. Below raised rail.
	T1- W2		5/ Aug/ 21		0.1	Heavy Metals	Silt fill with organics. At the base of a slope, 3m below rail and under rail ballast.
	T1- W3		5/ Aug/ 21		0.1	Heavy Metals	Silt fill, dark brown with organics.
Corridor - Transect 2	T2 - E1	Soil	5/ Aug/ 21	D03/T03_210805	0.1	Heavy Metals	Gravelly silty weathered sand, dark brown with deposition from cutting erosion in culvert.
	T2 - E2		5/ Aug/ 21		0.1	Heavy Metals	Gravelly wet silt, brown, in drainage line 3.5m above railway cutting.
	T2 - E3		5/ Aug/ 21		0.1	Heavy Metals	Silt, brown, close to fence.
	T2- W1		5/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt, brown, under rail ballast.
	T2- W2		5/ Aug/ 21		0.1	Heavy Metals	Gravelly silt, dark brown, with organics
Corridor - Transect 3	T3 - E1	Soil	5/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt, light brown, inside siding under ballast between sleepers.
	T3 - E2		5/ Aug/ 21		0.1	Heavy Metals	Silty gravelly sand, brown to orange, on top of rail cutting 2.5m above rail.
	T3 - E3		5/ Aug/ 21		0.1	Heavy Metals	Silty gravelly sand, brown to orange, on top of rail cutting 2.5m above rail in minor drainage area.
	T3 - W1		5/ Aug/ 21		0.1	Heavy Metals	Sandy silt, brown to yellow, under rail ballast.
	T3 - W2		5/ Aug/ 21		0.1	Heavy Metals	Silt, dark brown with organics, under leaves, 1m above rail.
Corridor - Transect 4	T4 - E1	Soil	4/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt fill, brown.
	T4 - E2		4/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt with large gravels, brown, in bare patch near eroded creek.
	T4 - E3		4/ Aug/ 21		0.1	Heavy Metals	Silt with organics, dark brown, under grass.
	T4 - W1		4/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt, clean, brown, under track/ballast.
	T4 - W2		4/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt, brown, adjacent to old siding.
Corridor - Transect 5	T5 - E1	Soil	4/ Aug/ 21		0.1	Heavy Metals	Sandy silt fill, brown, under ballast.
	T5 - E2		4/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt with green/grey layer 0.1m bgl.
	T5 - E3		4/ Aug/ 21		0.1	Heavy Metals	Sandy silt with organics, brown, under grass.
	T5 - W1		4/ Aug/ 21		0.1	Heavy Metals	Sandy silt fill, brown, below rail ballast.
	T5 - W2		4/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt fill, dark brown, adjacent to old rail siding.
Corridor - Transect 6	T6 - E1	Soil	4/ Aug/ 21		0.1	Heavy Metals	Sandy silt, brown, at ballast edge.
	T6 - E2		4/ Aug/ 21		0.1	Heavy Metals	Clayey silt, brown to grey, in drainage channel under grass.
	T6 - E3		4/ Aug/ 21		0.1	Heavy Metals	Silt, brown, slightly raised from corridor.
	T6 - W1		4/ Aug/ 21		0.1	Heavy Metals	Gravelly silty sand, brown, adjacent to rail switch.
	T6 - W2		4/ Aug/ 21		0.1	Heavy Metals	Gravelly silty sand, brown, adjacent to old rail siding.
Corridor - Transect 7	T7 - E1	Soil	4/ Aug/ 21		0.1	Heavy Metals	Sandy silt fill with minor gravels, brown, 0.5m below top of ballast.
	T7 - E2		4/ Aug/ 21		0.1	Heavy Metals	Silt with organics, brown, in drainage depression.
	T7 - E3		4/ Aug/ 21		0.1	Heavy Metals	Silt, brown to dark red, under fenceline.
	T7 - W1		4/ Aug/ 21		0.1	Heavy Metals	Sandy silt fill with minor gravels, 0.5m below top of ballast.
	T7 - W2		4/ Aug/ 21		0.1	Heavy Metals	Silt, brown.
Corridor - Transect 8	T7 - W3		4/ Aug/ 21		0.1	Heavy Metals	Gravelly silt, brown, with organics.
	T8 - E1	Soil	4/ Aug/ 21		0.1	Heavy Metals	Sandy silt fill, light brown, halfway up ballast.
	T8 - E2		4/ Aug/ 21		0.1	Heavy Metals	Sandy gravelly silt, receiving water, wet.
	T8 - E3		4/ Aug/ 21		0.1	Heavy Metals	Silt with fine sand, brown, under fence and slightly raised.
	T8- W1		4/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt, light brown.
Corridor - Transect 9	T8- W2		4/ Aug/ 21		0.1	Heavy Metals	Sandy clayey silt, dark brown, with organics, off roadway.
	T8- W3		4/ Aug/ 21		0.1	Heavy Metals	Sandy silt, brown with organics near fence.
	T9 - E1	Soil	3/ Aug/ 21		0.1	Heavy Metals	Gravelly sand, brown to grey at base of ballast.
	T9 - E2		3/ Aug/ 21		0.1	Heavy Metals	Gravelly clayey silt, dark brown, in drainage channel between road/windrow and rail.
	T9 - E3		3/ Aug/ 21		0.1	Heavy Metals	Silt, soft, brown, under fence in windrow.
Corridor - Transect 9	T9- W1		3/ Aug/ 21		0.1	Heavy Metals	Clayey silt, orangy brown, at base of ballast below rail.
	T9 - W2		3/ Aug/ 21		0.1	Heavy Metals	Silt, dark brown with organics.
	T9 - W3		3/ Aug/ 21		0.1	Heavy Metals	Gravelly silt, brown, on footpath.

Location	Sampling Location	Sample Type	Sampling Date	Duplicate/ Triplicate	Sample Depth (m bgl)	Analysis	Comments
Corridor - Transect 10	T10 - E1	Soil	3/ Aug/ 21		0.1	Heavy Metals	Silt, brown, with organics.
	T10 - E2		3/ Aug/ 21		0.1	Heavy Metals	Gravelly sand with silt, soft, reddish brown.
	T10 - E3		3/ Aug/ 21		0.1	Heavy Metals	Gravelly clayey silt at edge of ballast in drainage area.
	T10 - W1		4/ Aug/ 21	T02/D02_210803	0.1	Heavy Metals	Gravelly sandy silt, brown to grey at edge of ballast.
	T10 - W2		3/ Aug/ 21		0.1	Heavy Metals	Clayey silt, brown. Sample taken from a cess drainage depression with pooled water.
	T10 - W3		3/ Aug/ 21		0.1	Heavy Metals	Silt, brown.
Corridor - Transect 11	T11 - E1	Soil	3/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt, brown, at edge of ballast and base of cutting.
	T11 - E2		3/ Aug/ 21		0.1	Heavy Metals	Silty sand with gravel, brown, at top of cutting.
	T11 - E3		3/ Aug/ 21		0.1	Heavy Metals	Unconsolidated silt, brown, at edge of corridor.
	T11 - W1		3/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt, grey to brown, under ballast with silver floating speckles.
	T11 - W2		3/ Aug/ 21		0.1	Heavy Metals	Gravelly silty sand with organics next to road at bottom of terrace drainage with pooled water.
	T11 - W3		3/ Aug/ 21		0.1	Heavy Metals	Silt, brown. Sample taken from elevated terrace above rail line.
Corridor - Transect 12	T12 - E1	Soil	3/ Aug/ 21		0.1	Heavy Metals	Clayey silt fill with gravels, brown, under ballast.
	T12 - E2		3/ Aug/ 21		0.1	Heavy Metals	Clayey silt, brown, sample taken from piled windrow.
	T12 - E3		3/ Aug/ 21		0.1	Heavy Metals	Silt, dark brown, sample taken from road.
	T12- W1		3/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt, brown, at the edge of ballast.
	T12- W2		3/ Aug/ 21		0.1	Heavy Metals	Sandy silt, brown. Sample taken from raised road material in windrow.
	T12- W3		3/ Aug/ 21		0.1	Heavy Metals	Silty clay, brown.
Corridor - Transect 13	T13 - E1	Soil	3/ Aug/ 21		0.1	Heavy Metals	Clayey silt, brown.
	T13 - E2		3/ Aug/ 21		0.1	Heavy Metals	Clayey silt, brown, with minor organics. Sample taken from drainage channel.
	T13 - E3		3/ Aug/ 21		0.1	Heavy Metals	Silt, light brown, in natural depression next to potential old road.
	T13- W1		3/ Aug/ 21	T01/D01_210803	0.1	Heavy Metals	Sandy silt, grey to brown.
	T13- W2		3/ Aug/ 21		0.1	Heavy Metals	Clayey silt, grey to brown with organics.
	T13- W3		3/ Aug/ 21		0.1	Heavy Metals	Clayey silt, grey to brown.
Corridor - Transect 14	T14 - E1	Soil	3/ Aug/ 21		0.1	Heavy Metals	Sandy silt, red to brown, with organics, below edge of ballast.
	T14 - E2		3/ Aug/ 21		0.1	Heavy Metals	Clayey silt, brown, with organics. Sample taken from bottom of drainage channel under grass.
	T14 - E3		3/ Aug/ 21		0.1	Heavy Metals	Sandy clayey silt, brown to red.
	T14- W1		3/ Aug/ 21		0.1	Heavy Metals	Silty sandy clay, brown, below ballast.
	T14- W2		3/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt, brown. Sample taken from patch at edge of road.
	T14- W3		3/ Aug/ 21		0.1	Heavy Metals	Silty sandy clay, brown, taken under fence.
Area A - Bungendore Wool Shed / Former Rail Yard	SS-A1	Soil	4/ Aug/ 21		0.1	Heavy Metals	Gravelly silt, brown, with organics, under grass.
	SS-A2		4/ Aug/ 21		0.1	Heavy Metals	Gravelly silt, brown, with organics, under grass.
	SS-A3		4/ Aug/ 21		0.1	Heavy Metals	Gravelly silt, dark brown, with organics, under grass.
	SS-A4		4/ Aug/ 21		0.1	Heavy Metals	Gravelly silt, dark brown, with organics, under bare patch.
	SS-A5		4/ Aug/ 21		0.1	Heavy Metals	Gravelly silt, brown, under bare patch.
	SS-A6		4/ Aug/ 21		0.1	Heavy Metals	Gravelly silt, light brown, sample taken adjacent to road.
	SS-A7		4/ Aug/ 21		0.1	Heavy Metals	Sandy silt on top of ballast fill in old track at back of building.
	SS-A8		4/ Aug/ 21		0.1	Heavy Metals	Silt, wet, brown. Sample taken from drainage channel/pooling water.
	SS-A9		4/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt atop submersed asphalt/roadbase.
	SS-A10		4/ Aug/ 21		0.1	Heavy Metals	Silty sand, dark brown, under grass. Black ballast fill layer present at 0.05m bgl.
	SS-A11		4/ Aug/ 21		0.1	Heavy Metals	Gravelly silt, brown, with soft conglomerate stones at 0.05m bgl.
	SS-A12		4/ Aug/ 21		0.1	Heavy Metals	Gravelly silty dense sand, brown, at roadway.
	SS-A13		4/ Aug/ 21		0.1	Heavy Metals	Silt with <4cm gravels, brown, wet with pooling water and grass.
	SS-A14		4/ Aug/ 21		0.1	Heavy Metals	Silt with clay, brown, organics.
	SS-A15		4/ Aug/ 21		0.1	Heavy Metals	Silt, brown/dark brown, 2m away from road.
	SS-A16		4/ Aug/ 21		0.1	Heavy Metals	Sandy silt, dark brown with brown/black gravel, sample taken under grass.
	SS-A17		4/ Aug/ 21		0.1	Heavy Metals	Silt, brown, sample taken under grass.
	SS-A18		4/ Aug/ 21		0.1	Heavy Metals	Silt, brown to black, with gravel, sample taken from under road.

Location	Sampling Location	Sample Type	Sampling Date	Duplicate/Triplicate	Sample Depth (m bgl)	Analysis	Comments
Area B - Eastern Triangle	SS-B1	Soil	5/ Aug/ 21	D02/T02_210805	0.1	Heavy Metals	Silt with fine sand, dark brown.
	SS-B2		5/ Aug/ 21		0.1	Heavy Metals	Silty gravelly sand, brown to grey.
	SS-B3		5/ Aug/ 21		0.1	Heavy Metals	Clayey silt, brown with high organic content.
	SS-B4		5/ Aug/ 21		0.1	Heavy Metals	Clayey silt, brown with high organic content.
	SS-B5		5/ Aug/ 21	D01/T01_210805	0.1	Heavy Metals	Clayey silt, brown with high organic content.
Area C - Trucking Yard Lane	SS-C1	Soil	5/ Aug/ 21		0.1	Heavy Metals	Silt, brown.
	SS-C2		5/ Aug/ 21		0.1	Heavy Metals	Sandy clayey silt, light brown, under grass.
	SS-C3		5/ Aug/ 21		0.1	Heavy Metals	Sandy clayey silt, light brown, under grass.
	SS-C4		5/ Aug/ 21		0.1	Heavy Metals	Sandy silt, light brown, under grass.
	SS-C5		5/ Aug/ 21		0.1	Heavy Metals	Clayey silt with minor gravels, light brown.
	SS-C6		5/ Aug/ 21		0.1	Heavy Metals	Sandy silt, brown, under grass.
	SS-C7		5/ Aug/ 21		0.1	Heavy Metals	Silt, brown, with organics.
	SS-C8		5/ Aug/ 21		0.1	Heavy Metals	Sandy clayey silt, brown, organics, under grass.
Areas of Interest	AOI-1	Soil	5/ Aug/ 21		0.1	Heavy Metals	Silt, weathered, brown. Sampled from rail cutting with switch on eastern side.
	AOI-2		5/ Aug/ 21		0.1	Heavy Metals	Silty sandy gravel with organics in creek bed.
	AOI-3		5/ Aug/ 21		0.1	Heavy Metals	Sandy silt, brown. Sample taken from creek base, receiving waterway from S + N of E of railway trench.
	AOI-4		5/ Aug/ 21	Lost By Laboratory	0.1	Heavy Metals	Sandy silt, brown, with gravels and ballast in pooled water adjacent to station.
	AOI-5		5/ Aug/ 21	D04/T04_210805	0.1	Heavy Metals	Sandy gravelly silt, brown, with pooled water adjacent to station.
	AOI-6		5/ Aug/ 21		0.1	Heavy Metals	Sandy silt, dark brown to grey, beneath woolshed platform near footings.
	AOI-7		5/ Aug/ 21		0.1	Heavy Metals	Dark brown gravelly silt with organic inclusions between old rail sidings. Old looking ballast/fill.
	AOI-8		5/ Aug/ 21		0.1	Heavy Metals	Silt, brown, with organics. Sampled from water receiving culvert under railway.
	AOI-9		5/ Aug/ 21		0.1	Heavy Metals	Silty clay, brown, with organics. Sampled adjacent to drain leading offsite.
	AOI-10		5/ Aug/ 21		0.1	Heavy Metals	Gravelly sandy silt, light brown to red. Sample area raised 0.4m above ground on track.



Table 4. Soil Metals Analytical Results
Preliminary Site Investigation
JHR Bungendore Rail Corridor and Sidings - 0608750

					Metals															
					Arsenic	Barium	Beryllium	Boron	Calcium	Chromium (III+VI)	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Vanadium	Zinc	
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EQL					2	10	1	10	0.4	2	2	5	5	5	0.1	2	2	5	5	
NEPM (1999) EIL - Urban Residential & Open Space*					108					10	73	1122	177						206	
NEPM (1999) EIL - Commercial/Industrial					168					310	98	1822							316	
NEPM 2013 Table 1A(1) Residential (HIL A)*					100	60	4500	20		100	6000	300	3800	40	400	200			7400	
NEPM 2013 Table 1A(1) Recreation (HIL C)					300	90	20000	90		300	17000	600	19000	80	1200	700			30000	
NEPM 2013 Table 1A(1) Comm/Ind (HIL D)					3000	500	300000	900		4000	240000	1500	60000	730	6000	10000			400000	
Field ID	LocCode	Sampled Date-Time	Lab Report Number	Purpose	Monitoring Zone															
AOI-1	AOI-1	5/08/2021	ES2128631	Primary	Rail Corridor - Rail line	26	20	<1	<50	<1	9	<2	93	542	64	<0.1	<2	<5	12	250
AOI-2	AOI-2	5/08/2021	ES2128631	Primary	Rail Corridor - Boundary / Drainage - Adjacent Turralo Creek	<5	30	<1	<50	<1	10	3	11	8	135	<0.1	4	<5	18	22
AOI-3	AOI-3	5/08/2021	ES2128631	Primary	Rail Corridor - Mid Corridor / Drainage to Malbon St	15	150	1	<50	2	29	13	47	495	415	<0.1	16	<5	53	1210
AOI-5	AOI-5	5/08/2021	ES2128631	Primary	Rail Corridor - Mid Corridor	63	100	<1	<50	2	22	3	404	4710	144	0.9	6	<5	32	1220
D04_210805	AOI-5	5/08/2021	ES2128631	Intra Laboratory Dup	Rail Corridor - Mid Corridor	83	130	1	<50	4	25	<2	342	4360	114	1	7	5	27	1330
T04_210805	AOI-5	3/08/2021	815855	Inter Laboratory Dup	Rail Corridor - Mid Corridor	81	110	<2	<10	2.6	26	<5	310	3900	200	0.7	7.8	<2	56	1000
AOI-6	AOI-6	5/08/2021	ES2128631	Primary	Rail Corridor - Mid Corridor	502	90	<1	<50	6	263	<2	906	30000	109	1.9	4	7	17	2570
AOI-7	AOI-7	5/08/2021	ES2128631	Primary	Rail Corridor - Mid Corridor	410	150	<1	<50	6	6	<2	1120	9200	32	11	<2	23	12	829
AOI-8	AOI-8	5/08/2021	ES2128631	Primary	Rail Corridor - Mid Corridor	17	60	<1	<50	<1	17	6	25	148	413	<0.1	3	<5	34	208
AOI-9	AOI-9	5/08/2021	ES2128631	Primary	Rail Corridor - Mid Corridor	5	40	<1	<50	<1	17	5	12	28	412	<0.1	3	<5	27	47
AOI-10	AOI-10	5/08/2021	ES2128631	Primary	Rail Corridor - Rail line	46	30	<1	<50	<1	25	5	62	169	234	<0.1	16	<5	30	165
SS-A1	SS-A1	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	34	80	<1	<50	2	16	8	107	1730						603
SS-A2	SS-A2	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	22	100	<1	<50	2	12	3	184	1160	416	<0.1	6	<5	17	732
SS-A3	SS-A3	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	24	80	<1	<50	2	11	4	161	1490	607	<0.1	5	<5	15	734
SS-A4	SS-A4	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	67	90	<1	<50	4	13	8	333	2120	433	0.1	8	<5	25	1630
SS-A5	SS-A5	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	27	80	<1	<50	1	11	2	962	93000	212	23.6	<2	19	17	3120
SS-A6	SS-A6	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	20	40	<1	<50	<1	9	3	87	1010	124	0.2	5	<5	16	203
SS-A7	SS-A7	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	18	50	<1	<50	1	12	4	113	746	237	<0.1	6	<5	21	728
SS-A8	SS-A8	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding / Drainage to Majara St	10	40	<1	<50	<1	11	4	96	617	356	0.1	2	<5	18	138
SS-A9	SS-A9	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	16	60	<1	<50	<1	16	4	136	1020	143	0.2	8	<5	20	576
SS-A10	SS-A10	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	23	90	<1	<50	<1	11	5	73	260	348	<0.1	6	<5	18	102
SS-A11	SS-A11	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	12	50	<1	<50	<1	13	3	35	950	192	<0.1	4	<5	17	154
SS-A12	SS-A12	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	16	40	<1	<50	<1	13	3	35	154	296	<0.1	3	<5	20	154
SS-A13	SS-A13	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	42	60	<1	<50	4	14	5	187	817	582	0.3	4	<5	21	1740
SS-A14	SS-A14	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	27	30	<1	<50	<1	11	3	38	225	273	<0.1	2	<5	17	182
SS-A15	SS-A15	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	7	60	<1	<50	<1	12	<2	26	193	274	0.4	3	<5	14	151
SS-A16	SS-A16	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	75	170	<1	<50	3	8	3	219	1920	269	0.2	5	<5	14	711
SS-A17	SS-A17	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	6	30	<1	<50	<1	12	2	6	33	280	<0.1	<2	<5	16	80
SS-A18	SS-A18	4/08/2021	ES2128631	Primary	Area A - Woolshed Siding	14	160	<1	<50	1	11	2	106	174	212	<0.1	7	<5	12	565
SS-B1	SS-B1	5/08/2021	ES2128631	Primary	Area B - Former Rail Fork	9	40	<1	<50	<1	10	3	38	378	279	<0.1	2	<5	18	254
D02_210805	SS-B1	5/08/2021	ES2128631	Intra Laboratory Dup	Area B - Former Rail Fork	10	40	<1	<50	<1	16	3	45	406	313	<0.1	3	<5	23	275
T02_210805	SS-B1	3/08/2021	815855	Inter Laboratory Dup	Area B - Former Rail Fork	41	29	<2	<10	0.9	17	7.8	53	230	240	<0.1	7.7	<2	23	220
SS-B2	SS-B2	5/08/2021	ES2128631	Primary	Area B - Former Rail Fork	147	50	<1	<50	<1	14	7	80	295	418	0.1	4	<5	29	176
SS-B3	SS-B3	5/08/2021	ES2128631	Primary	Area B - Former Rail Fork	<5	80	<1	<50	<1	10	4	12	59	573	<0.1	3	<5	20	130
SS-B4	SS-B4	5/08/2021	ES2128631	Primary	Area B - Former Rail Fork	5	50	<1	<50	<1	18	6	12	58	531	<0.1	4	<5	26	77
SS-B5	SS-B5	5/08/2021	ES2128631	Primary	Area B - Former Rail Fork	<5	40	<1	<50	<1	19	5	9	31	556	<0.1	3	<5	28	109
D01_210805	SS-B5	5/08/2021	ES2128631	Intra Laboratory Dup	Area B - Former Rail Fork	<5	40	<1	<50	<1	19	5	10	33	550	<0.1	4	<5	27	89
T01_210805	SS-B5	3/08/2021	815855	Inter Laboratory Dup	Area B - Former Rail Fork	2	35	<2	<10	<0.4	15	<5	7.3	23	370	<0.1	<5	<2	10	102
SS-C1	SS-C1	3/08/2021	ES2128631	Primary	Area C - Trucking Yard Lane	17	120	<1	<50	<1	27	13	16	27	772	<0.1	8	<5	39	47
SS-C2	SS-C2	3/08/2021	ES2128631	Primary	Area C - Trucking Yard Lane	5	90	<1	<50	<1	18	10	13	12	469	<0.1	7	<5	31	19
SS-C3	SS-C3	3/08/2021	ES2128631	Primary	Area C - Trucking Yard Lane	5	70	<1	<50	<1	20	10	13	13	381	<0.1	7	<5	35	17
SS-C4	SS-C4	3/08/2021	ES2128631	Primary	Area C - Trucking Yard Lane	6	40	<1	<50	<1	8	4	9	63	274	<0.1	3	<5	13	22
SS-C5	SS-C5	3/08/2021	ES2128631	Primary	Area C - Trucking Yard Lane	7	80	<1	<50	<1	34	11	14	15	628	<0.1	9	<5	38	21
SS-C6	SS-C6	3/08/2021	ES2128631	Primary	Area C - Trucking Yard Lane	<5	50	<1	<50	<1	12	5	10	7	255	<0.1	5	<5	21	26
SS-C7	SS-C7	3/08/2021	ES2128631	Primary	Area C - Trucking Yard Lane	6	90	<1	<50	<1	25	18	14	23	686	<0.1	7	<5	32	27
SS-C8	SS-C8	3/08/2021	ES2128631	Primary	Area C - Trucking Yard Lane	11	80	<1	<50	<1	17	15	20	11	205	<0.1	12	<5	80	29
T1-E1	T1-E1	5/08/2021	ES2128631	Primary	Rail Corridor - Rail line	45	70	<1	<50	3	20	9	196	870	482	0.1	9	<5	30	879
T1-E2	T1-E2	5/08/2021	ES2128631	Primary	Rail Corridor - Mid Corridor	18	70	<1	<50	1	13	5	35	165	319	0.1	6	<5	18	461
T1-E3	T1-E3	5/08/2021	ES2128631	Primary	Rail Corridor - Boundary	7	80	<1	<50	<1	21	8	25	60	300	<0.1	12	<5	39	211
T1-W1	T1-W1	5/08/2021	ES2128631	Primary	Rail Corridor - Rail line	282	50	<1	<50	2	18	7	169	919	358	0.4	5	<5	33	427
T1-W2	T1-W2	5/08/2021	ES2128631	Primary	Rail Corridor - Mid Corridor	9	35	<1	<50	<1	8	4	9	63	274	<0.1	3	<5	16	77

APPENDIX C BACKGROUND INFORMATION



LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 20 Jul 2021 16:05:42

Reference: LS022540 EP

Address: Rail Corridor - Bungendore, NSW 2621

Disclaimer:

The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features.

You should obtain independent advice before you make any decision based on the information within the report.

The detailed terms applicable to use of this report are set out at the end of this report.

Dataset Listing

Datasets contained within this report, detailing their source and data currency:

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	30/06/2021	30/06/2021	Quarterly	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	12/07/2021	08/07/2021	Monthly	1000m	0	1	1
Contaminated Land Records of Notice	Environment Protection Authority	08/07/2021	08/07/2021	Monthly	1000m	0	1	1
Former Gasworks	Environment Protection Authority	11/05/2021	11/10/2017	Quarterly	1000m	0	0	0
National Waste Management Facilities Database	Geoscience Australia	12/05/2021	07/03/2017	Annually	1000m	0	0	0
National Liquid Fuel Facilities	Geoscience Australia	15/02/2021	13/07/2012	Annually	1000m	0	0	3
EPA PFAS Investigation Program	Environment Protection Authority	21/06/2021	28/04/2021	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	01/07/2021	01/07/2021	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	01/07/2021	01/07/2021	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	07/07/2021	07/07/2021	Monthly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	11/05/2021	11/05/2021	Quarterly	2000m	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	02/02/2021	13/12/2018	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	16/07/2021	16/07/2021	Monthly	1000m	1	1	1
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	16/07/2021	16/07/2021	Monthly	1000m	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	16/07/2021	16/07/2021	Monthly	1000m	3	3	3
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150m	0	1	1
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150m	-	127	127
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500m	0	0	1
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500m	-	8	8
Points of Interest	NSW Department of Finance, Services & Innovation	14/05/2021	14/05/2021	Quarterly	1000m	1	5	37
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	14/05/2021	14/05/2021	Quarterly	1000m	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	14/05/2021	14/05/2021	Quarterly	1000m	0	0	5
Major Easements	NSW Department of Finance, Services & Innovation	14/05/2021	14/05/2021	Quarterly	1000m	0	0	5
State Forest	Forestry Corporation of NSW	25/02/2021	14/02/2021	Annually	1000m	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	22/01/2021	11/12/2020	Annually	1000m	0	0	1
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000m	1	1	1
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018	NSW Department of Planning, Industry and Environment	26/10/2020	21/02/2018	Annually	1000m	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000m	1	5	82

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Geological Units 1:250,000	NSW Department of Planning, Industry and Environment	20/08/2014		Annually	1000m	4	4	5
Geological Structures 1:250,000	NSW Department of Planning, Industry and Environment	20/08/2014		Annually	1000m	0	0	1
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000m	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	As required	1000m	1	1	1
Soil Landscapes of Central and Eastern NSW	NSW Department of Planning, Industry and Environment	14/10/2020	27/07/2020	Annually	1000m	4	5	8
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	16/07/2021	28/06/2021	Monthly	500m	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000m	1	1	1
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000m	0	1	1
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	14/05/2021	28/04/2021	Quarterly	1000m	0	0	0
Current Mining Titles	NSW Department of Industry	01/07/2021	01/07/2021	Monthly	1000m	0	0	0
Mining Title Applications	NSW Department of Industry	01/07/2021	01/07/2021	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Industry	01/07/2021	01/07/2021	Monthly	1000m	6	6	7
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	16/07/2021	07/12/2018	Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	16/07/2021	09/07/2021	Monthly	1000m	2	14	62
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	14/05/2021	26/03/2021	Quarterly	1000m	1	1	1
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Industry and Environment	16/07/2021	09/07/2021	Monthly	1000m	2	9	71
Bush Fire Prone Land	NSW Rural Fire Service	19/07/2021	08/06/2021	Weekly	1000m	2	3	4
Vegetation of Southern Forests	NSW Office of Environment & Heritage	09/12/2014	10/10/2011	Unknown	1000m	0	0	1
Ramsar Wetlands of Australia	Australian Government Department of Agriculture, Water and the Environment	24/02/2021	19/03/2020	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Annually	1000m	1	1	1
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000m	1	1	3
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	12/07/2021	12/07/2021	Weekly	10000m	-	-	-

Site Diagram

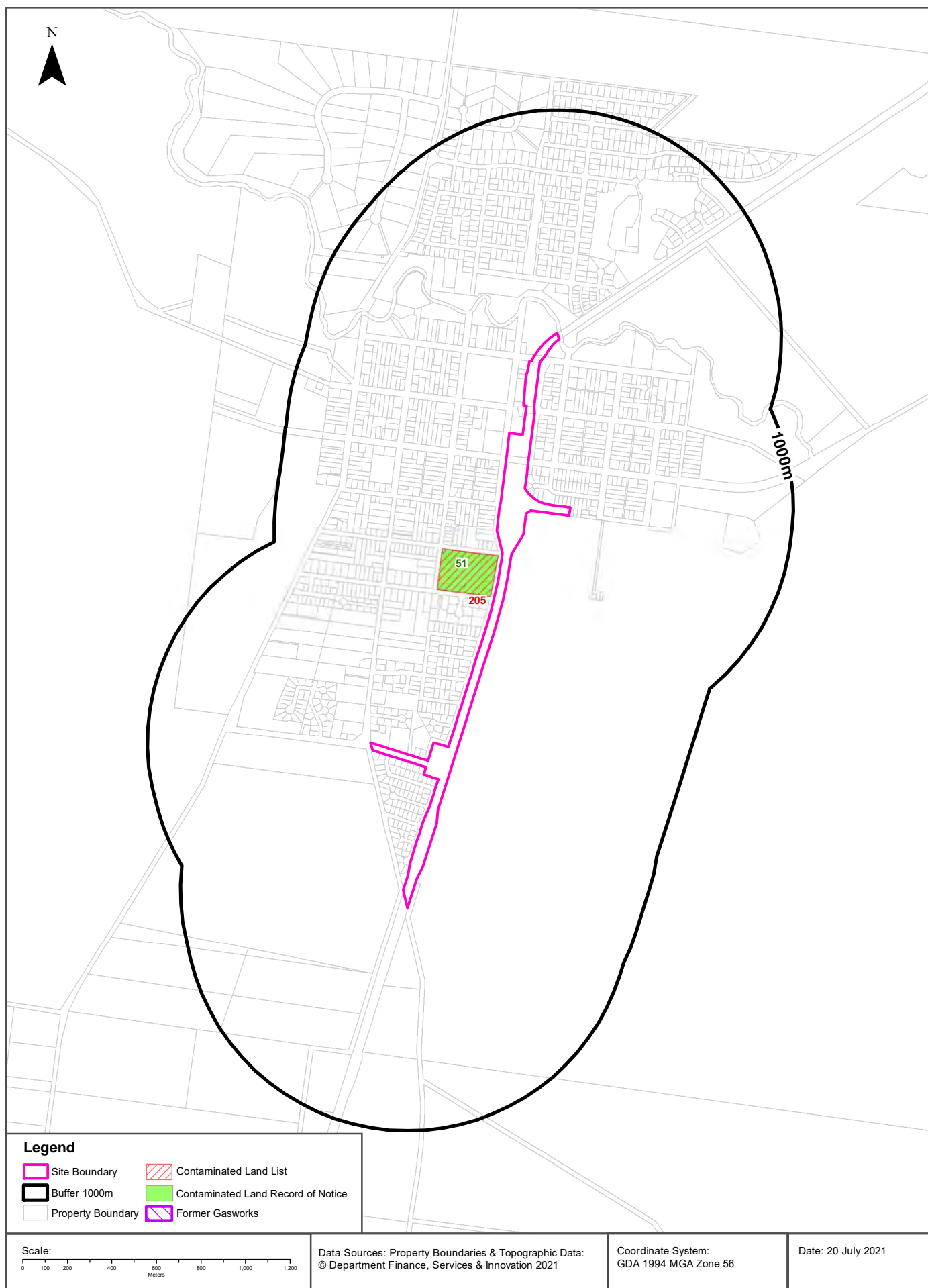
Rail Corridor - Bungendore, NSW 2621



Legend <div><div></div> Site Boundary</div> <div><div></div> Internal Parcel Boundaries</div>	Total Area: 174958m ² Total Perimeter: 6.53km	
	Scale: 0 50 100 200 300 400 500 Meters	
	Data Sources: Data Sources: Aerial Imagery; © Aerometrex Pty Ltd	
Disclaimers: Measurements are approximate only and may have been simplified or smaller lengths removed for readability. Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.	Coordinate System: GDA 1994 MGA Zone 56	Date: 20 July 2021

Contaminated Land

Rail Corridor - Bungendore, NSW 2621



Contaminated Land

Rail Corridor - Bungendore, NSW 2621

List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer:

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist	Direction
205	Former Timber Treatment Plant	Corner King Street and Butmaroo Street	Bungendore	Other Industry	Contamination formerly regulated under the CLM Act	Current EPA List	Premise Match	20m	North West

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

EPA site management class	Explanation
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices.
Contamination currently regulated under POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the Protection of the Environment Operations Act 1997 (POEO Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record of Notices.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.
Regulation under the CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Contaminated Land

Rail Corridor - Bungendore, NSW 2621

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
51	Former Timber Treatment Plant	Corner King Street and Butmaroo Street	Bungendore	1 former	990	Premise Match	20m	North West

Contaminated Land Records of Notice Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit

<http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm>

Former Gasworks

Former Gasworks within the dataset buffer:

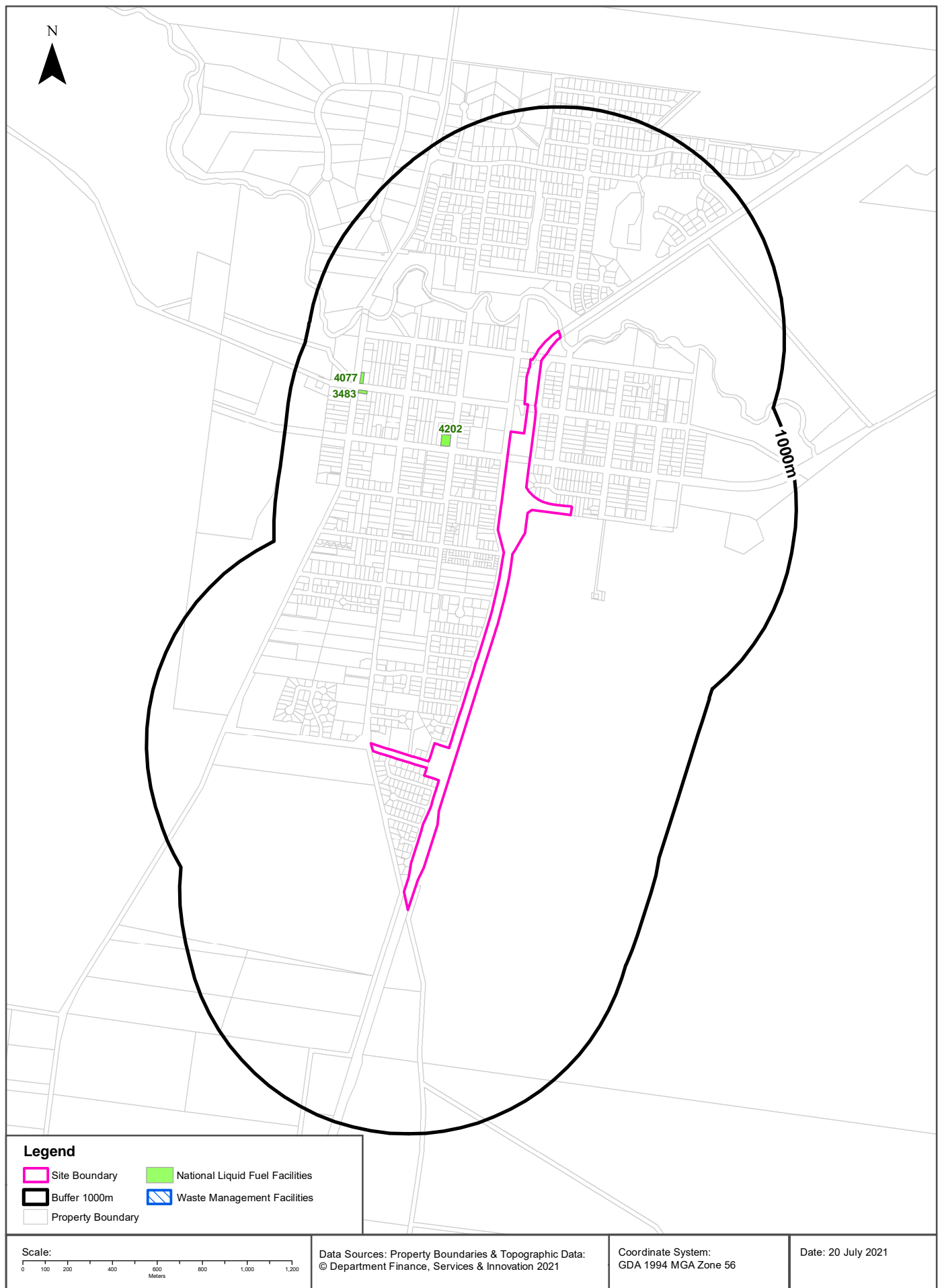
Map Id	Location	Council	Further Info	Location Confidence	Distance	Direction
N/A	No records in buffer					

Former Gasworks Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Waste Management & Liquid Fuel Facilities

Rail Corridor - Bungendore, NSW 2621



Waste Management & Liquid Fuel Facilities

Rail Corridor - Bungendore, NSW 2621

National Waste Management Site Database

Sites on the National Waste Management Site Database within the dataset buffer:

Site Id	Owner	Name	Address	Suburb	Class	Landfill	Reprocess	Transfer	Comments	Loc Conf	Dist	Direction
N/A	No records in buffer											

Waste Management Facilities Data Source: Geoscience Australia

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National Liquid Fuel Facilities

National Liquid Fuel Facilities within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist	Direction
4202	Caltex	Caltex Bungendore	42-44 Malbon Street	Bungendore	Petrol Station	Operational		25/07/2011	Premise Match	264m	North
3483	Independent Fuel Supplies	BP Bungendore	1 Gibraltar Street	Bungendore	Petrol Station	Operational		25/07/2011	Premise Match	665m	North West
4077	Independent Fuel Supplies	Independent Bungendore	2 Gibraltar Street	Bungendore	Petrol Station	Operational		25/07/2011	Premise Match	695m	North West

National Liquid Fuel Facilities Data Source: Geoscience Australia

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PFAS Investigation & Management Programs

Rail Corridor - Bungendore, NSW 2621

EPA PFAS Investigation Program

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

Map ID	Site	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

EPA PFAS Investigation Program: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Defence PFAS Investigation Program

Sites being investigated by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Investigation Program Data Custodian: Department of Defence, Australian Government

Defence PFAS Management Program

Sites being managed by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Management Program Data Custodian: Department of Defence, Australian Government

Airservices Australia National PFAS Management Program

Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

Map ID	Site Name	Impacts	Loc Conf	Dist	Dir
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

Rail Corridor - Bungendore, NSW 2621

Defence 3 Year Regional Contamination Investigation Program

Sites which have been assessed as part of the Defence 3 Year Regional Contamination Investigation Program within the dataset buffer:

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
N/A	No records in buffer					

Defence 3 Year Regional Contamination Investigation Program, Data Custodian: Department of Defence, Australian Government

EPA Other Sites with Contamination Issues

Rail Corridor - Bungendore, NSW 2621

EPA Other Sites with Contamination Issues

This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

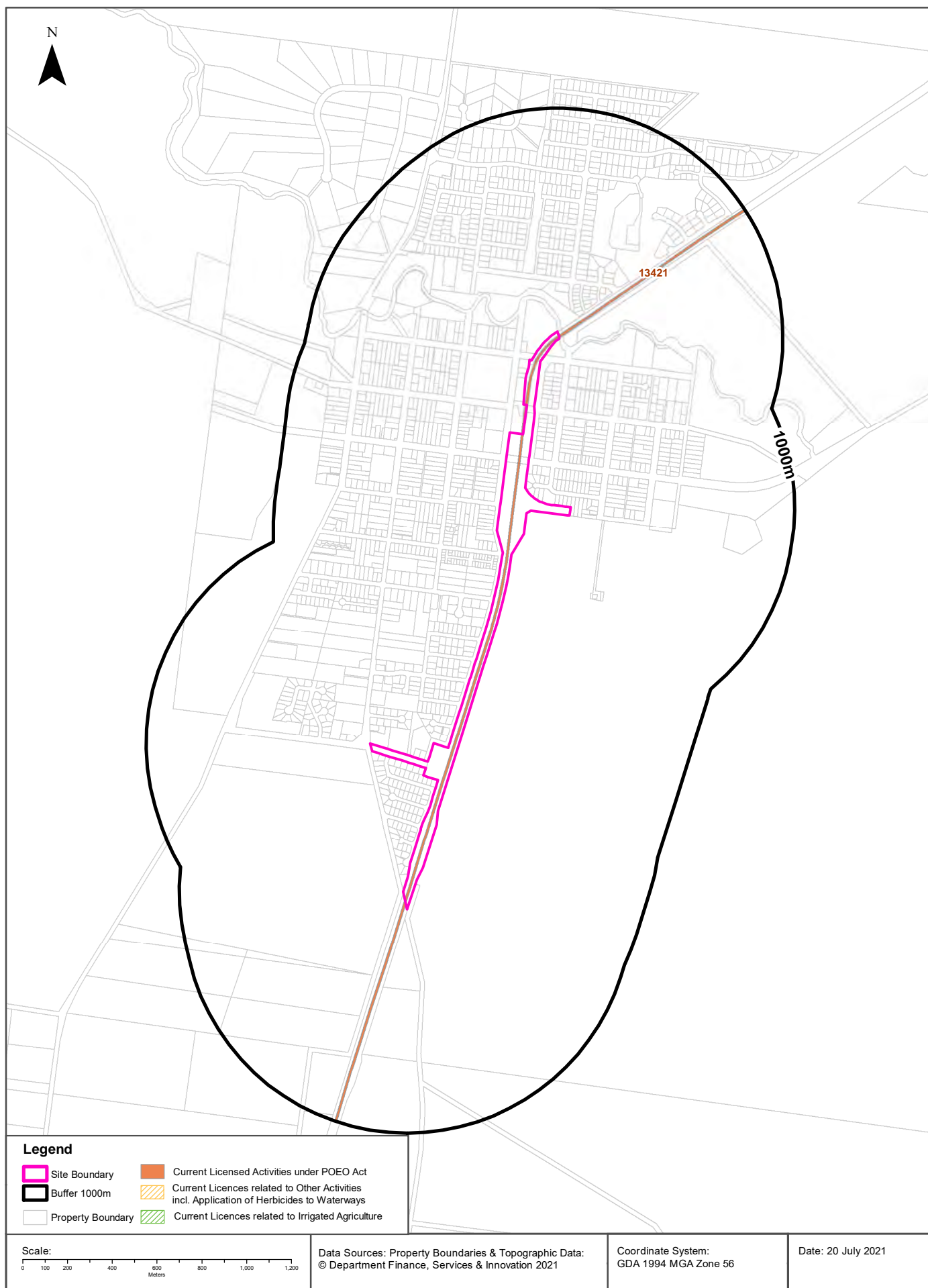
Sites within the dataset buffer:

Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
N/A	No records in buffer						

EPA Other Sites with Contamination Issues: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Current EPA Licensed Activities

Rail Corridor - Bungendore, NSW 2621



EPA Activities

Rail Corridor - Bungendore, NSW 2621

Licensed Activities under the POEO Act 1997

Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

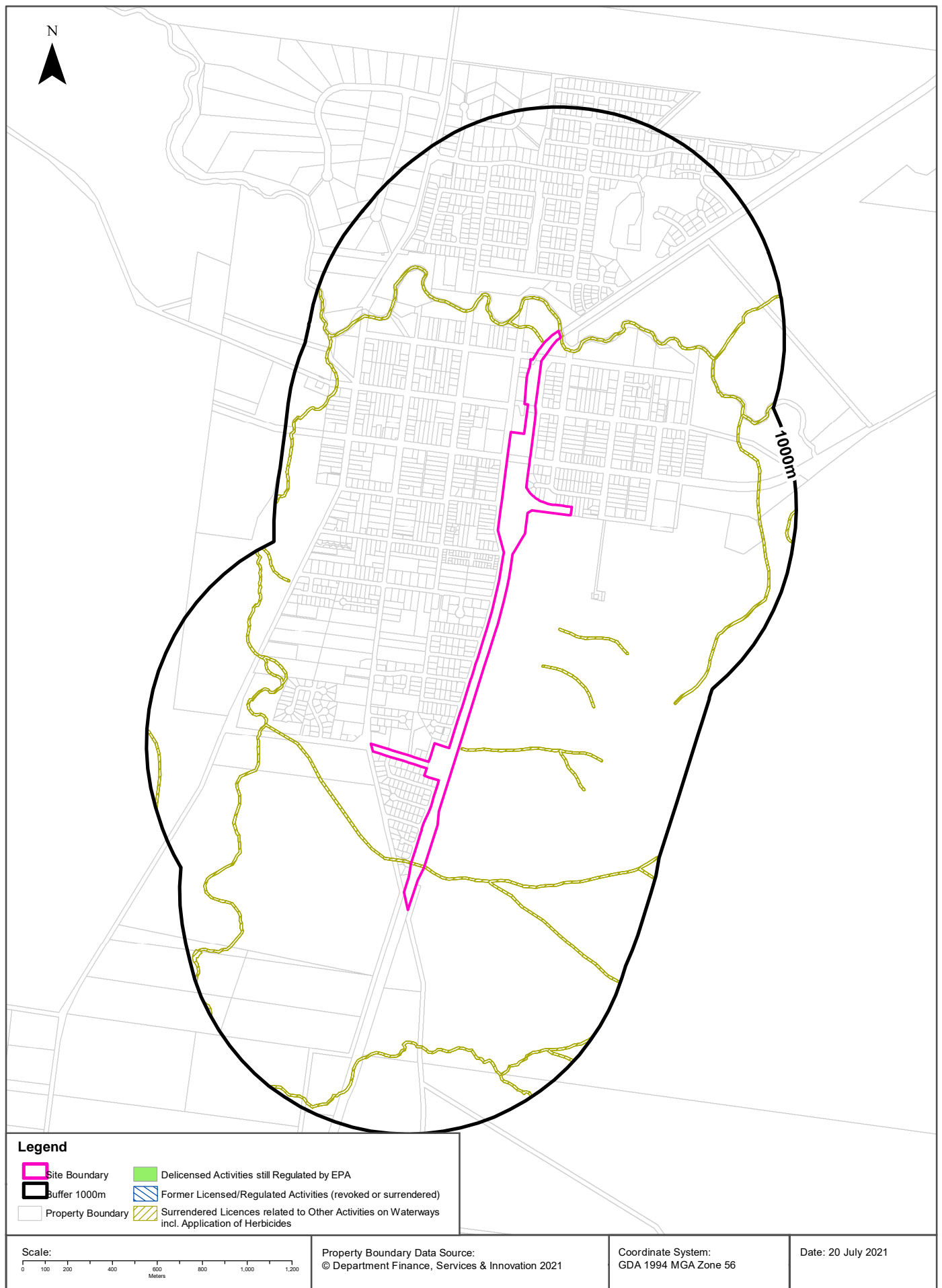
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
13421	JOHN HOLLAND RAIL PTY LTD		JOHN HOLLAND RAIL NETWORK, PARRAMATTA, NSW 2124		Railway systems activities	Network of Features	0m	On-site

POEO Licence Data Source: Environment Protection Authority

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Delicensed & Former Licensed EPA Activities

Rail Corridor - Bungendore, NSW 2621



EPA Activities

Rail Corridor - Bungendore, NSW 2621

Delicensed Activities still regulated by the EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

Delicensed Activities Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

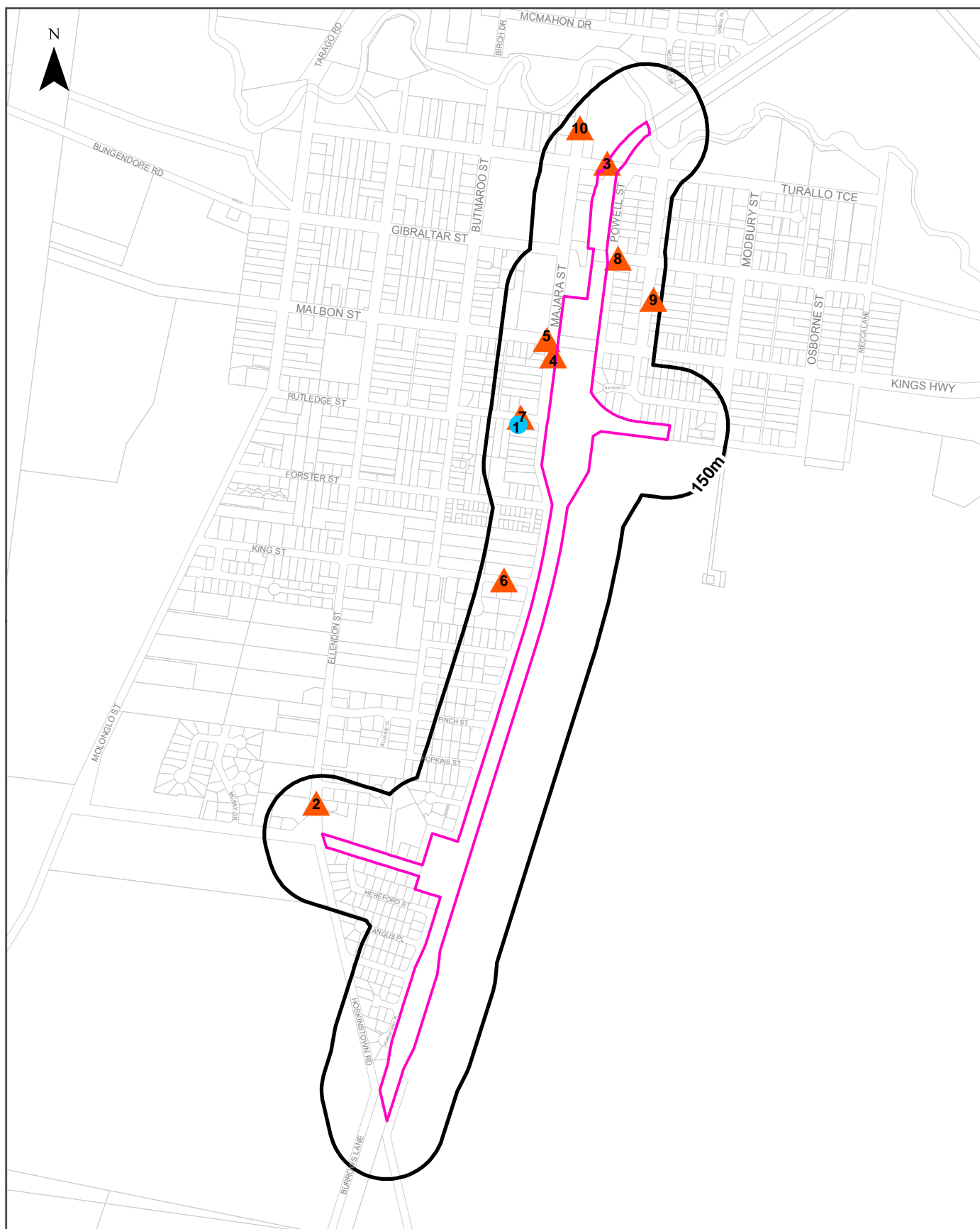
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site

Former Licensed Activities Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Historical Business Directories

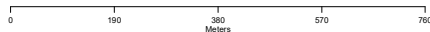
Rail Corridor - Bungendore, NSW 2621



Legend

- Site Boundary
- Buffer 150m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- ▲ Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale:



Coordinate System:
GDA 1994 MGA Zone 56

Date: 21 July 2021

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018
Property Boundaries © NSW Department Finance, Services & Innovation 2021

Historical Business Directories

Rail Corridor - Bungendore, NSW 2621

Business Directory Records 1950-1991 Premise or Road Intersection Matches

Universal Business Directory records from years 1991, 1982, 1970, 1961 & 1950, mapped to a premise or road intersection within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	NOT LISTED	Ratcliff John Drilling Services Pty. Ltd., 61 Rutledge St	136693	1991	Premise Match	54m	North

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Business Directory Records 1950-1991

Road or Area Matches

Universal Business Directory records from years 1991, 1982, 1970, 1961 & 1950, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
2	NOT LISTED	Bush Fire Brigade., Ellendon St	136668	1991	Road Match	0m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Bush Fire Brigade, Ellendon St., Bungendore	146775	1982	Road Match	0m
	LOCAL BODIES	Bush Fire Brigade, Ellenden St. Bungendore	583724	1970	Road Match	0m
	ENGINEERS-GENERAL, MANUFACTURING & MECHANICAL	Brown, F. E., Ellendon St., Bungendore	192594	1961	Road Match	0m
3	NOT LISTED	Manna House., Turallo Tce	136687	1991	Road Match	0m
	SCHOOLS & COLLEGES-PRIVATE & PUBLIC	St. Joseph's Convent, Turalla St. Bungendore	583734	1970	Road Match	0m
	SCHOOLS & COLLEGES-PRIVATE & PUBLIC	St., Joseph's Convent, Turalla St., Bungendore	192614	1961	Road Match	0m
	CARRIERS & CARTAGE CONTRACTORS	Cumblan, J., Tralla St., Bungendore	154835	1950	Road Match	0m
4	CARRIERS & CARTAGE CONTRACTORS	Cumberland, J. A., Majura St., Bungendore	192589	1961	Road Match	0m
5	NOT LISTED	Bundendore Motors (Ampol Service Station), Malbon St	136661	1991	Road Match	20m
	NOT LISTED	Bungendore Books Bungendore Village Sq., Malbon St	136662	1991	Road Match	20m
	NOT LISTED	Bungendore Bushrange Souvenir Shop Bungendore Village Sq., Malbon St	136663	1991	Road Match	20m
	NOT LISTED	Bungendore Village Pantry The Bungendore Village Sq., Malbon St	136667	1991	Road Match	20m
	NOT LISTED	Cafe Mezzes Bungendore Village Sq., Malbon St	136669	1991	Road Match	20m
	NOT LISTED	Feehely Barrow Bungendore Village Sq., Malbon St	136675	1991	Road Match	20m
	NOT LISTED	Gaelians Corner Ice-Cream Parlour Bungendore Village Sq., Malbon St	136676	1991	Road Match	20m
	NOT LISTED	Harrison G. L., Malbon St	136680	1991	Road Match	20m
	NOT LISTED	Hopperdon R. J., Malbon St	136682	1991	Road Match	20m
	NOT LISTED	Jacky Jacky Antiques Bungendore Village Sq., Malbon St	136683	1991	Road Match	20m
	NOT LISTED	Tea Cosy Cottage Bungendore Village Sq., Malbon St	136699	1991	Road Match	20m
	NOT LISTED	Toucan Pottery Bungendore Village Sq., Malbon St	136702	1991	Road Match	20m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Ampol Service Station, Malbon St., Bungendore	146770	1982	Road Match	20m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Harrison, G. L., Livestk.CarrierMalbon St., Bungendore	146783	1982	Road Match	20m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Hopperdon, R. J., Bldr., Malbon St., Bungendore	146786	1982	Road Match	20m
	TIMBER MERCHANTS &/OR SAWMILLERS	Daniel, R., Malbon St. Bungendore	583740	1970	Road Match	20m
	BUILDERS &/OR BUILDING CONTRACTORS	Hopperdon, R. J., Malbon St. Bungendore	583714	1970	Road Match	20m
	BUTCHERS-RETAIL	Shumack, B. B., Malbon St. Bungendore	583715	1970	Road Match	20m
	BUTCHERS-RETAIL	Brown, V. R. & M., Malbon St., Bungendore	192588	1961	Road Match	20m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
5	CARRIERS & CARTAGE CONTRACTORS	Daniel, R., Malbon St., Bungendore	192590	1961	Road Match	20m
	BUILDERS & CONTRACTORS	Hopperdon, R. J., Malbon St., Bungendore	192586	1961	Road Match	20m
	DRAPERS-RETAIL	Ryan, G. S., Malbon St., Bungendore	192592	1961	Road Match	20m
	GROCERS & GENERAL STOREKEEPERS	Ryan, G. S., Malbon St., Bungendore	192601	1961	Road Match	20m
	HARDWARE DEALERS &/OR IRONMONGERS	Ryan, G. S., Malbon St., Bungendore	192603	1961	Road Match	20m
	MERCERS-MEN'S & BOYS' OUTFITTERS	Ryan, G. S., Malbon St., Bungendore	192607	1961	Road Match	20m
	NEWSAGENTS	Ryan, G. S., Malbon St., Bungendore	192610	1961	Road Match	20m
	SHEARING CONTRACTORS	Sills, L. H., Malbon St., Bungendore	192617	1961	Road Match	20m
	TAXIS & HIRE CARS .	Thoms, W., Malbon St, Bungendore	192619	1961	Road Match	20m
	HALLS	Gallagher M. M., Malbon St., Bungendore	154847	1950	Road Match	20m
	CARRIERS & CARTAGE CONTRACTORS	Kennedy, R. W., Malbon St., Bungendore	154837	1950	Road Match	20m
	MOTOR ACCESSORIES DEALERS	Raymond, A. and Son, Malbon St., Bungendore	154856	1950	Road Match	20m
	MOTOR PAINTERS & PANEL BEATERS	Raymond, A. and Son, Malbon St., Bungendore	154865	1950	Road Match	20m
	MOTOR SERVICE STATIONS	Raymond, A. and Son, Malbon St., Bungendore	154867	1950	Road Match	20m
	MOTOR GARAGES & ENGINEERS	Raymond, A. and Son, Malbon St., Bungendore	154861	1950	Road Match	20m
6	WINE & / OR SPIRIT MERCHANTS - RETAIL	Koppers Australia Pty. Ltd., rmb.ProceSng., King St., Bungendore	146788	1982	Road Match	20m
7	MOTOR BUS SERVICES	Campbell, M., Rutledge St. Bungendore	583725	1970	Road Match	24m
	SHEARING CONTRACTORS	Sills, J. P., Rutledge St., Bungendore	192616	1961	Road Match	24m
	HIRE CAR SERVICES	Campbell, M., Rutledge St., Bungendore	154849	1950	Road Match	24m
8	NOT LISTED	Elder Smith Goldsborough Mort Co. Ltd., Gibraltar St	136674	1991	Road Match	25m
	NOT LISTED	Gardner's Motor Works., Gibraltar St	136677	1991	Road Match	25m
	NOT LISTED	Lake George Hotel Motel., Gibraltar St	136685	1991	Road Match	25m
	NOT LISTED	Police Station., Gibraltar St	136691	1991	Road Match	25m
	NOT LISTED	Post Office., Gibraltar St	136692	1991	Road Match	25m
	NOT LISTED	Ye Olde Wool Winkel (Trading For Aust-Ag. Industries), Gibraltar St	136704	1991	Road Match	25m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Bungendore Bakery, Gibraltar St., Bungendore	146771	1982	Road Match	25m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Bungendore Motel, Gibraltar St., Bungendore	146772	1982	Road Match	25m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Elder Snnth Goldsborough Mort. Co. Ltd., Stk. 6 Stn. Agnt., Gibrahar St., Bungendore	146780	1982	Road Match	25m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Gardner's Motor Works, Gibraltar St., Bungendore	146781	1982	Road Match	25m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	General Store, Gibraltar St., Bungendore	146782	1982	Road Match	25m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Lake George Hotel Motel, Gibraltar St., Bungendore	146789	1982	Road Match	25m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Lake George Nursery, Gibraltar St., Bungendore	146790	1982	Road Match	25m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Police Station, Gibratlar St., Bungendore	146793	1982	Road Match	25m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Post Office, Gibraltar St., Bungendore	146794	1982	Road Match	25m

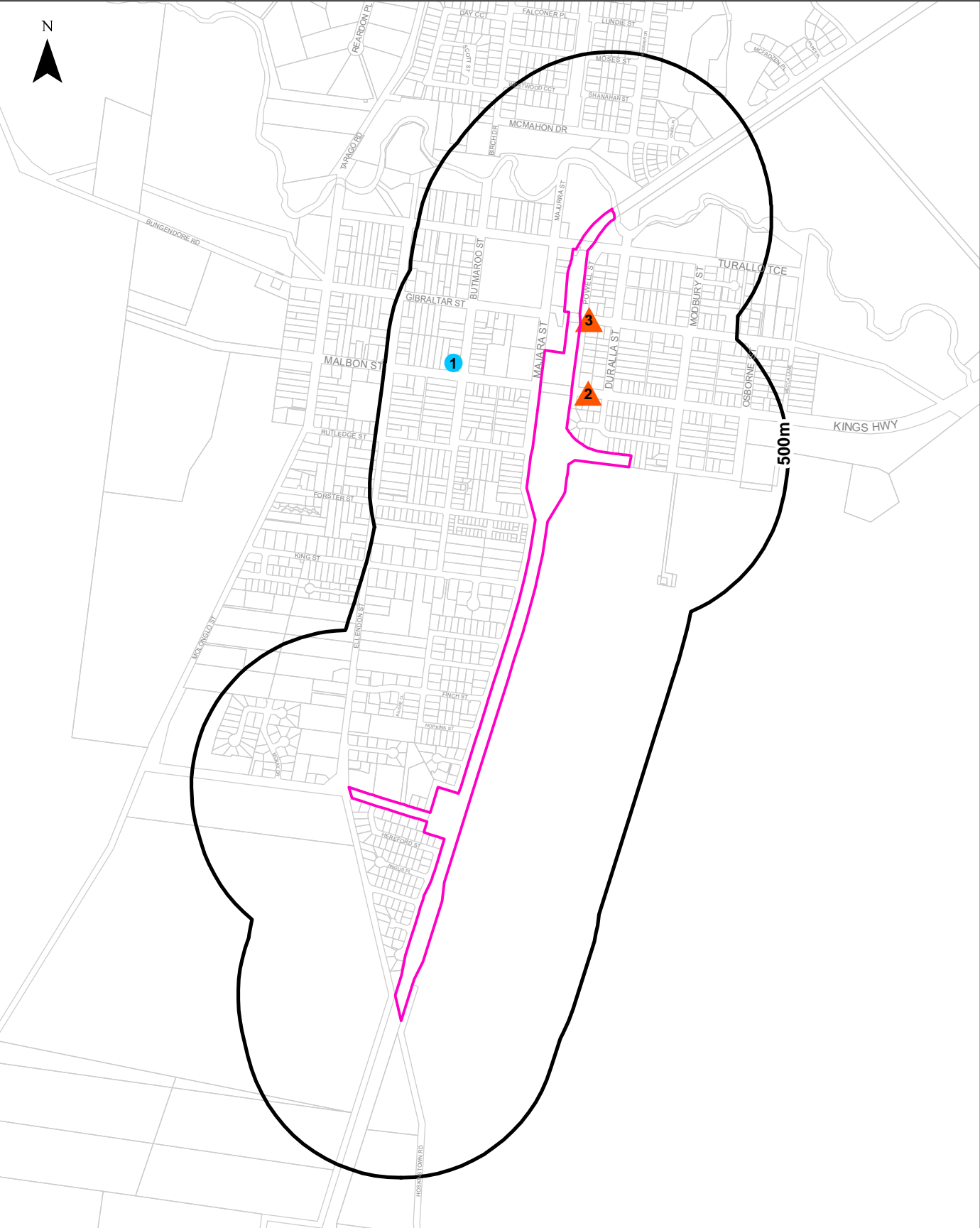
Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
8	WINE & / OR SPIRIT MERCHANTS - RETAIL	Royal Hotel, Gibraltar St., Bungendore	146795	1982	Road Match	25m
	BAKERS	Bungendore Bakery, Gibraltar St. Bungendore	583712	1970	Road Match	25m
	SCHOOLS & COLLEGES-PRIVATE & PUBLIC	Bungendore Public School, Gibraltar St. Bungendore	583733	1970	Road Match	25m
	AGRICULTURAL MACHINERY HIRERS &/OR D"LA,	Elder Smith Goldsbrough Mort Co. Ltd., Gibraltar Bungendore	583711	1970	Road Match	25m
	STOCK, STATION & REAL ESTATE AGENTS	Elder Smith Goldsbrough Mort Co. Ltd., Gibraltar St. Bungendore	583738	1970	Road Match	25m
	MOTOR GARAGES & ENGINEERS	Gallagher, R., Gibraltar St. Bungendore	583728	1970	Road Match	25m
	ELECTRICAL SUPPLIES & APPLIANCES-RETAILERS	Gardners Motor Works, Gibraltar St. Bungendore	583718	1970	Road Match	25m
	MOTOR GARAGES & ENGINEERS	Gardners Motor Works, Gibraltar St. Bungendore	583729	1970	Road Match	25m
	HOTELS-LICENSED	Lake George Hotel, Gibraltar St. Bungendore	583722	1970	Road Match	25m
	HOTELS	Lake George Motel, Gibraltar St. Bungendore	583726	1970	Road Match	25m
	GOVERNMENT DEPARTMENTS	Police Station, Gibraltar St. Bungendore	583719	1970	Road Match	25m
	GOVERNMENT DEPARTMENTS	Post Office, Gibraltar St. Bungendore	583720	1970	Road Match	25m
	HOTELS-LICENSED	Royal Hotel, Gibraltar St. Bungendore	583723	1970	Road Match	25m
	GROCERS & SELF SERVICE STORES	Ryan, G. S., Gibraltar St. Bungendore	583721	1970	Road Match	25m
	NEWSAGENTS-GENERAL	Ryan, G. S., Gibraltar St. Bungendore	583731	1970	Road Match	25m
	PRODUCE MERCHANTS-GRAIN & SEED-RETAIL	Ryan, G. S., Gibraltar St. Bungendore	583732	1970	Road Match	25m
	BAKERS-BREAD	Bungendore Bakery, Gibraltar St., Bungendore	192583	1961	Road Match	25m
	SCHOOLS & COLLEGES-PRIVATE & PUBLIC	Bungendore Public School, Gibraltar St., Bungendore	192613	1961	Road Match	25m
	GROCERS & GENERAL STOREKEEPERS	Campbell, P. J., Gibraltar St., Bungendore	192599	1961	Road Match	25m
	FRUITERERS & GREENGROCERS	Coleman, L. C., Gibraltar St., Bungendore	192595	1961	Road Match	25m
	GROCERS & GENERAL STOREKEEPERS	Coleman, L. G., Gibraltar St., Bungendore	192600	1961	Road Match	25m
	BANKS	Commonwealth Savings Bank of Australia, Gibraltar St., P.O., Bungendore	192585	1961	Road Match	25m
	MOTOR GARAGES & ENGINEERS	Gallagher, R., Gibraltar St., Bungendore	192608	1961	Road Match	25m
	ELECTRICAL SUPPLIES & APPLIANCES-RETAILERS	Gardners Motor Works, Gibraltar St., Bungendore	192593	1961	Road Match	25m
	MOTOR GARAGES & ENGINEERS	Gardners Motor Works, Gibraltar St., Bungendore	192609	1961	Road Match	25m
	AGRICULTURAL MACHINERY DEALERS	Goldsbrough Mort & Co. Ltd., Gibraltar St., Bungendore	192581	1961	Road Match	25m
	STOCK, STATION & REAL ESTATE AGENTS	Goldsbrough Mort St Co. Ltd., Gibraltar St., Bungendore	192618	1961	Road Match	25m
	HOTELS-LICENSED	Lake George Hotel, Gibraltar St., Bungendore	192605	1961	Road Match	25m
	GOVERNMENT DEPARTMENTS	Police Station. Gibraltar St., Bungendore	192597	1961	Road Match	25m
	GOVERNMENT DEPARTMENTS	Post Office, Gibraltar St., Bungendore	192598	1961	Road Match	25m
	HOTELS-LICENSED	Royal Hotel, Gibraltar St., Bungendore	192606	1961	Road Match	25m
	GROCERS & GENERAL STOREKEEPERS	Ryan, W., Gibraltar St., Bungendore	192602	1961	Road Match	25m
	HARDWARE DEALERS &/OR IRONMONGERS	Ryan, W., Gibraltar St., Bungendore	192604	1961	Road Match	25m
	PRODUCE MERCHANTS-GRAIN & SEED-RETAIL	Ryan, W., Gibraltar St., Bungendore	192612	1961	Road Match	25m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
8	CARRIERS & CARTAGE CONTRACTORS	Taylor, K., Gibraltar St., Bungendore	192591	1961	Road Match	25m
	BAKERS &/OR PASTRYCOOKS	Bungendore Bakery, Gibraltar St., Bungendore	154829	1950	Road Match	25m
	SCHOOLS	Bungendore Public School, Gibraltar St., Bungendore	154873	1950	Road Match	25m
	INSURANCE AGENTS	Donelly, F. (Agent, N.Z. Insrnce.), Gibraltar St., Bungendore	154852	1950	Road Match	25m
	AGRICULTURAL MACHINERY DEALERS	Donelly, F. (Agent, Massey Harris), Gibraltar St., Bungendore	154828	1950	Road Match	25m
	AUCTIONEERS	Donelly, F. Gibraltar St., Bungendore	154826	1950	Road Match	25m
	REAL ESTATE AGENTS	Donelly, F., Gibraltar St., Bungendore	154872	1950	Road Match	25m
	STOCK & STATION AGENTS	Donnelly, J. F. Gibraltar St., Bungendore	154874	1950	Road Match	25m
	MOTOR OIL & SPIRIT MERCHANTS	Gardner Motor Works (Agents, Ampol), Gibraltar St., Bungendore	154863	1950	Road Match	25m
	RADIO DEALERS &/OR SERVICEMEN	Gardners Motor Works (Agents, Tasma and Breville, Bungendore Radio), Gibraltar St., Bungendore	154871	1950	Road Match	25m
	MOTOR ACCESSORIES DEALERS	Gardners Motor Works, Gibraltar St., Bungendore	154855	1950	Road Match	25m
	MOTOR GARAGES & ENGINEERS	Gardners Motor Works, Gibraltar St., Bungendore	154860	1950	Road Match	25m
	MOTOR PAINTERS & PANEL BEATERS	Gardners Motor Works, Gibraltar St., Bungendore	154864	1950	Road Match	25m
	MOTOR SERVICE STATIONS	Gardners Motor Works, Gibraltar St., Bungendore	154866	1950	Road Match	25m
	MOTOR TOWING SERVICES	Gardners Motor Works, Gibraltar St., Bungendore	154868	1950	Road Match	25m
	WELDERS	Gardners Motor Works, Gibraltar St., Bungendore	154876	1950	Road Match	25m
	HOTELS	Lake George Hotel (James Butler), Gibraltar St., Bungendore	154850	1950	Road Match	25m
	FRUITERERS & GREENGROCERS	Lee, M. V., Gibraltar St., Bungendore	154839	1950	Road Match	25m
	BUTCHERS-RETAIL	Lee, T. M., Gibraltar St., Bungendore	154833	1950	Road Match	25m
	BUTCHERS-RETAIL	Lytham, C. J., Gibraltar St., Bungendore	154834	1950	Road Match	25m
	GOVERNMENT DEPARTMENTS	Pest Office, Gibraltar St., Bungendore	154843	1950	Road Match	25m
	GOVERNMENT DEPARTMENTS	Police Station, Gibraltar St., Bungendore	154842	1950	Road Match	25m
	FRUITERERS & GREENGROCERS	Raufell, J., Gibraltar St., Bungendore	154840	1950	Road Match	25m
	MERCERS & MEN'S OUTFITTERS	Ryan, W. Gibraltar St., Bungendore	154854	1950	Road Match	25m
	GROCERS & GENERAL STOREKEEPERS	Ryan, W., Gibraltar St., Bungendore	154845	1950	Road Match	25m
	HARDWARE DEALERS & IRONMONGERS	Ryan, W., Gibraltar St., Bungendore	154848	1950	Road Match	25m
	PRODUCE MERCHANTS-RETAIL	Ryan, W., Gibraltar St., Bungendore	154870	1950	Road Match	25m
	TOY DEALERS-RETAIL	Ryan, W., Gibraltar St., Bungendore	154875	1950	Road Match	25m
9	NOT LISTED	Sillis P. H., 12 Duralla St	136696	1991	Road Match	48m
	WINE & / OR SPIRIT MERCHANTS - RETAIL	Silks, P. H., Livestk.Carrier, 12 Duralta St., Bungendore	146797	1982	Road Match	48m
10	CARRIERS & CARTAGE CONTRACTORS	Guy, R. J. & M. F., 1 Majura St. Bungendore	583717	1970	Road Match	56m

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Dry Cleaners, Motor Garages & Service Stations

Rail Corridor - Bungendore, NSW 2621



Legend		Scale: 0 230 460 690 920 Metres	Coordinate System: GDA 1994 MGA Zone 56
Site Boundary	Business directory records mapped to a specific premise		Date: 20 July 2021
Buffer 500m	Business directory records mapped to a road intersection	Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018 Property Boundaries © NSW Department Finance, Services & Innovation 2021	
Property Boundary	Business directory records mapped to a road corridor		
Business directory records mapped to a general area			

Historical Business Directories

Rail Corridor - Bungendore, NSW 2621

Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MOTOR GARAGES & ENGINEERS	Bungendore Motors, 42 Malbon St. Bungendore	583727	1970	Premise Match	264m	North

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Dry Cleaners, Motor Garages & Service Stations Road or Area Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
2	MOTOR SERVICE STATIONS	Raymond, A. and Son, Malbon St., Bungendore	154867	1950	Road Match	20m
	MOTOR GARAGES & ENGINEERS	Raymond, A. and Son, Malbon St., Bungendore	154861	1950	Road Match	20m
3	MOTOR GARAGES & ENGINEERS	Gallagher, R., Gibraltar St. Bungendore	583728	1970	Road Match	25m
	MOTOR GARAGES & ENGINEERS	Gardners Motor Works, Gibraltar St. Bungendore	583729	1970	Road Match	25m
	MOTOR GARAGES & ENGINEERS	Gallagher, R., Gibraltar St., Bungendore	192608	1961	Road Match	25m
	MOTOR GARAGES & ENGINEERS	Gardners Motor Works, Gibraltar St., Bungendore	192609	1961	Road Match	25m
	MOTOR GARAGES & ENGINEERS	Gardners Motor Works, Gibraltar St., Bungendore	154860	1950	Road Match	25m
	MOTOR SERVICE STATIONS	Gardners Motor Works, Gibraltar St., Bungendore	154866	1950	Road Match	25m

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Aerial Imagery 2021

Rail Corridor - Bungendore, NSW 2621





<p>Scale:</p> <p>0 150 300 450 600</p> <p>Meters</p>	<p>Data Source Aerial Imagery: © 2021 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System: GDA 1994 MGA Zone 56</p>	<p>Date: 20 July 2021</p>
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<p>Scale:</p> <p>0 150 300 450 600</p> <p>Meters</p>	<p>Data Source Aerial Imagery: © 2021 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System:</p> <p>GDA 1994 MGA Zone 56</p>	<p>Date: 20 July 2021</p>
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Scale: 0 150 300 450 600 Meters	Data Source Aerial Imagery: © 2021 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 20 July 2021
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Aerial Imagery 1992

Rail Corridor - Bungendore, NSW 2621



Legend

- Site Boundary
- Buffer 150m

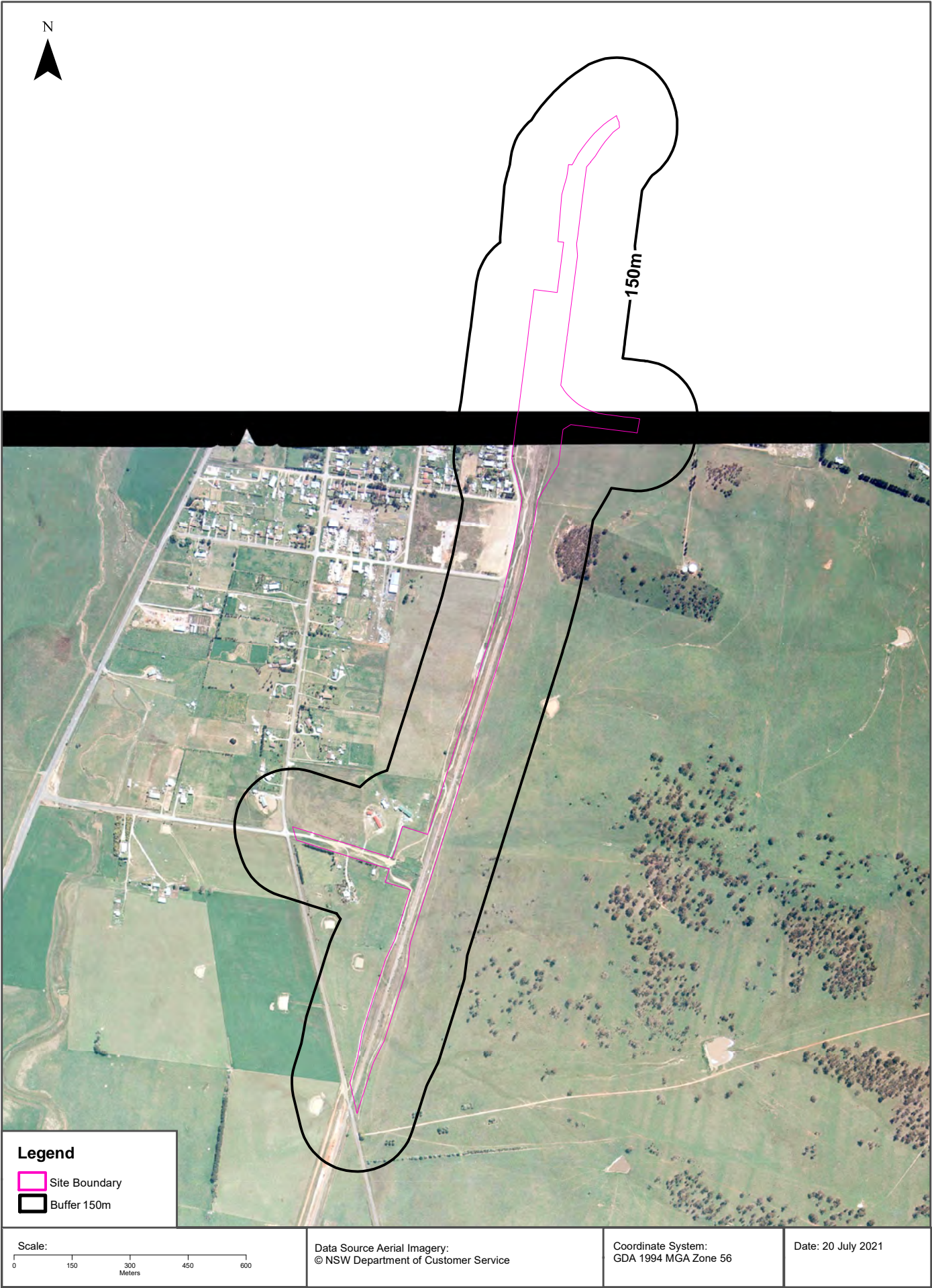
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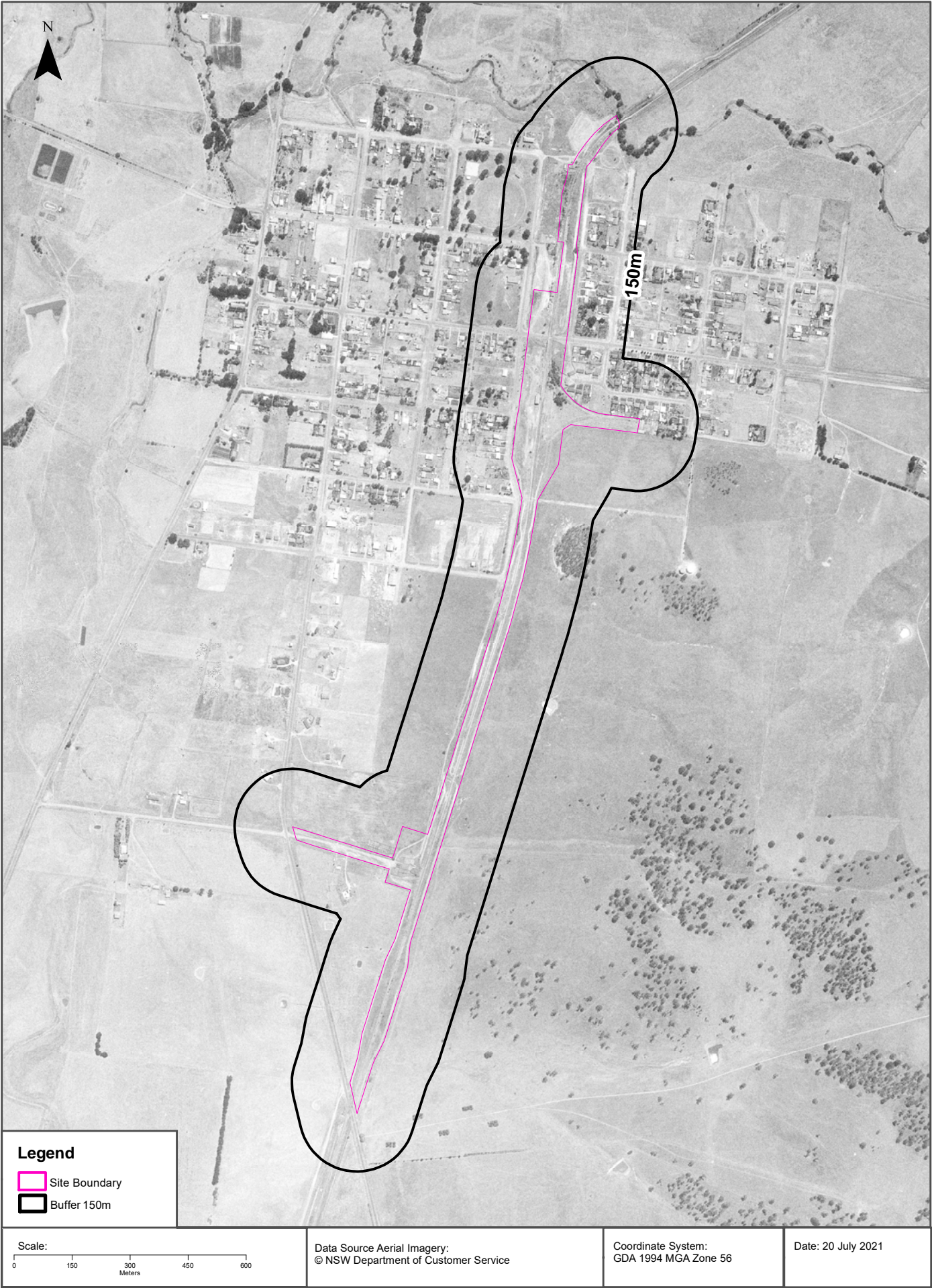
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Meters

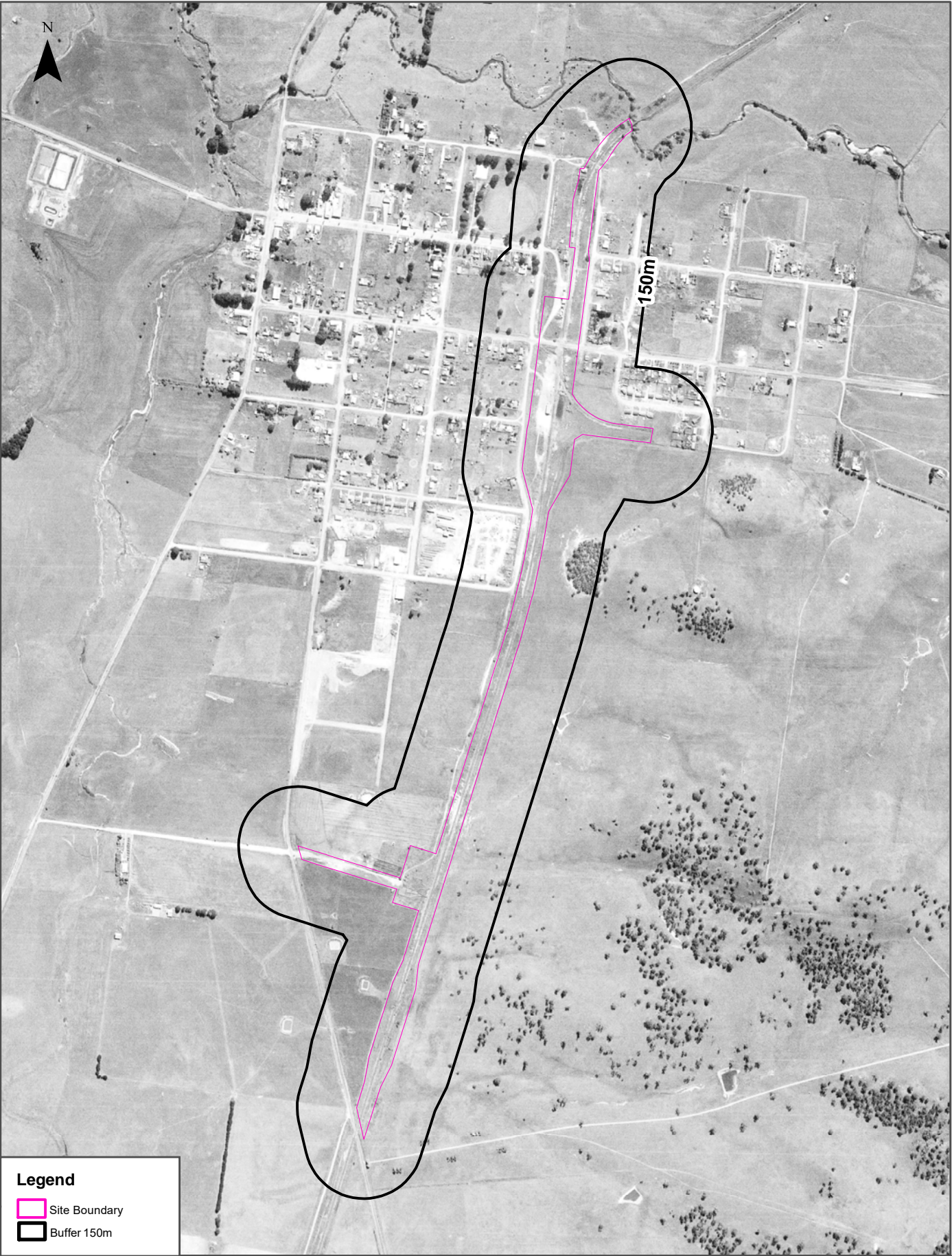
Data Source Aerial Imagery:
© NSW Department of Customer Service

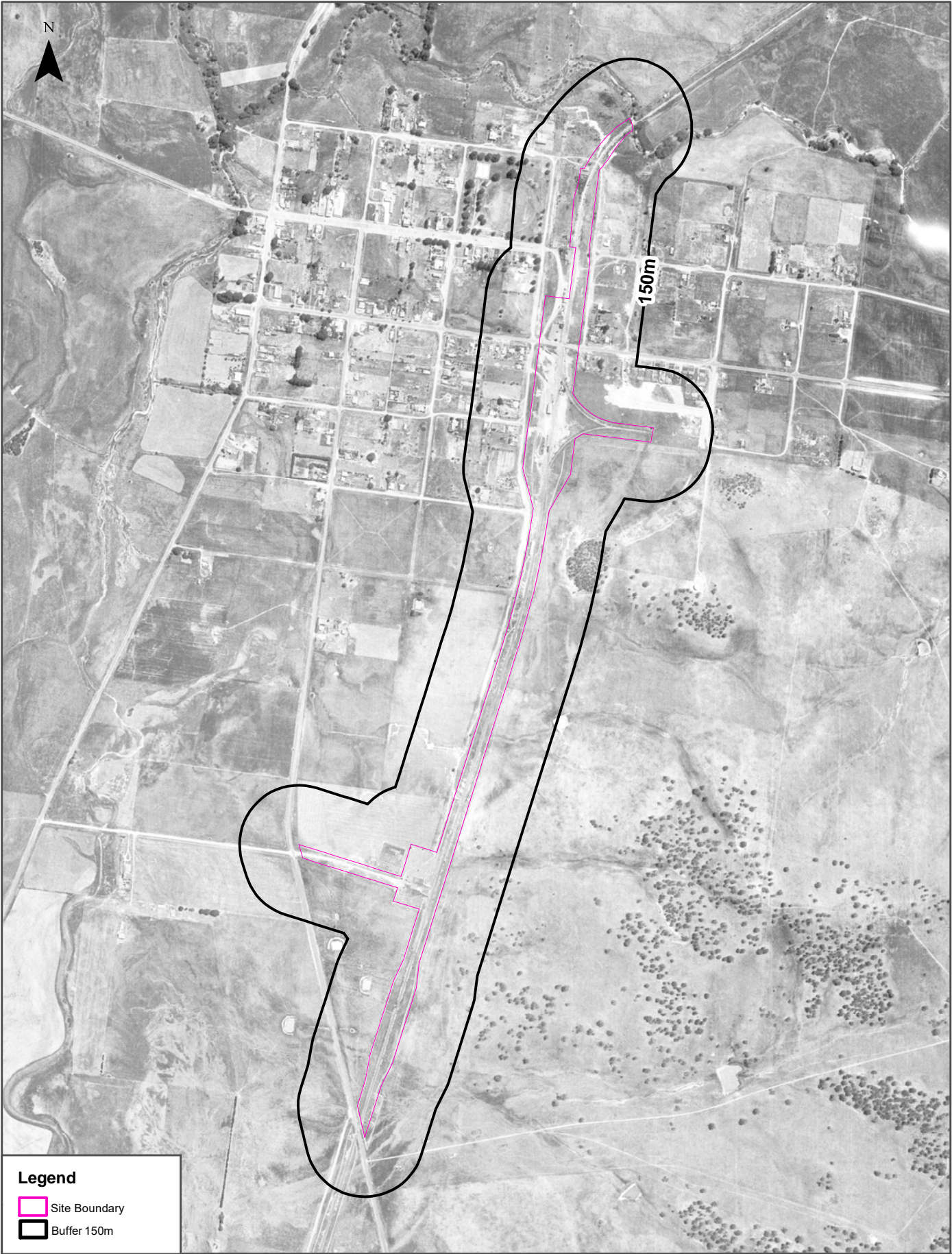
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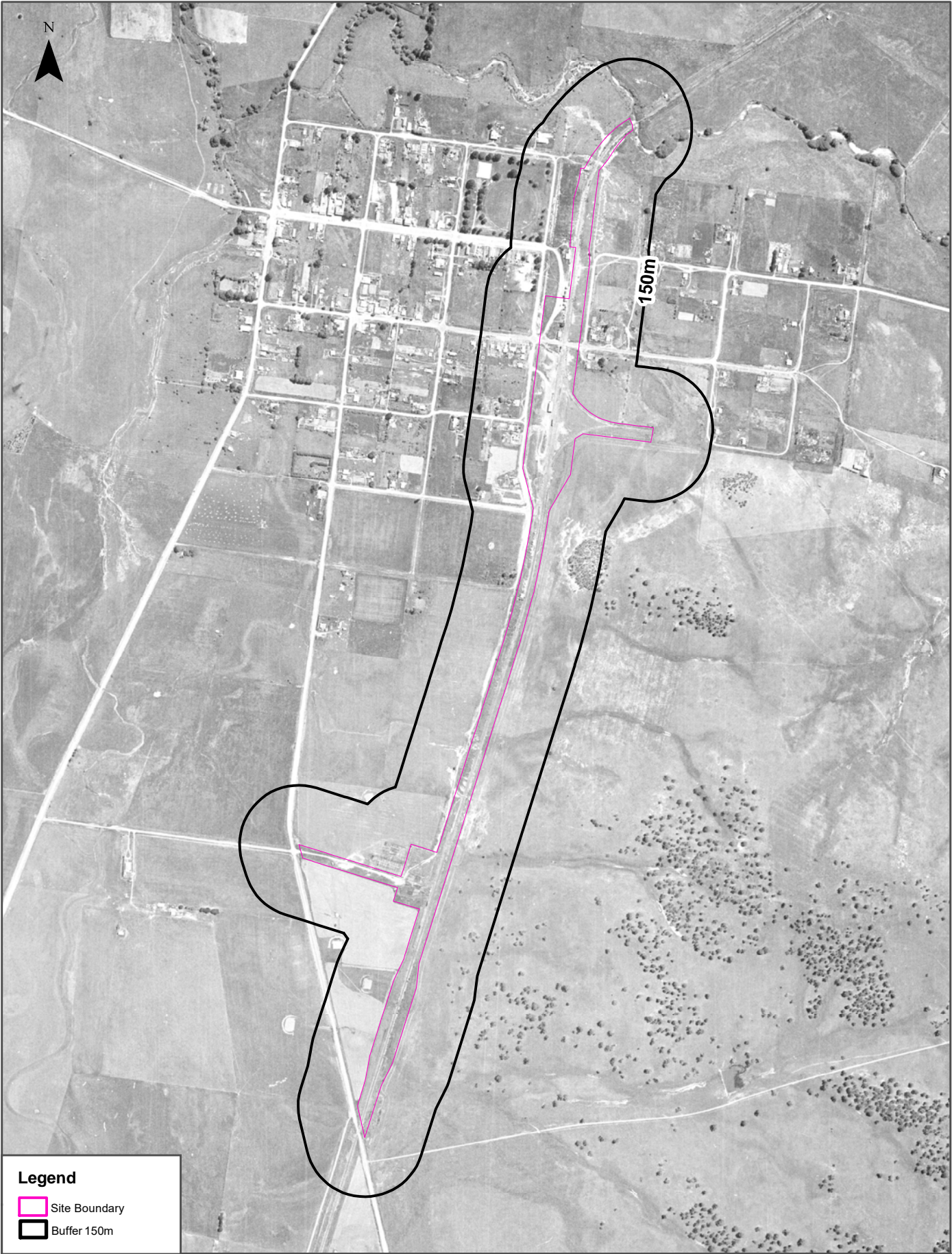
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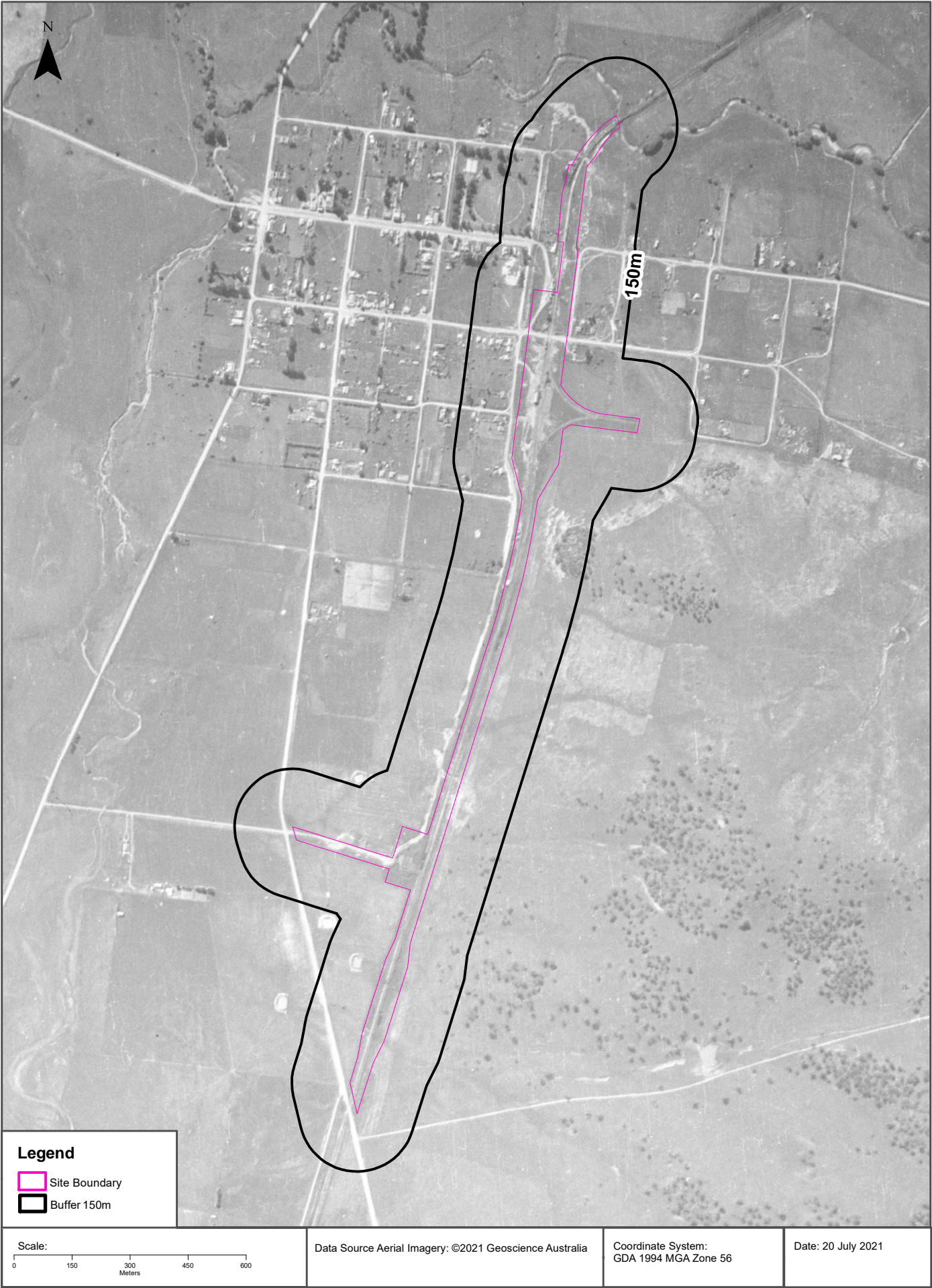








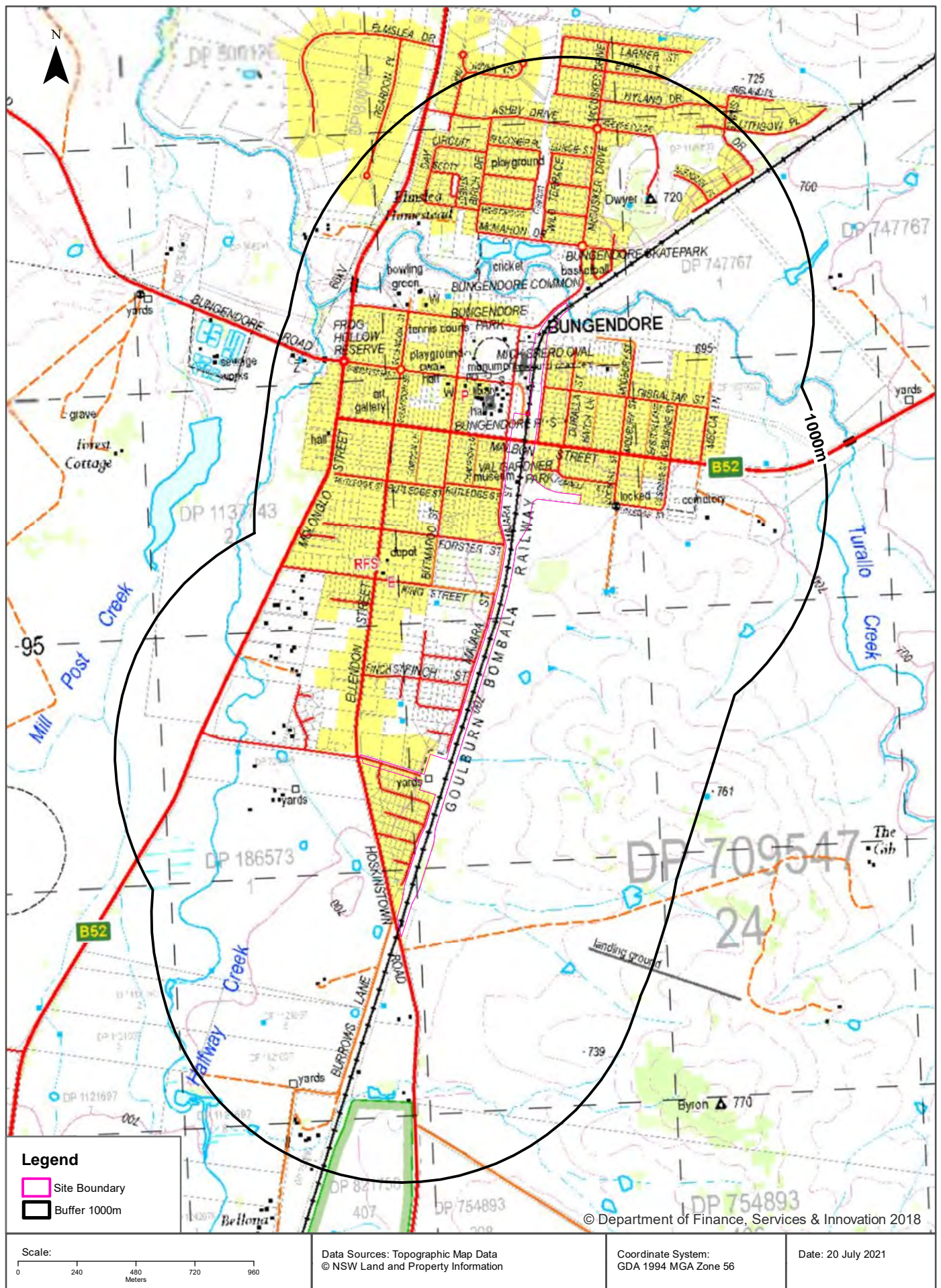
Scale: 0 150 300 450 600 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 20 July 2021
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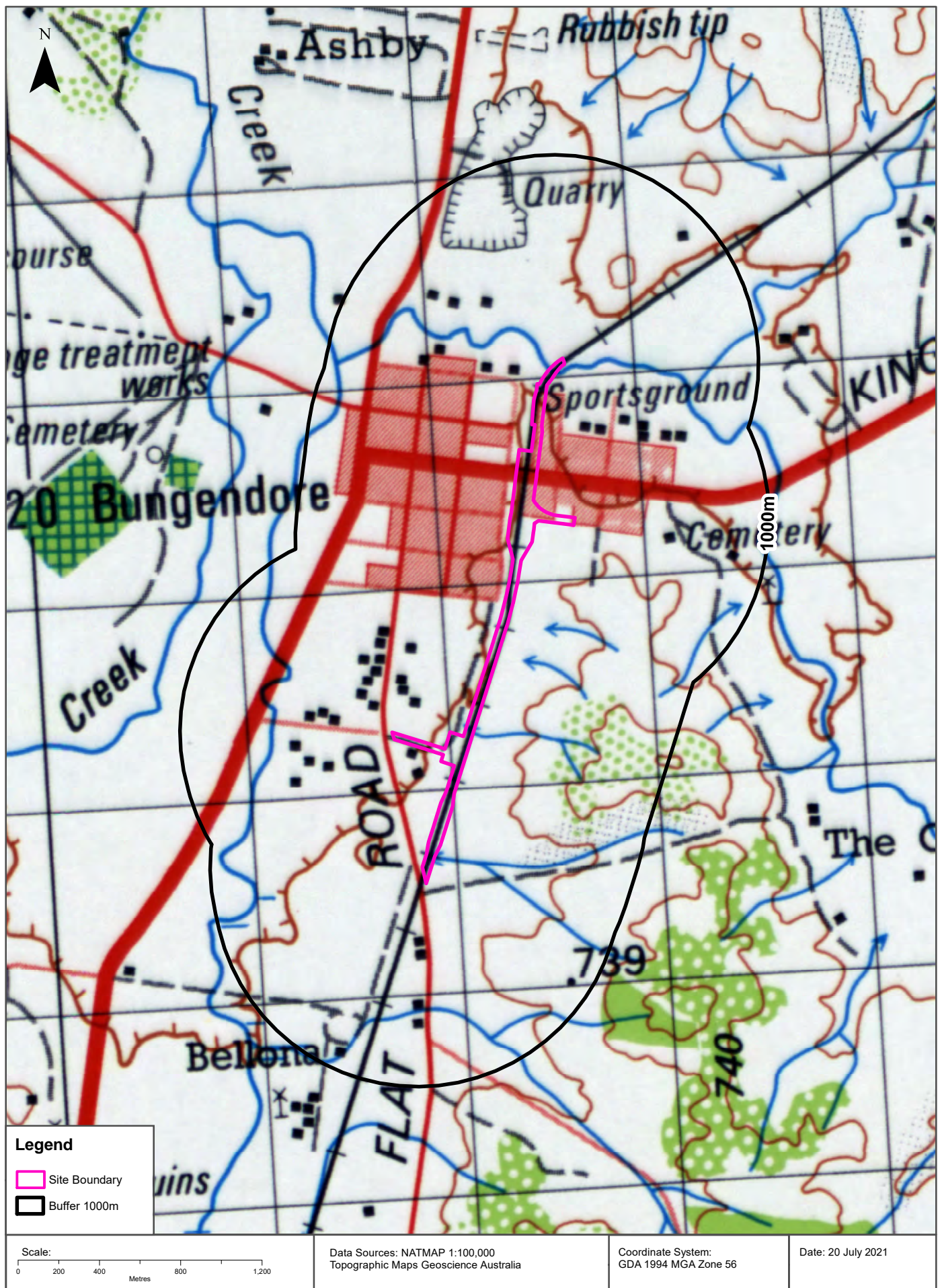
Topographic Map 2015

Rail Corridor - Bungendore, NSW 2621



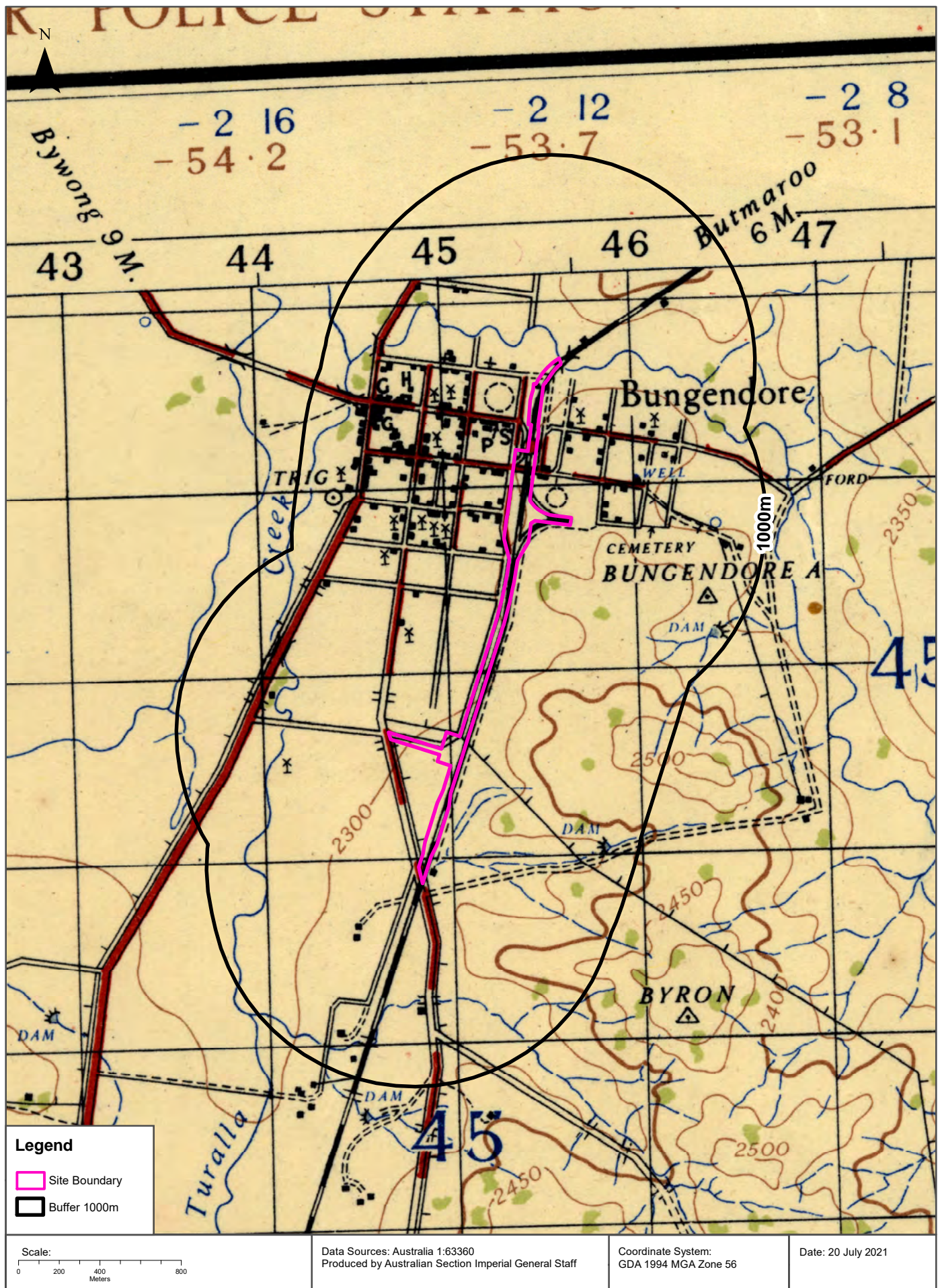
Historical Map 1987

Rail Corridor - Bungendore, NSW 2621



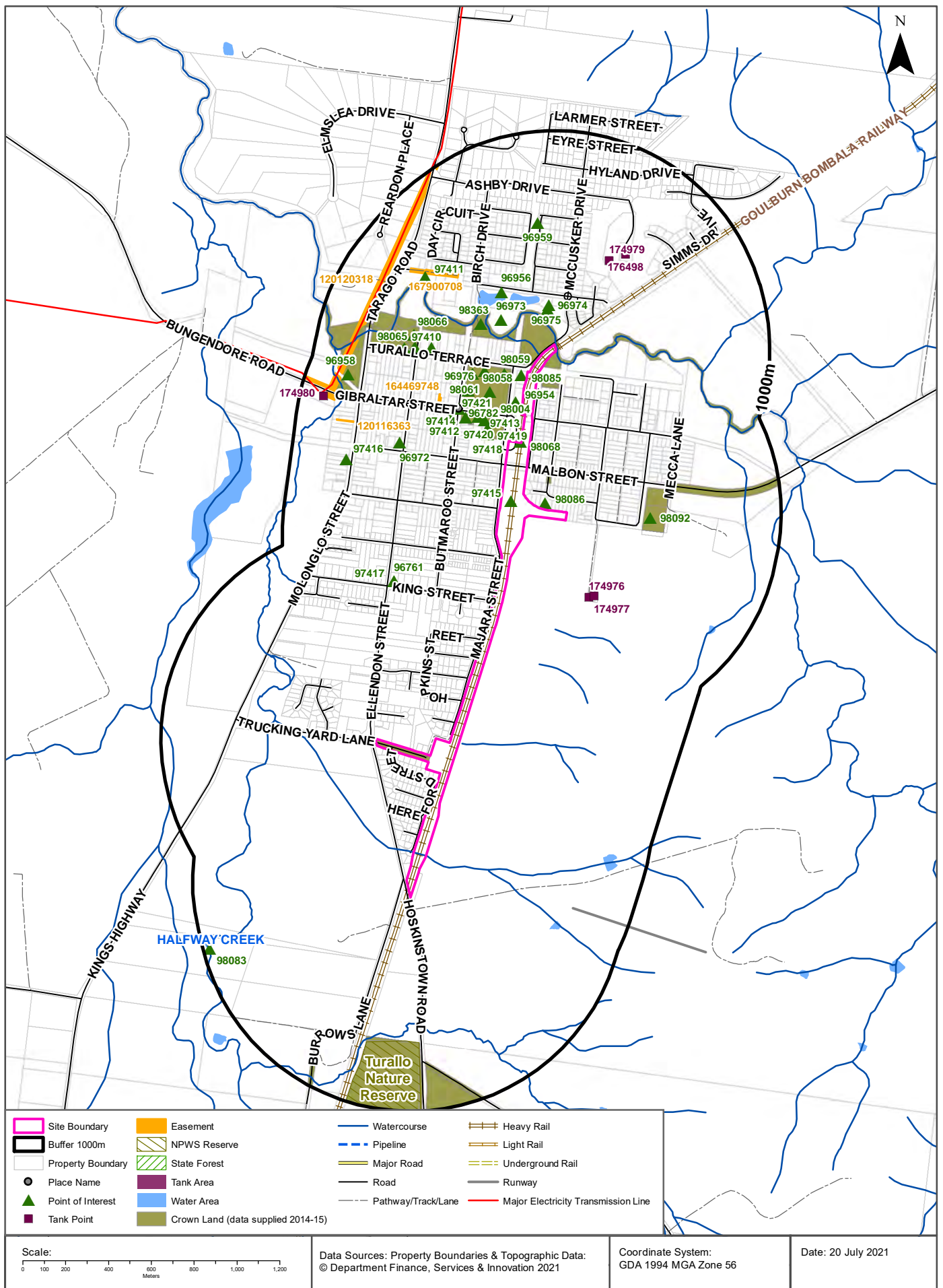
Historical Map c.1942

Rail Corridor - Bungendore, NSW 2621



Topographic Features

Rail Corridor - Bungendore, NSW 2621



Topographic Features

Rail Corridor - Bungendore, NSW 2621

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
97415	Museum	BAYONETS AND BANDAGES WAR MUSEUM	0m	On-site
98068	Railway Station	BUNGENDORE RAILWAY STATION	3m	North
98085	Community Facility	BUNGENDORE COMMUNITY CENTRE	27m	North
98086	Park	VAL GARDNER PARK	30m	North East
96954	Local Government Chambers	PALERANG COUNCIL	34m	North
97418	Community Facility	BUNGENDORE MULTIPURPOSE HALL	101m	North
98059	Swimming Pool Facility	BUNGENDORE DISTRICT COMMUNITY SWIMMING POOL	107m	North
97419	Library	BUNGENDORE COMMUNITY LIBRARY	115m	North
98004	Primary School	BUNGENDORE PUBLIC SCHOOL	120m	North
97420	Community Facility	BUNGENDORE SCHOOL OF ARTS	149m	North
98061	Sports Field	MICK SHERD OVAL	157m	North
96974	Sports Court	BASKETBALL	168m	North
97413	Monument	BUNGENDORE AND DISTRICT WAR MEMORIAL	168m	North
97421	Post Office	BUNGENDORE POST OFFICE	181m	North
96975	Sports Court	BUNGENDORE SKATEPARK	185m	North
98067	Park	BUNGENDORE PARK	197m	North
97414	Police Station	BUNGENDORE POLICE STATION	228m	North
98058	Sports Court	TENNIS COURTS	249m	North
96973	Park	CRICKET	249m	North
96976	Picnic Area	PLAYGROUND	259m	North
96782	Town	BUNGENDORE	278m	North
97412	Place Of Worship	ST PHILLIPS ANGLICAN CHURCH	294m	North
98363	Park	BUNGENDORE COMMON	312m	North
96956	Picnic Area	Picnic Area	344m	North
98092	Cemetery	BUNGENDORE CEMETERY	389m	North East
98060	Place Of Worship	ST MARYS CATHOLIC CHURCH	464m	North
97417	SES Facility	BUNGENDORE SES	473m	West
96761	Firestation - Bush	BUNGENDORE RFB	473m	West
96972	Art Gallery	BUNGENDORE WOOD WORKS GALLERY	504m	North West
98065	Community Facility	BUNGENDORE BOWLING CLUB	540m	North
98066	Sports Field	BOWLING GREEN	559m	North

Map Id	Feature Type	Label	Distance	Direction
96959	Park	PLAYGROUND	575m	North
97410	Community Facility	YARRALUMLA SHIRE COUNCIL POUND	587m	North
97411	Homestead	ELMSLEA HOMESTEAD	652m	North
97416	Community Facility	BUNGENDORE WAR MEMORIAL HALL	741m	North West
96958	Park	FROG HOLLOW RESERVE	813m	North West
98083	Manmade Waterbody	HALFWAY CREEK	970m	South West

Topographic Data Source: © Land and Property Information (2015)

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Topographic Features

Rail Corridor - Bungendore, NSW 2621

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
N/A	No records in buffer					

Tanks (Points)

What are the Tank Points located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
174976	Water	Operational		23/09/2002	376m	East
174977	Water	Operational		23/09/2002	378m	East
174979	Water	Operational		23/09/2002	468m	North
176498	Water	Operational		21/10/2010	538m	North
174980	Water	Operational		23/09/2002	891m	North West

Tanks Data Source: © Land and Property Information (2015)

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Major Easements

What Major Easements exist within the dataset buffer?

Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
164599484	Primary	Right of way	5m	363m	North
164469748	Primary	Right of way	5m	368m	North
167900708	Primary	Right of way	15.11m & 18.14m	532m	North
120116363	Primary	Undefined		729m	North West
120120318	Primary	Undefined		782m	North

Easements Data Source: © Land and Property Information (2015)

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Topographic Features

Rail Corridor - Bungendore, NSW 2621

State Forest

What State Forest exist within the dataset buffer?

State Forest Number	State Forest Name	Distance	Direction
N/A	No records in buffer		

State Forest Data Source: © NSW Department of Finance, Services & Innovation (2018)

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National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N0901	NATURE RESERVE	Turallo Nature Reserve	07/03/2003	671m	South

NPWS Data Source: © NSW Department of Finance, Services & Innovation (2018)

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Elevation Contours (m AHD)

Rail Corridor - Bungendore, NSW 2621



Hydrogeology & Groundwater

Rail Corridor - Bungendore, NSW 2621

Hydrogeology

Description of aquifers within the dataset buffer:

Description	Distance	Direction
Porous, extensive highly productive aquifers	0m	On-site

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)

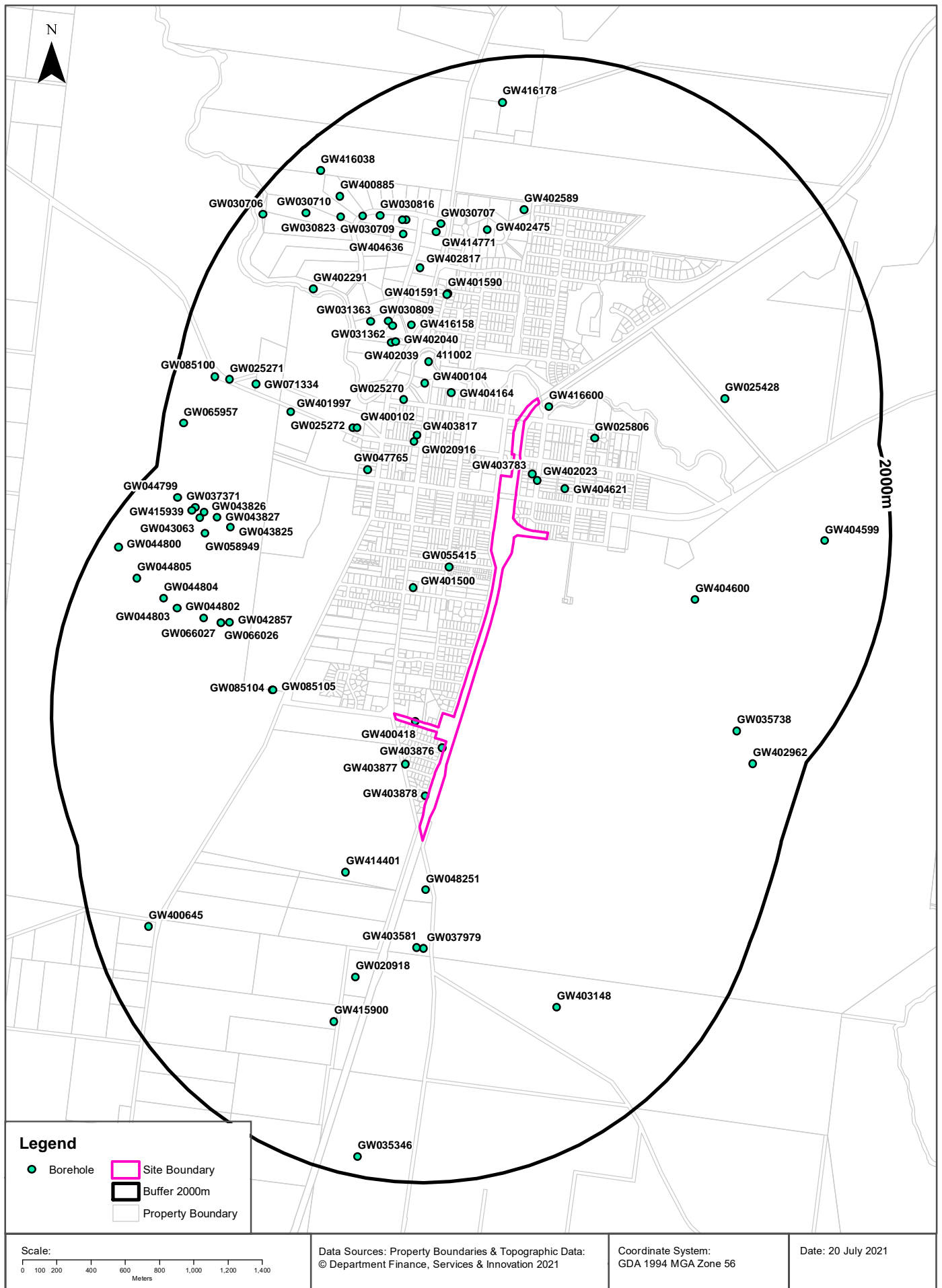
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Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018

Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

Prohibition Area No.	Prohibition	Distance	Direction
N/A	No records in buffer		

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018 Data Source : NSW Department of Primary Industries



Hydrogeology & Groundwater

Rail Corridor - Bungendore, NSW 2621

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW400 418	40BL186 662, 40WA40 9685	Bore		Domestic	Domestic		01/01/1978	45.73			7.00			0m	On-site
GW403 876	40BL188 672	Bore	Private	Domestic	Domestic		06/03/2007	48.00	48.00		20.0 0	0.880		12m	South
GW403 878	40BL188 670	Bore	Private	Domestic	Domestic		07/03/2007	78.00	78.00		48.0 0	0.240		12m	South
GW416 600	40BL192 199	Bore	Private	Monitoring Bore	Monitoring Bore	'The Village Estate'	15/01/2015	5.10	5.10		4.35			63m	North
GW403 783	40BL189 605	Bore	Private	Domestic	Domestic		09/02/2003	50.00	50.00		28.0 0	0.375		79m	North
GW402 023	40BL188 524, 40WA41 0095	Bore		Domestic	Domestic		15/10/2002	22.00	22.00		10.0 0	3.000		114m	North
GW403 877	40BL188 671	Bore	Private	Domestic	Domestic		06/03/2007	54.00	54.00		31.0 0	1.260		178m	South West
GW055 415	40BL120 347	Bore	Private	Test Bore	G/water Xplore		01/09/1981	45.70	45.70					262m	North West
GW404 621	40BL191 391	Bore	Private	Domestic	Domestic		16/07/2008	30.00	30.00	Good	10.0 0	0.260		275m	North East
GW048 251	40BL105 564, 40WA40 8803	Bore open thru rock	Private	Domestic, Stock	Domestic, Stock		01/10/1976	46.60	46.60					292m	South
GW025 806	40BL016 536, 40WA40 8171	Well	Private	Domestic, Stock	Domestic, Stock		01/01/1945	7.90	7.90	0-500 ppm				385m	North East
GW404 164	40BL189 356	Bore	Private	Domestic	Domestic		21/09/2004	42.00	42.00	200	2.00	0.750		410m	North
GW401 500	40BL144 242	Bore		Domestic, Stock	Domestic, Farming		02/10/1991	9.14	9.14	Good	0.91	1.000		450m	West
GW414 401	40BL191 373	Bore	Private	Domestic, Stock	Domestic, Stock		04/08/2009	48.00	48.00		10.0 0	3.750		484m	South West
GW403 817	40BL191 363	Bore	Private	Domestic	Domestic		27/07/2007	39.00	39.00	Fresh	6.00	3.000		542m	North
GW020 916		Bore open thru rock	Private		Domestic		01/06/1952	21.90	22.00					543m	North West
GW400 104	40BL151 830	Bore		Test Bore	Test Bore		24/01/1995	73.00	73.00	Fresh				574m	North
411002					UNK								693.1 2	613m	North
GW403 581	40BL190 647, 40CA41 1638	Bore	Private	Domestic, Irrigation, Stock			01/11/2005	75.00	75.00		5.00			627m	South
GW037 979	40BL030 316, 40CA41 1638	Bore open thru rock	Private	Domestic, Irrigation, Stock	Irrigation		01/02/1973	83.80	83.80					631m	South
GW025 270	40BL024 229	Bore	Local Govt	Town Water Supply	Public/muni cipl		01/07/1969	42.60	42.70	0-500 ppm				665m	North
GW085 105		Bore	NSW Office of Water		Monitoring Bore		24/07/1999	5.00	5.00		1.30	0.500		717m	West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW085104		Bore	NSW Office of Water				23/07/1999	67.00	67.00		2.00	0.800		722m	West
GW047765	40BL106091, 40BL139683	Bore	Private	Domestic, Irrigation, Stock	Irrigation		01/04/1978	15.20	15.20	Fair				777m	North West
GW401591	40BL188226	Bore		Domestic, Stock	Town Water Supply		01/10/2000	72.00	72.00		7.00	7.900		801m	North
GW401590	40BL188227	Bore		Domestic, Stock	Town Water Supply		26/03/2001	115.00	115.00			5.100		802m	North
GW416158	40WA405768	Bore	Private	Domestic, Stock	Domestic, Stock		07/12/2012	31.00	31.00		9.00	1.263		823m	North
GW402040	40BL188634	Bore		Test Bore	Test Bore		15/03/2002	84.00	100.00	0.71	8.00	19.000		839m	North
GW402039	40BL188635	Bore		Test Bore	Test Bore		15/03/2002	84.00	84.00	0.34	6.00	0.800		857m	North
GW400102	40BL151830	Bore		Test Bore			14/04/1993	60.00	60.00	325		3.750		883m	North West
GW020918		Bore	Private		Not Known			47.90	47.90					890m	South
GW031362	40BL024232	Bore	Local Govt	Monitoring Bore	Not Known		01/01/1965	45.70	52.40					905m	North
GW025272	40BL024231	Bore	Local Govt	Town Water Supply	Public/municipal		01/02/1969	47.80	51.80	0-500 ppm				907m	North West
GW404600	40BL190475	Bore	Private	Test Bore	Test Bore		07/11/2005	79.00	79.00		3.00	0.900		937m	East
GW030809		Bore	Local Govt		G/water Xplore		01/08/1980	0.00	55.50					945m	North
GW402817	40BL188341	Bore		Domestic			20/07/2004	90.00	90.00	Fresh	15.00	1.000		1020m	North
GW031363	40BL024233	Bore	Local Govt	Town Water Supply	Public/municipal		01/01/1965	111.90	111.90					1024m	North
GW402475	40BL188504	Bore		Domestic	Domestic		18/07/2003	18.00	18.00		9.10	1.500		1027m	North
GW025428	40BL023591, 40WA408450	Bore	Private	Domestic, Stock	Domestic, Stock		01/08/1969	10.10	10.10					1087m	North East
GW042857	40BL104713	Bore	Private	Domestic, Irrigation, Stock	Irrigation		01/03/1976	34.70	34.80					1094m	West
GW402589	40BL189056, 40WA410259	Bore		Domestic	Domestic		14/10/2003	54.00	54.00		11.00	1.188		1105m	North
GW414771	40BL189099	Bore	Private	Domestic	Domestic		01/01/2002	8.00						1137m	North
GW066027	40BL145601	Bore	Private	Test Bore	Monitoring Bore		01/03/1992	64.00		0-500 ppm				1138m	West
GW066026	40BL153681	Bore	Private	Irrigation	Irrigation		12/10/1992	61.50						1138m	West
GW030707		Bore	Local Govt		Stock		01/01/1976	22.00	22.00	0-500 ppm	3.30	0.760		1163m	North
GW415900	40BL189686	Bore	Private	Domestic, Stock	Domestic, Stock		01/01/2004	100.00	100.00					1179m	South
GW404636	40BL187383	Bore	Private	Domestic	Domestic		01/12/1998	26.00	26.00		3.00	15.000		1234m	North
GW044802	40BL100758	Bore	Private	Test Bore	G/water Xplore		01/03/1976	29.00	29.00					1241m	West
GW403148	40BL190553, 40BL190662, 40WA410806	Bore		Domestic, Stock, Test Bore	Domestic, Stock		20/06/2005	84.00	84.00		18.00	3.180		1251m	South
GW401997	40BL188636	Bore		Test Bore	Test Bore, Town Water Supply		15/03/2002	43.00	43.00		3.70	1.500		1281m	North West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW030 708		Bore	Local Govt		Stock		01/02/1976	24.50	24.50	0-500 ppm	7.40			1292m	North
GW416 189	40WA41 2232	Bore	Private	Domestic	Domestic, Irrigation, Stock		18/12/2012	36.00	36.00		10.0 0	4.000		1305m	North
GW044 803	40BL100 759	Bore	Private	Test Bore	G/water Xplore		01/03/1976	32.20	32.20					1404m	West
GW030 816		Bore	Local Govt		G/water Xplore		01/07/1980	0.00	55.00					1405m	North
GW402 291	40BL188 771	Bore		Town Water Supply	Town Water Supply		15/01/2003	49.00	50.00		9.70	12.00 0		1409m	North West
GW043 825	40BL101 570	Bore	Private	Test Bore	G/water Xplore			30.50						1444m	West
GW030 709		Bore	Local Govt		Stock		01/02/1976	42.00	42.00	0-500 ppm	5.00	0.320		1468m	North
GW044 804	40BL100 760	Bore	Private	Test Bore	G/water Xplore		01/03/1976	33.50	33.50					1500m	West
GW058 949	40BL128 265	Bore	Private	Test Bore	G/water Xplore		01/01/1984	57.00	57.00					1522m	West
GW071 334	40BL151 830	Bore		Test Bore			06/04/1993	69.20	69.20	450	2.00			1526m	North West
GW043 827	40BL101 572	Bore	Private	Test Bore	G/water Xplore			22.20						1540m	West
GW030 823		Bore	Local Govt		G/water Xplore		01/08/1980	0.00	35.20					1552m	North
GW035 738	40BL028 444, 40WA40 8609	Bore open thru rock	Private	Domestic, Stock	Domestic, Stock		01/02/1973	82.20	82.30	Fresh				1560m	South East
GW043 063	40BL040 129	Bore	Private	Domestic, Stock	Domestic, Stock		01/04/1974	60.90	61.00	Good				1607m	West
GW043 826	40BL101 571	Bore	Private	Test Bore	G/water Xplore			60.90	61.00	Good				1613m	West
GW404 599	40BL190 475, 40BL191 912	Bore	Private	Irrigation, Test Bore	Irrigation		04/11/2005	100.00	100.00		10.0 0	4.700		1618m	East
GW400 885	40BL187 012	Bore		Domestic, Stock	Domestic, Stock		28/05/1998	26.00	26.00	Brackish	8.20			1643m	North
GW037 371	40BL031 474	Bore	Private	Irrigation, Stock	Irrigation		01/10/1973	32.90	32.90					1670m	West
GW415 939	40BL191 475	Bore	Private	Irrigation	Irrigation		26/07/2008	49.50	49.50		4.50	10.00 0		1671m	West
GW400 645	40BL187 475	Bore		Irrigation, Stock	Irrigation, Stock		10/02/1998	96.00	96.00	Fresh				1677m	South West
GW025 271	40BL024 230	Bore	Local Govt	Town Water Supply	Public/municipal		01/07/1969	38.10	38.10	0-500 ppm				1679m	North West
GW044 805	40BL100 761	Bore	Private	Test Bore	G/water Xplore		01/03/1976	21.00	21.00					1693m	West
GW402 962	40BL190 435, 40WA41 0732	Bore		Domestic, Stock	Domestic, Stock		01/01/1945	20.00			5.00			1708m	South East
GW030 710		Bore	Local Govt		Stock		01/03/1976	40.00	40.00	0-500 ppm	3.10	0.630		1716m	North West
GW416 178	40BL187 413	Bore	Private	Monitoring Bore	Monitoring Bore		29/05/2013	16.50			10.3 0			1741m	North
GW085 100		Bore	NSW Office of Water		Monitoring Bore		27/06/1999	66.00	66.00		9.00	1.000	691.0 0	1765m	North West
GW044 799	40BL100 754	Bore	Private	Test Bore	G/water Xplore		01/10/1975	33.50	33.50					1783m	West
GW416 038	40BL190 293, 40WA41 2625	Bore	Private	Domestic, Stock	Domestic, Stock		31/05/2005	42.00	42.00	good	16.0 0	4.000		1832m	North
GW044 800	40BL100 755	Bore	Private	Test Bore	G/water Xplore		01/03/1976	33.50	33.50					1876m	West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW065 957	40BL131 956	Bore	Private	Irrigation, Stock	Irrigation		03/06/1985	62.00						1876m	North West
GW035 346	40BL028 374, 40WA40 8604	Bore open thru rock	Private	Stock	Stock		01/06/1973	36.50	36.60	Fresh				1887m	South
GW030 706		Bore	Local Govt		Stock		01/12/1975	30.00	30.00	0-500 ppm				1904m	North West

Borehole Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation for all bores prefixed with GW. All other bores © Commonwealth of Australia (Bureau of Meteorology) 2015. Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Hydrogeology & Groundwater

Rail Corridor - Bungendore, NSW 2621

Driller's Logs

Drill log data relevant to the boreholes within the dataset buffer:

Groundwater No	Drillers Log	Distance	Direction
GW403876	0.00m-18.00m CLAY - YELLOW 18.00m-48.00m SHALE - BROWN	12m	South
GW403878	0.00m-6.00m CLAY - RED 6.00m-24.00m SHALE - WHITE 24.00m-78.00m SHALE - BROWN	12m	South
GW416600	0.00m-1.00m sandy clay 1.00m-2.20m fine sand 2.20m-5.10m gravel, medium	63m	North
GW403783	0.00m-1.00m TOPSOIL 1.00m-50.00m YELLOW SHALE	79m	North
GW402023	0.00m-9.00m Clay, soil 9.00m-15.00m Silt, gravel 15.00m-22.00m Gravel, sand clay	114m	North
GW403877	0.00m-21.00m SHALE - WHITE 21.00m-54.00m SHALE - BROWN	178m	South West
GW055415	0.00m-0.30m Topsoil 0.30m-25.90m Clay 25.90m-45.70m Shale Soft	262m	North West
GW404621	0.00m-0.10m TOPSOIL 0.10m-6.00m SANDY CLAYS 6.00m-30.00m SAND - FINE - COARSE	275m	North East
GW048251	0.00m-0.30m Topsoil 0.30m-9.10m Clay Gravel 9.10m-36.60m Clay White 36.60m-39.30m Clay Yellow 39.30m-46.60m Rock Water Supply	292m	South
GW025806	0.00m-5.49m Loam Sandy 5.49m-7.92m Sand Wet Water Supply	385m	North East
GW404164	0.00m-1.00m SOIL 1.00m-9.00m CLAYS - SOFT AND LARGE GRAVELLY SAND 9.00m-42.00m SHALES/QUARTZ/SILTSTONE - WEATHERED	410m	North
GW401500	0.00m-1.52m CLAY, BROWN 1.52m-3.66m GRAVEL 3.66m-5.18m CLAY 5.18m-6.70m DECOMPOSED SHALE 6.70m-7.62m CLAY, BROWN 7.62m-9.14m SHALE, BROKEN	450m	West
GW414401	0.00m-1.00m SOIL - CLAY - YELLOW 1.00m-18.00m SEDIMENT - SOFT - LIGHT BROWN 18.00m-30.00m SHALES/CLAYS - BROWN 30.00m-48.00m QUARTZ - WHITE	484m	South West
GW403817	0.00m-1.00m BLACK SOIL 1.00m-26.00m FINE SAND LOAMY CLAYS 26.00m-34.00m YELLOW WHITE GRAVELLY SANDS 34.00m-39.00m BLACK SHALE	542m	North
GW020916	0.00m-1.83m Clay Sandy 1.83m-11.58m Quartz Decomposed Clay 11.58m-14.33m Quartz 14.33m-17.68m Quartz Decomposed Clay 17.68m-21.95m Quartz Decomposed Water Supply	543m	North West
GW400104	0.00m-2.50m RED/BR CLAY; BLACK AT TOP 2.50m-4.00m GRAVEL, 2-10 MM AV 5MM 4.00m-15.50m SANDSTONE, WH. KAOLINITIC, VERY FRACTURED, F.G-MG 15.50m-21.00m CLAYSTONE, WH-LT GREY 21.00m-33.00m SHALE, SOFT WH-LT GREY 33.00m-65.50m SANDSTONE, WH. KAOLINITIC TENDING SILTY; RED/BR AT TOP; F.G. M.G. 65.50m-73.00m SANDSTONE, OR/BR - PINK QTZ M-C.G	574m	North
GW403581	0.00m-2.00m Topsoil 2.00m-15.00m Clay Orange 15.00m-35.00m Grey Shale 35.00m-75.00m Black Shale	627m	South

Groundwater No	Drillers Log	Distance	Direction
GW037979	0.00m-0.91m Topsoil 0.91m-3.04m Topsoil Clayey 3.04m-3.96m Quartz Bands 3.96m-40.53m Pipe Clay Clay Bands 40.53m-41.45m Slate Grey Decomposed 41.45m-83.82m Slate Grey Hard Water Supply Quartz Bands	631m	South
GW025270	0.00m-1.52m Soil 1.52m-2.13m Clay Dark Khaki Gravel 2.13m-2.44m Gravel Dry Medium 2.44m-4.27m Clay Gravel 4.27m-4.88m Sand Gravel Fine 4.27m-4.88m Very Clayey 4.88m-6.40m Clay Light Grey Sticky Sandy 6.40m-7.62m Clay Light Yellow Sticky Sandy 7.62m-14.02m Clay Dark Yellow Gravel 14.02m-14.63m Clay Light Grey Gravel 14.63m-17.37m Clay White Sticky 17.37m-19.51m Clay Light Grey Light Brown Sandy 19.51m-20.42m Clay Reddish Light Grey Light Brown Sandy 20.42m-23.47m Clay Variegated 23.47m-23.77m Clay Grey Gravel 23.77m-25.30m Gravel Cemented 23.77m-25.30m Silt Sandy Fine 25.30m-25.60m Silt Sandy Fine 25.30m-25.60m Gravel Cemented 25.30m-25.60m Sand Dark Yellow Clay 25.60m-26.82m Gravel Cemented Clay 25.60m-26.82m Sand Dark Yellow 26.82m-28.65m Clay Yellow Gravel 28.65m-31.09m Clay Light Yellow Gravel 31.09m-31.70m Gravel Silty Medium Water Supply 31.70m-32.00m Sand Yellow Cemented Gravel 32.00m-32.31m Sand Yellow Gravel Fine 32.31m-32.61m Sand Yellow Large Gravel 32.61m-33.22m Sand Yellow Small Gravel 33.22m-35.05m Clay Sandy 35.05m-36.58m Sand Rock Light Yellow 36.58m-36.88m Clay Grey Sticky 36.88m-39.01m Clay Sticky 36.88m-39.01m Conglomerate Very Hard Cemented Seams 39.01m-42.67m Conglomerate Very Hard Cemented Seams 39.01m-42.67m Clay Grey Sticky	665m	North
GW085105	0.00m-2.00m Topsoil 2.00m-5.00m Brown clay and gravel	717m	West
GW085104	0.00m-2.00m Topsoil 2.00m-11.00m Brown clay and gravel 11.00m-16.00m Sand and gravel 16.00m-30.00m Brown clay and gravel 30.00m-37.00m Yellow clay and gravel 37.00m-41.00m Brown clay 41.00m-48.00m Yellow clay and gravel 48.00m-67.00m Black rock	722m	West
GW047765	0.00m-0.30m Topsoil 0.30m-7.60m Clay 7.60m-13.70m Gravel River Water Supply 13.70m-15.20m Clay	777m	North West
GW401591	0.00m-5.00m Clay 5.00m-8.00m Gravel 8.00m-14.00m Ckat 14.00m-31.00m Siliceous phyllite with quartz veins 31.00m-41.00m Siliceous phyllite 41.00m-47.00m Grantie dyke 47.00m-68.00m Siliceous phyllite 68.00m-72.00m Medium grained sandstone	801m	North
GW401590	0.00m-7.00m Clay 7.00m-8.00m Coarse sand 8.00m-8.90m Gravel 8.90m-46.00m Siliceous phyllite with quartz veins 46.00m-50.00m Siliceous phyllite 50.00m-56.00m Granite dyke 56.00m-115.00m Siliceous phyllite with minor quartz veins	802m	North
GW416158	0.00m-1.00m topsoil 1.00m-28.00m clay 28.00m-31.00m sand, and clay - water supply	823m	North
GW402040	0.00m-7.00m Clay, yellow brown 7.00m-22.50m Gravel, very coarse, quartzose, angular 22.50m-45.00m Siltstone, weathered with abundant quartz veins 45.00m-60.00m Siltstone, less weathered, fractured, light brown 60.00m-100.00m Siltstone, light grey, quartz veins	839m	North

Groundwater No	Drillers Log	Distance	Direction
GW402039	0.00m-7.50m Clay, and silt, interbedded (buff-it orange) 7.50m-15.00m Sand, coarse interbedded with gravel fine to coarse and clay, thin 15.00m-27.00m Clay, sand thin, gravel minor 27.00m-37.00m Sand, coarse interbedded, gravel fine, clay 37.00m-46.50m Gravel, coarse, quartz and red siltstone pebbles 46.50m-48.50m Clay 48.50m-49.50m Gravel, medium to coarse, white quartz 49.50m-84.00m Bedrock, deeply weathered with claystones	857m	North
GW400102	0.00m-1.00m TOPSOIL 1.00m-2.50m YELLOW & BROWN CLAY 2.50m-9.00m GRAVEL TO 25MM YELLOW GREY 9.00m-12.00m YELLOW, SILTY CLAY SANDSTONE TOP OF CARWOOLA BED 12.00m-21.00m GREY - PINK & YELLOW SILTY CLAY SANDSTONE - GRAVEL 21.00m-35.40m GREY SILTY CLAY 35.40m-38.40m DARK GREY SILTY CLAY 38.40m-45.70m YELLOW SILTY CLAY - SANDSTONE 45.70m-45.73m BASE OF CARWOOLA BEDS 45.73m-60.00m EXTREMELY WEATHERED TO SLIGHTLY WEATHERED DARK GREY TUFFACEOUS SILTSTONE OF CAPTAINS FLAT FORMATION	883m	North West
GW020918	0.00m-37.95m Driller 37.95m-40.54m Shale Yellow 37.95m-40.54m Granite Decomposed Water Supply 40.54m-47.85m Water Supply	890m	South
GW031362	0.00m-2.44m Sand 2.44m-4.57m Clay Sandy 4.57m-6.10m Gravel 6.10m-7.62m Clay Sandy 7.62m-10.67m Clay 10.67m-16.76m Gravel 16.76m-19.81m Sand Water Bearing 19.81m-21.34m Clay 21.34m-22.86m Sand Water Bearing 22.86m-25.91m Clay 25.91m-47.24m Sand Coarse Water Bearing 47.24m-50.60m Clay 50.60m-52.43m Sand Coarse Siltstone	905m	North
GW025272	0.00m-1.22m Topsoil 1.22m-1.83m Clay Gravel 1.83m-5.18m Clay Yellow Grey 5.18m-10.36m Clay Gravel 10.36m-10.97m Sand Gravel Water Supply 10.97m-12.50m Clay Grey Yellow Gravel 12.50m-13.11m Gravel Very Clayey Fine-coarse 13.11m-14.63m Gravel Sandy Clay Fine-coarse 14.63m-15.85m Clay Yellow Sandy 15.85m-16.15m Clay Gravel 16.15m-16.76m Sand Gravel 16.76m-19.81m Gravel Fine-coarse Water Supply 16.76m-19.81m Clay 19.81m-20.12m Clay Grey Sandy 20.12m-20.73m Sand Yellow Water Supply 20.73m-21.64m Clay Yellow Grey Sandy 21.64m-22.56m Sand Gravel 21.64m-22.56m Clay Yellow 22.56m-23.47m Clay Yellow Sandy 23.47m-26.52m Sand Water Supply 23.47m-26.52m Clay Yellow 26.52m-27.74m Clay Yellow Grey 27.74m-28.96m Clay Yellow Grey Sandy 28.96m-29.57m Sand Fine-coarse 29.57m-31.39m Clay Grey Yellow Sandy 31.39m-35.66m Sand 31.39m-35.66m Silt 31.39m-35.66m Clay Heavy 35.66m-36.58m Clay Grey Yellow 36.58m-37.19m Clay Yellow Sandy 37.19m-38.40m Sand Small Gravel Water Supply 38.40m-39.01m Clay Yellow Sandy 39.01m-39.93m Clay Yellow Gravel 39.93m-45.42m Sand Gravel Water Supply 39.93m-45.42m Clay Sandy Bands 45.42m-46.63m Clay Yellow Sandy Gravel 46.63m-47.85m Gravel Sand Fine-coarse Water Supply 47.85m-50.90m Shale Yellow Grey 50.90m-51.82m Phyllite Decomposed	907m	North West
GW404600	0.00m-1.00m SOIL - BLACK 1.00m-3.00m LOAM SOIL - BROWN 3.00m-5.00m GRAVEL AND SAND 5.00m-42.00m SILTSTONE - YELLOW/WHITE, WEATHERED 42.00m-79.00m SILTSTONE - LIGHT GREY, DARK QUARTZ BANDS	937m	East

Groundwater No	Drillers Log	Distance	Direction
GW030809	0.00m-0.80m Topsoil 0.80m-2.50m Clay White Gravel 2.50m-4.50m Clay Yellow White 4.50m-6.00m Clay Yellow Gravel 6.00m-7.00m Clay Gravel 7.00m-8.00m Clay White 8.00m-10.00m Clay Yellow Gravel 10.00m-18.00m Clay Reddish Gravel 18.00m-19.00m Clay White Sticky 19.00m-21.00m Clay Red White Sticky 21.00m-22.00m Clay Grey Yellow Sticky 22.00m-22.50m Sand Gravel Water Bearing Bands 22.50m-24.50m Clay Grey Yellow Sandy 24.50m-25.00m Sand Water Bearing Clay 25.00m-28.00m Clay White Sandy 28.00m-30.00m Clay White Sticky 30.00m-39.00m Sand Coarse 30.00m-39.00m Clay Yellow Water Bearing Bands 39.00m-41.00m Gravel Yellow Water Bearing Clay Bands 41.00m-42.00m Clay Grey 42.00m-47.00m Gravel Water Bearing Large Clay Bands 47.00m-49.50m Clay Yellow Grey 49.50m-50.50m Gravel Water Bearing Large 50.50m-51.00m Gravel Water Bearing Cemented Large 51.00m-52.00m Gravel Cemented Large 52.00m-55.50m Slate Black Hard 55.50m-55.51m Bedrock	945m	North
GW402817	0.00m-5.00m brown sticky clay 5.00m-15.00m Gravels sand 15.00m-60.00m weathered grey/black shale 60.00m-90.00m hard blackshale/siltstone	1020m	North
GW031363	0.00m-3.05m Clay Sandy 3.05m-6.10m Gravel Sandy 6.10m-10.97m Clay 10.97m-11.58m Gravel Water Bearing 11.58m-16.76m Clay Large Gravel Seams 16.76m-18.29m Sand Coarse 18.29m-24.38m Clay Sandy 24.38m-32.00m Sand Firm 32.00m-33.53m Clay Sandy 33.53m-35.05m Clay 35.05m-38.10m Sand 38.10m-39.62m Sand Clay 39.62m-44.20m Sand Coarse 44.20m-64.01m Clay 44.20m-64.01m Or Weathered Rock 64.01m-74.98m Or Weathered Rock 64.01m-74.98m Clay Some Sand 74.98m-86.87m Clay 74.98m-86.87m Or Weathered Rock 86.87m-111.86m Or Weathered Rock 86.87m-111.86m Silt Sandy	1024m	North
GW402475	0.00m-5.00m Soil, loamy clays 5.00m-12.00m Sand, weathered and loamy 12.00m-18.00m Sand, large gravel	1027m	North
GW025428	0.00m-0.30m Loam Sandy 0.30m-0.91m Clay Dark Grey 0.91m-1.22m Clay Yellow Sandy 1.22m-3.05m Sand Yellow Gravel 3.05m-3.66m Sand Medium Gravel 3.66m-5.18m Gravel Grey Clay 5.18m-5.49m Gravel Fine Medium 5.49m-7.01m Gravel Clay 7.01m-7.16m Sand Fine Gravel 7.16m-7.92m Clay Grey Gravel 7.92m-8.23m Sand Fine Medium 7.92m-8.23m Sandstone Gravel 8.23m-10.06m Sand Rock Green Dark Blue	1087m	North East

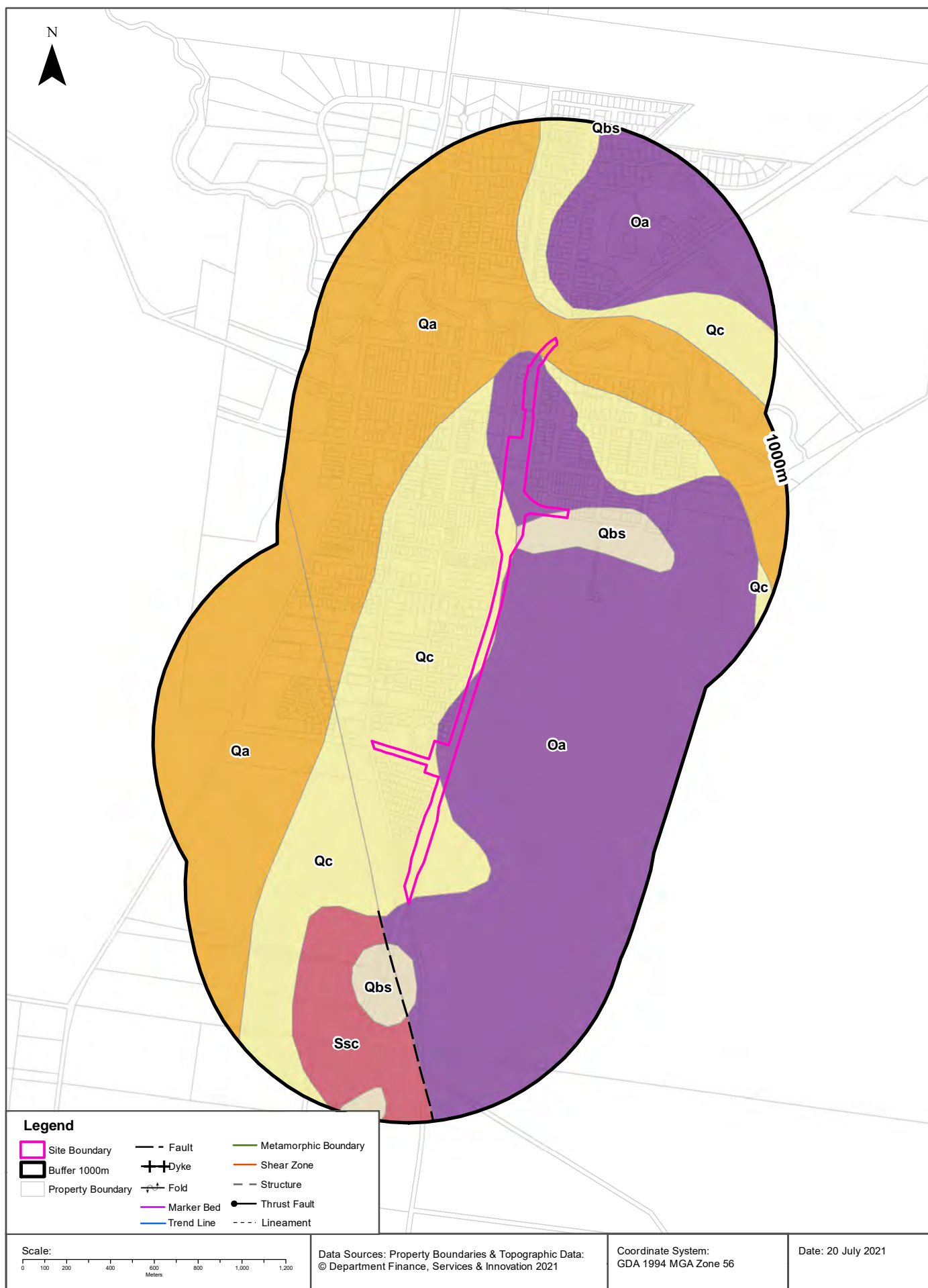
Groundwater No	Drillers Log	Distance	Direction
GW042857	0.00m-0.01m Soil 0.01m-1.52m Clay Plastic 1.52m-2.44m Gravel Dry 2.44m-5.18m Clay Gravel 5.18m-6.71m Gravel 6.71m-8.53m Clay Light Brown 8.53m-9.75m Clay Gravel 9.75m-10.67m Clay 10.67m-13.72m Gravel Coarse 13.72m-14.33m Clay 14.33m-20.73m Gravel Some Clayey Seam Water Supply 20.73m-26.35m Clay 26.35m-26.52m Clay White 26.52m-26.82m Gravel Water Supply 26.52m-26.82m Sand 26.82m-31.39m Sand Coarse 26.82m-31.39m Gravel Water Supply 31.39m-34.75m Clay Hard	1094m	West
GW402589	0.00m-9.00m Soil, loamy clay 9.00m-28.00m Shale, yellow brown, weathered 28.00m-54.00m Shale, grey blue, quartz bands	1105m	North
GW415900	0.00m-1.00m Clay, black 1.00m-47.00m Clay, red brown 47.00m-100.00m Shales, brown	1179m	South
GW044802	0.00m-0.30m Soil 0.30m-2.44m Clay Plastic 2.44m-2.74m Gravel Dry Clay 2.74m-5.49m Clay Grey Plastic 5.49m-6.40m Gravel Water Supply 6.40m-7.32m Clay 7.32m-9.14m Gravel Water Supply 9.14m-10.67m Clay Light Brown 10.67m-10.97m Gravel 10.97m-11.58m Clay Plastic 11.58m-11.89m Gravel 11.89m-15.85m Clay Plastic 15.85m-17.37m Gravel Water Supply 17.37m-18.59m Clay Gravel 18.59m-20.42m Gravel Water Supply 20.42m-21.34m Clay White 21.34m-24.38m Clay Pink 24.38m-25.91m Clay Plastic 25.91m-28.96m Clay Pink Plastic	1241m	West
GW403148	0.00m-4.00m Shale, soft yellow 4.00m-28.00m Shales, red brown yellow 28.00m-38.00m Shale, soft grey 38.00m-84.00m Quartz, grey blue	1251m	South
GW401997	0.00m-2.50m Clay, soil 2.50m-8.00m Clay, and silt 8.00m-17.00m Gravel, silt, clays, gravels dominated by red siltstone, quartz and slatey pebbles to 3 cm 17.00m-43.00m Siltstone, reddish brown, pink, very clayey	1281m	North West
GW416189	0.00m-1.00m soil with sand and clay 1.00m-6.00m clay, grey 6.00m-36.00m clay, with sand and gravel	1305m	North

Groundwater No	Drillers Log	Distance	Direction
GW044803	0.00m-0.30m Soil 0.30m-3.05m Clay Plastic 3.05m-3.66m Gravel Dirty 3.66m-5.49m Clay Gravel 5.49m-8.23m Gravel Coarse 8.23m-9.14m Clay Gravel Plastic 9.14m-9.75m Gravel Water Supply 9.75m-10.36m Gravel Clay 10.36m-12.50m Clay Soft 12.50m-13.11m Gravel Water Supply 13.11m-14.33m Clay Plastic 14.33m-14.48m Gravel 14.48m-15.54m Clay Plastic 15.54m-16.15m Gravel 16.15m-18.90m Clay White 18.90m-19.20m Gravel Water Supply 19.20m-19.81m Clay Pink 19.81m-20.42m Gravel Large Water Supply 20.42m-22.86m Clay Pink 22.86m-23.47m Clay Yellow 23.47m-24.08m Gravel Water Supply 24.08m-24.54m Clay White 24.54m-24.84m Gravel 24.84m-24.99m Clay Light Brown 24.99m-27.74m Clay White 27.74m-28.35m Gravel 28.35m-28.65m Clay White 28.65m-29.87m Gravel Water Supply 29.87m-30.02m Clay 30.02m-31.85m Gravel Water Supply 31.85m-32.16m Clay	1404m	West
GW030816	0.00m-0.50m Topsoil 0.50m-3.00m Sand Dry 3.00m-5.00m Clay Grey Sandy 5.00m-14.00m Clay Large Gravel 14.00m-17.50m Gravel Sand 17.50m-21.00m Clay Reddish Stones Large Bands 21.00m-24.00m Sand Dry Medium Clay Bands 24.00m-33.00m Clay Grey Yellow Sand Small Bands 33.00m-39.00m Clay White 39.00m-55.00m Clay White Yellow	1405m	North
GW402291	0.00m-7.50m Clay, and silts, interbedded 7.70m-15.00m Sand, coarse interbedded, with fine to coarse gravel and clay 15.00m-27.00m Clay, with thin sand and minor gravel 27.00m-33.00m Sand, coarse and fine gravel 33.00m-37.00m Clay, with coarse sand interbed 37.00m-47.00m Gravel, fine to medium, white 47.00m-50.00m Claystones, silty sandy, light grey	1409m	North West
GW044804	0.00m-0.30m Soil 0.30m-0.91m Clay 0.91m-1.52m Gravel Coarse 1.52m-5.79m Clay Gravel Plastic 5.79m-7.01m Gravel 7.01m-9.14m Clay Gravel 9.14m-11.58m Gravel Water Supply 11.58m-15.85m Clay Gravel Plastic 15.85m-17.68m Gravel Water Supply 17.68m-18.90m Clay Gravel 18.90m-20.12m Gravel 20.12m-21.18m Clay White 21.18m-21.49m Gravel Water Supply 21.49m-23.16m Clay Pink White 23.16m-23.47m Gravel Water Supply 23.47m-24.69m Clay White 24.69m-25.91m Gravel 25.91m-26.52m Clay White 26.52m-26.82m Clay Pink 26.82m-27.43m Clay Yellow 27.43m-27.74m Gravel 27.74m-28.04m Clay Yellow 28.04m-28.65m Gravel 28.65m-29.87m Clay White 29.87m-30.18m Gravel 30.18m-31.09m Clay Pink 31.09m-33.53m Clay Light Grey Hard	1500m	West
GW058949	0.00m-0.90m Topsoil 0.90m-3.30m Clay 3.30m-5.20m Shale 5.20m-7.30m Sand Clay 7.30m-8.80m Clay 8.80m-11.00m Shale Broken 11.00m-38.70m Clay Bands Shale 38.70m-56.00m Sand White Coarse Water Supply 56.00m-57.00m Clay Or Shale	1522m	West

Groundwater No	Drillers Log	Distance	Direction
GW071334	0.00m-11.00m BRWON CLAY & SUB ROUNDED GRAVEL IE LAKE GEORGE SEDIMENTS 11.00m-12.00m GRAVEL UP TO 12MM ANGULAR IE TOP OF CARWOOLA BEDS 12.00m-55.50m CARWOOLA BEDS YELLOW MINOR PINK SANDSTONE FARCTURED WITH GRAVEL MINOR THROUGHOUT 55.50m-69.20m CLAY COMPTELY WEATHERED PHYLLI BIRKENBURN BEDS	1526m	North West
GW030823	0.00m-0.30m Topsoil 0.30m-1.00m Clay White Sandy 1.00m-3.00m Clay Grey White 3.00m-4.00m Clay Grey 4.00m-7.00m Clay Gravel 7.00m-8.50m Clay Gravel Stones Large 8.50m-10.00m Gravel Medium Water Bearing Clay Bands 10.00m-12.00m Clay Grey 12.00m-13.00m Clay Grey Sandy 13.00m-14.00m Clay Grey Stones 14.00m-15.00m Clay Yellow Grey 15.00m-16.00m Gravel Water Bearing Medium Clay Bands 16.00m-18.50m Gravel Water Bearing Large Clay Bands 18.50m-20.00m Clay Large Gravel 20.00m-27.00m Sand Water Bearing Dirty Clay Bands 27.00m-30.50m Clay White Sand Small Bands 30.50m-35.20m Clay White Shaley 35.20m-35.21m Bedrock	1552m	North
GW035738	0.00m-0.91m Topsoil 0.91m-7.92m Topsoil Clay 7.92m-20.11m Shale Grey Decomposed 20.11m-24.38m Quartz Gravel Water Supply 24.38m-38.10m Shale Grey Decomposed 38.10m-71.62m Basalt 71.62m-76.20m Basalt Fractured Seams Water Supply 76.20m-82.29m Basalt Black Hard	1560m	South East
GW043063	0.00m-1.52m Clay Black 1.52m-3.35m Gravel 3.35m-3.65m Pipe Clay 3.65m-6.09m Clay Gravel 6.09m-8.53m Clay Grey 8.53m-8.83m Clay 8.83m-13.10m Gravel Water Supply 13.10m-15.54m Clay 15.54m-16.76m Clay Gravel 16.76m-21.33m Gravel Water Supply 21.33m-21.94m Sand 21.94m-25.60m Gravel 25.60m-32.00m Clay 32.00m-32.91m Slate 32.91m-33.83m Clay 33.83m-42.06m Slate Grey 42.06m-45.41m Clay Grey 45.41m-51.20m Shale Grey 51.20m-53.34m Quartz 53.34m-60.96m Shale Grey	1607m	West
GW043826	0.00m-0.61m Clay Black 0.61m-1.52m Clay 1.52m-3.66m Gravel Nominal Pipe Clay 3.66m-6.10m Clay Gravel 6.10m-8.53m Clay Grey 8.53m-8.84m Clay 8.84m-13.11m Gravel 13.11m-15.54m Clay 15.54m-16.76m Clay Gravel 16.76m-21.34m Gravel 21.34m-21.95m Sand 21.95m-25.60m Gravel 25.60m-32.00m Clay 32.00m-32.92m Shale 32.92m-35.66m Clay 35.66m-42.06m Shale Grey 42.06m-45.42m Clay Grey 45.42m-51.21m Shale Grey 51.21m-53.34m Quartz 53.34m-60.96m Shale Grey	1613m	West
GW404599	0.00m-2.00m CLAY - ORANGE/BROWN 2.00m-14.00m SILTSTONE - LIGHT BROWN, WEATHERED 14.00m-100.00m SILTSTONE - MEDIUM GREY - THIN FINE GRAINED SANDSTONES	1618m	East
GW400885	0.00m-2.00m Sand 2.00m-4.00m Clay 4.00m-9.00m Large gravel & sand 9.00m-20.00m Washed river gravel 20.00m-24.00m Sand 24.00m-26.00m Clay	1643m	North

Groundwater No	Drillers Log	Distance	Direction
GW037371	0.00m-0.61m Clay Black 0.61m-9.45m Clay Sand Fine Bands 9.45m-14.33m Clay Gravel Bands 14.33m-23.77m Sand Coarse Water Supply 23.77m-24.69m Clay White Hard 24.69m-31.09m Gravel White Water Supply 31.09m-32.92m Clay Red White	1670m	West
GW415939	0.00m-1.00m Soil, brown loam 1.00m-28.00m Clay, orange brown, yellow red 28.00m-42.00m Sands, with sandy clay 42.00m-49.50m Gravel with quartz	1671m	West
GW400645	0.00m-0.40m Topsoil 0.40m-5.00m Yellow Brown Clay 5.00m-44.00m Yellow Brown Soft Shale 44.00m-50.00m Black Fractured Shale 50.00m-60.00m Grey White Sandstone Quartz Bands 60.00m-96.00m Grey White Inbedded Sandstone	1677m	South West
GW025271	0.00m-1.22m Driller 1.22m-6.40m Clay Dark Brown Waddy 6.40m-7.01m Clay Yellow Gravel Sandy 7.01m-7.62m Sand Gravel Water Supply 7.62m-9.75m Clay Grey Gravel 9.75m-11.89m Clay Grey 11.89m-12.19m Sand Gravel Water Supply 12.19m-13.11m Sand Gravel Water Supply 12.19m-13.11m Silt Heavy 13.11m-13.72m Gravel Silt Water Supply 13.72m-15.24m Clay Yellow Grey Gravel 15.24m-21.34m Clay Light Grey Slightly Gravel 21.34m-24.69m Clay Yellow Grey Red Swelling 24.69m-25.91m Clay Red Yellow 25.91m-28.96m Clay Yellow Sandy Fine 28.96m-33.53m Clay Red Yellow 33.53m-35.36m Clay Yellow Purple Grey Slightly Gravel 35.36m-38.10m Conglomerate Cemented	1679m	North West
GW044805	0.00m-0.30m Soil 0.30m-0.91m Clay Black Plastic 0.91m-1.52m Clay Plastic 1.52m-3.96m Clay Gravel 3.96m-5.79m Clay Firm 5.79m-10.67m Clay Gravel 10.67m-12.19m Gravel Water Supply 12.19m-12.80m Clay 12.80m-14.33m Clay Interlayere 12.80m-14.33m Gravel Small Seam Water Supply 14.33m-17.07m Clay Plastic 17.07m-18.59m Gravel Dirty 18.59m-18.90m Clay Gravel 18.90m-19.81m Gravel Dirty 19.81m-20.42m Clay Gravel 20.42m-21.03m Gravel Water Supply	1693m	West
GW044799	0.00m-0.61m Clay Dark 0.61m-10.06m Clay Light Brown Gravel Plastic Water Supply 10.06m-19.20m Clay Reddish Gravel Water Supply 19.20m-33.53m Clay White Pink Plastic Water Supply	1783m	West
GW044800	0.00m-0.30m Soil 0.30m-1.52m Clay Dark Plastic 1.52m-2.13m Clay Sandy 2.13m-2.44m Clay Gravel 2.44m-2.74m Clay Plastic 2.74m-5.18m Clay Sandy Gravel 5.18m-5.79m Clay Gravel 5.79m-6.10m Clay Sandy 6.10m-7.32m Gravel Sandy Clay 7.32m-7.92m Clay Sandy Gravel 7.92m-8.53m Gravel Dirty 8.53m-14.02m Clay Grey Firm Plastic 14.02m-14.94m Gravel Dirty Water Supply 14.94m-18.59m Clay Plastic 18.59m-19.05m Gravel Water Supply 19.05m-20.12m Clay White 20.12m-21.95m Clay White Soft Sandy 21.95m-23.16m Clay White Gravel 23.16m-23.62m Clay White Firm 23.62m-24.38m Gravel White Water Supply 24.38m-31.39m Clay Pink 31.39m-33.53m Clay Gravel	1876m	West
GW035346	0.00m-0.60m Topsoil 0.60m-2.74m Topsoil Clay 2.74m-7.01m Clay Sandy 7.01m-9.75m Shale Decomposed 9.75m-36.57m Shale Slate Seams Water Supply	1887m	South

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp
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Geology

Rail Corridor - Bungendore, NSW 2621

Geological Units 1:250,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dist	Dir
Oa	Turbiditic sequence; sandstone, mudstone, shale; quartzite, quartz phyllite, phyllite, slate	Adaminaby Group	Adaminaby Group		Palaeozoic	0m	On-site
Qc	Fanglomerate and poorly cemented conglomerate, gravel and sand: colluvium				Cainozoic	0m	On-site
Qbs	Coarse sand and gravel in strandlines				Cainozoic	0m	On-site
Qa	Alluvium, fluvial deposits: gravel, sand, silt and clay	undifferentiated			Cainozoic	0m	On-site
Ssc	Dark grey shale, siltstone and minor limestone	Copper Creek Shale	Hoskinstown Group		Palaeozoic	144m	South

Geological Structures 1:250,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Distance	Direction
Fault		Thrust, Accurate	SCRA	143m	South

Geological Data Source : NSW Department of Industry, Resources & Energy

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Naturally Occurring Asbestos Potential

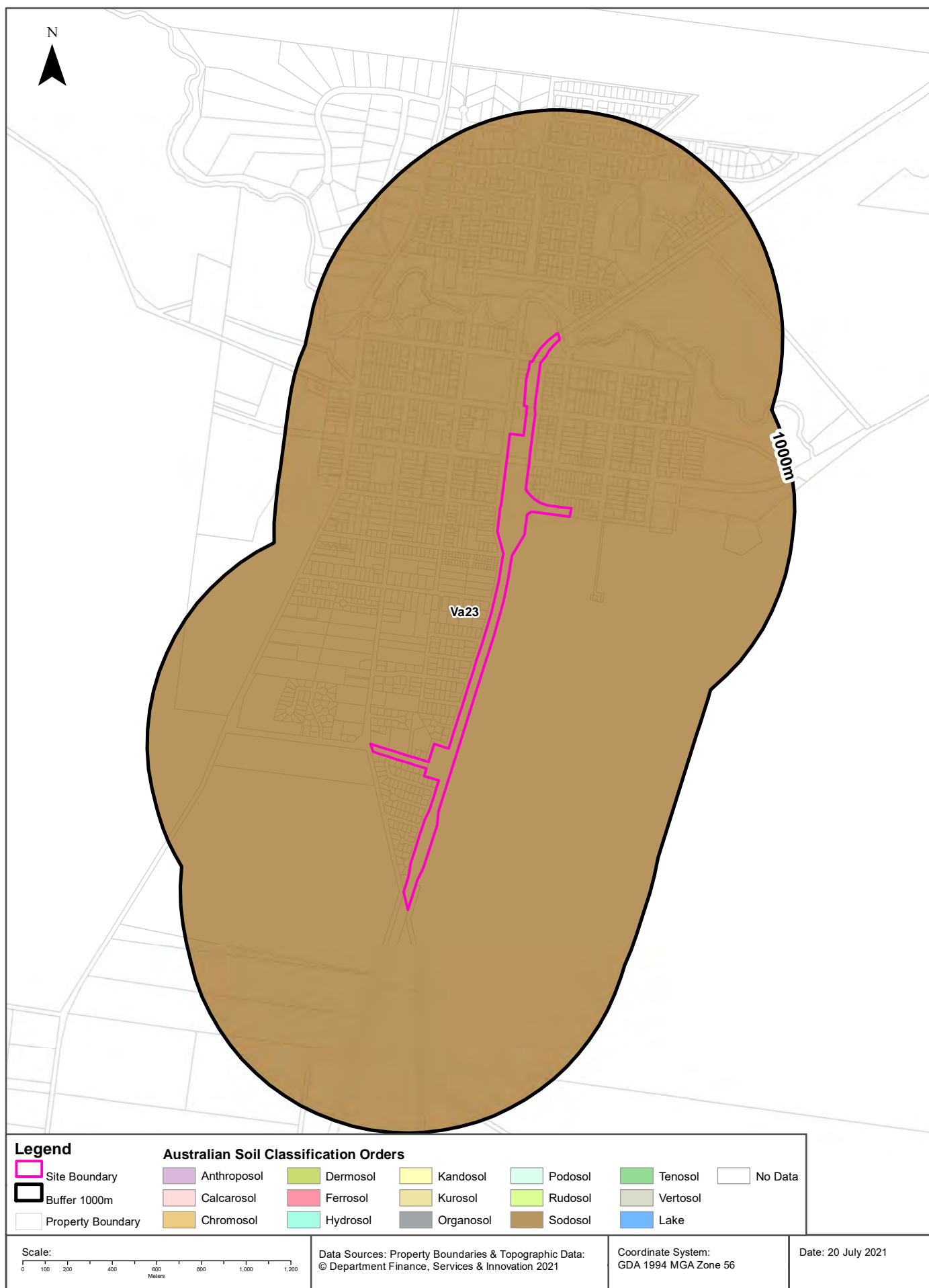
Rail Corridor - Bungendore, NSW 2621

Naturally Occurring Asbestos Potential

Naturally Occurring Asbestos Potential within the dataset buffer:

Potential	Sym	Strat Name	Group	Formation	Scale	Min Age	Max Age	Rock Type	Dom Lith	Description	Dist	Dir
No records in buffer												

Naturally Occurring Asbestos Potential Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy



Soils

Rail Corridor - Bungendore, NSW 2621

Atlas of Australian Soils

Soil mapping units and Australian Soil Classification orders within the dataset buffer:

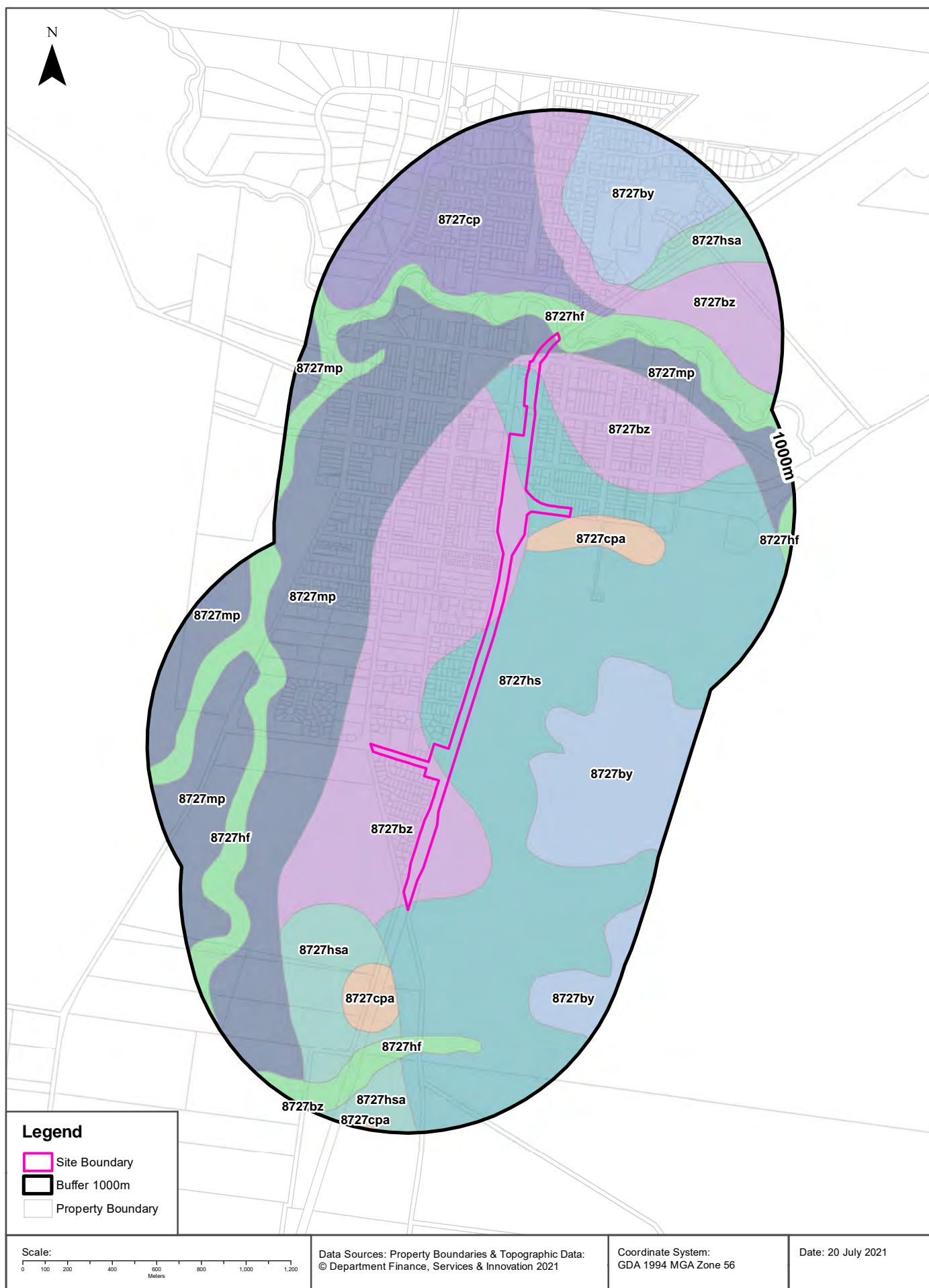
Map Unit Code	Soil Order	Map Unit Description	Distance	Direction
Va23	Sodosol	Basin plains at moderate elevations (> 2000 ft) with lakes, swamps, lunettes, small stream valleys, and low residual hills and ridges; some buried layered soil materials: basin plains of hard alkaline and neutral yellow mottled soils (Dy3.43 and Dy3.42) with other undescribed soils. Associated are (i) lunettes and/or levee-like ridges of red earths (Gn2.15) and possibly some sand sheets of (Uc) soils; (ii) narrow depressions of (Dd1.43) soils; (iii) ?old terrace remnants of (Dr2.41) soils above which some gravel fills may occur; and (iv) broken by some undulating to low hilly areas of (Dy3.42) soils with (Gn2.25 and Gn2.75) soils.	0m	On-site

Atlas of Australian Soils Data Source: CSIRO

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Soil Landscapes of Central and Eastern NSW

Rail Corridor - Bungendore, NSW 2621



Soils

Rail Corridor - Bungendore, NSW 2621

Soil Landscapes of Central and Eastern NSW

Soil Landscapes of Central and Eastern NSW within the dataset buffer:

Soil Code	Name	Distance	Direction
8727hs	Hoskinstown	0m	On-site
8727bz	Bungendore	0m	On-site
8727mp	Millpost	0m	On-site
8727hf	Halfway Creek	0m	On-site
8727cpa	Coopers variant a	4m	North East
8727cp	Coopers	152m	North
8727hsa	Hoskinstown variant a	168m	South West
8727by	Bywong	313m	East

Soil Landscapes of Central and Eastern NSW: NSW Department of Planning, Industry and Environment
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Acid Sulfate Soils

Rail Corridor - Bungendore, NSW 2621

Environmental Planning Instrument - Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

Soil Class	Description	EPI Name
N/A		

If the on-site Soil Class is 5, what other soil classes exist within 500m?

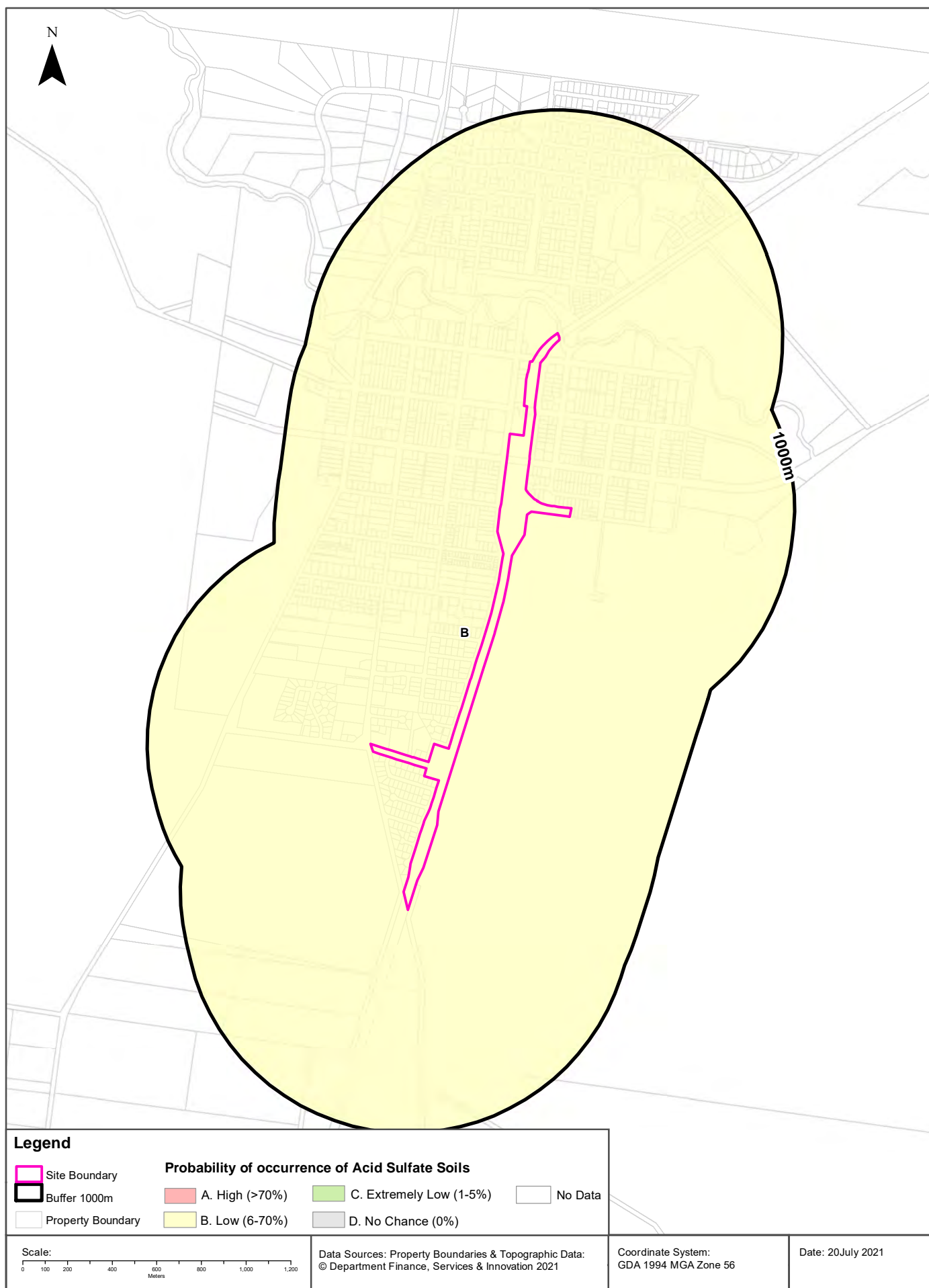
Soil Class	Description	EPI Name	Distance	Direction
N/A				

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Atlas of Australian Acid Sulfate Soils

Rail Corridor - Bungendore, NSW 2621



Acid Sulfate Soils

Rail Corridor - Bungendore, NSW 2621

Atlas of Australian Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

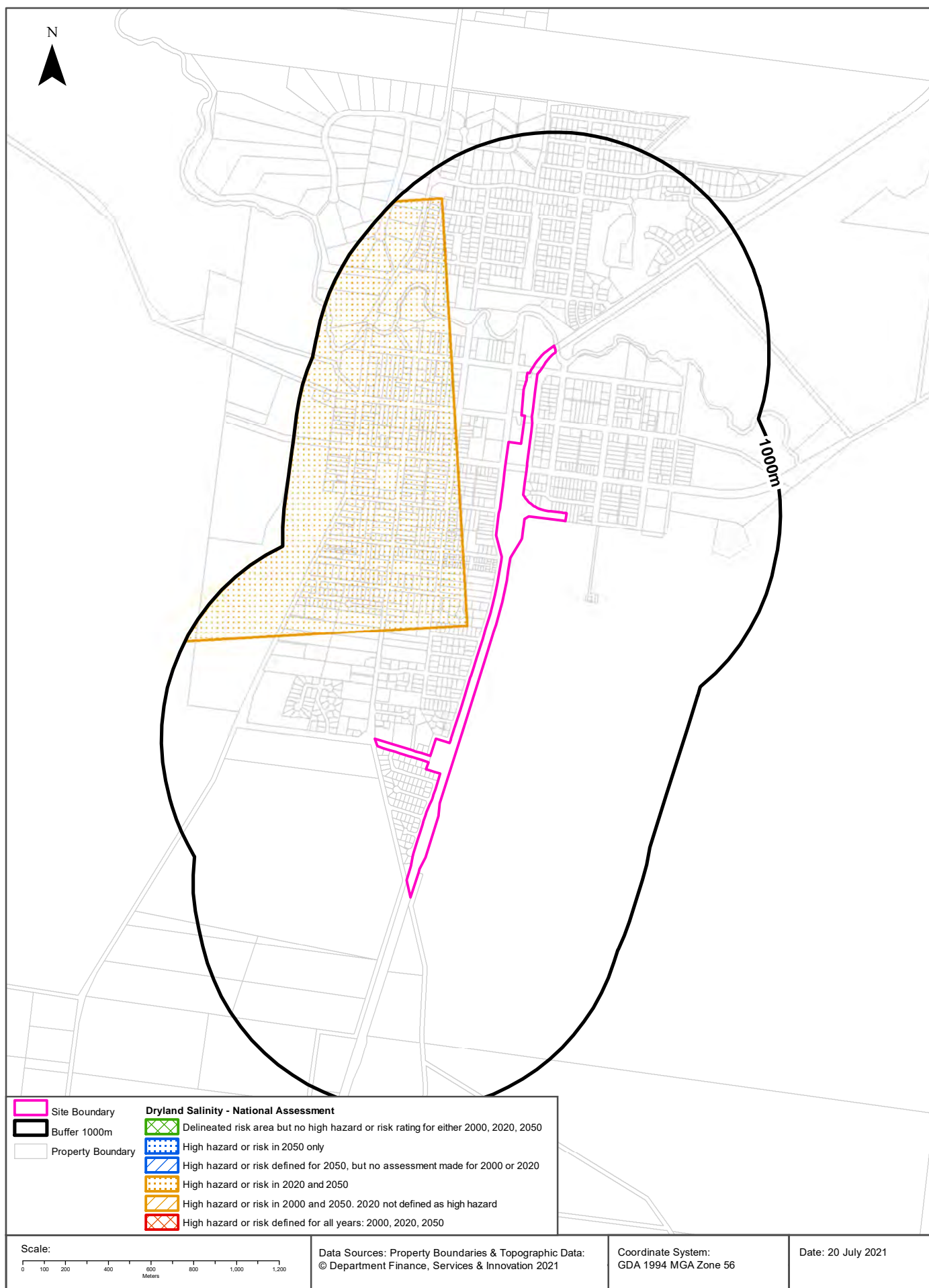
Class	Description	Distance	Direction
B	Low Probability of occurrence. 6-70% chance of occurrence.	0m	On-site

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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Dryland Salinity

Rail Corridor - Bungendore, NSW 2621



Dryland Salinity

Rail Corridor - Bungendore, NSW 2621

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

Is there Dryland Salinity - National Assessment data within the dataset buffer?

Yes

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
-	High hazard or risk	High hazard or risk	89m	North West

Dryland Salinity Data Source : National Land and Water Resources Audit

The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.

In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Mining

Rail Corridor - Bungendore, NSW 2621

Mining Subsidence Districts

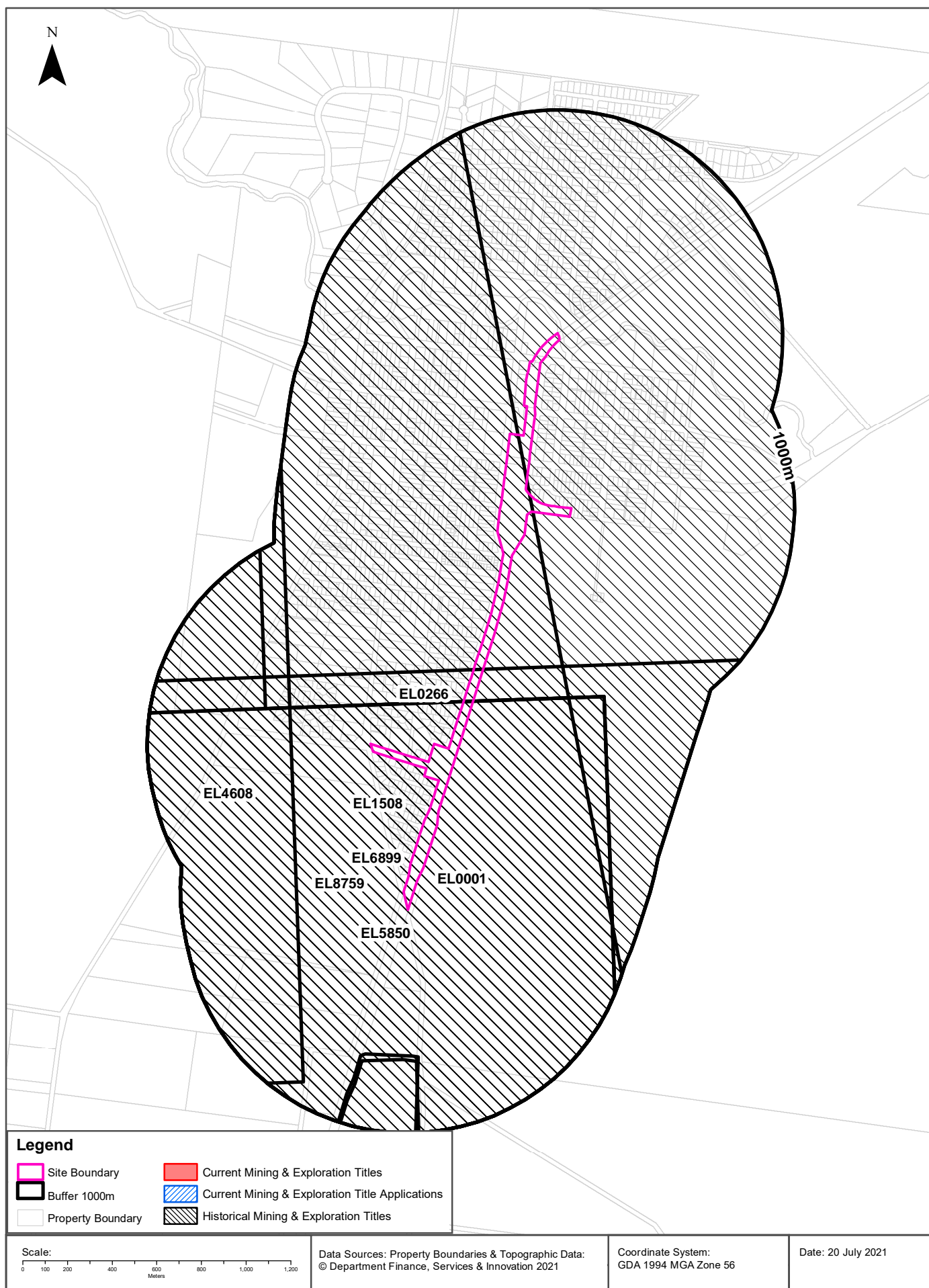
Mining Subsidence Districts within the dataset buffer:

District	Distance	Direction
There are no Mining Subsidence Districts within the report buffer		

Mining Subsidence District Data Source: © Land and Property Information (2016)
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Mining & Exploration Titles

Rail Corridor - Bungendore, NSW 2621



Mining

Rail Corridor - Bungendore, NSW 2621

Current Mining & Exploration Titles

Current Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Grant Date	Expiry Date	Last Renewed	Operation	Resource	Minerals	Dist	Dir
N/A	No records in buffer								

Current Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

Current Mining & Exploration Title Applications

Current Mining & Exploration Title Applications within the dataset buffer:

Application Ref	Applicant	Application Date	Operation	Resource	Minerals	Dist	Dir
N/A	No records in buffer						

Current Mining & Exploration Title Applications Data Source: © State of New South Wales through NSW Department of Industry

Mining

Rail Corridor - Bungendore, NSW 2621

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
EL5850	SPAR RESOURCES PTY LTD	03 May 2001	02 May 2005	MINERALS	Clay Shale	0m	On-site
EL6899	NEW SOUTHERN MINING PTY LTD	04 Oct 2007	30 Jun 2009	MINERALS	Au Cu Pb Ag	0m	On-site
EL1508	TECK EXPLORATIONS LIMITED	01 Dec 1980	01 Dec 1982	MINERALS	Cu Pb Zn	0m	On-site
EL0001	ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED	01 Mar 1965	01 Sep 1966	MINERALS	Cu Pb Zn	0m	On-site
EL0266	JODODEX AUSTRALIA PTY LIMITED	01 Mar 1970	01 Mar 1972	MINERALS	Cu Pb Zn Ni	0m	On-site
EL8759	EASTERN COBALT PTY LTD			MINERALS		0m	On-site
EL4608	ORION RESOURCES NL	20 Oct 1993	19 Oct 1995	MINERALS	Au Ag In Mn	356m	South West

Historical Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

State Environmental Planning Policy

Rail Corridor - Bungendore, NSW 2621

State Significant Precincts

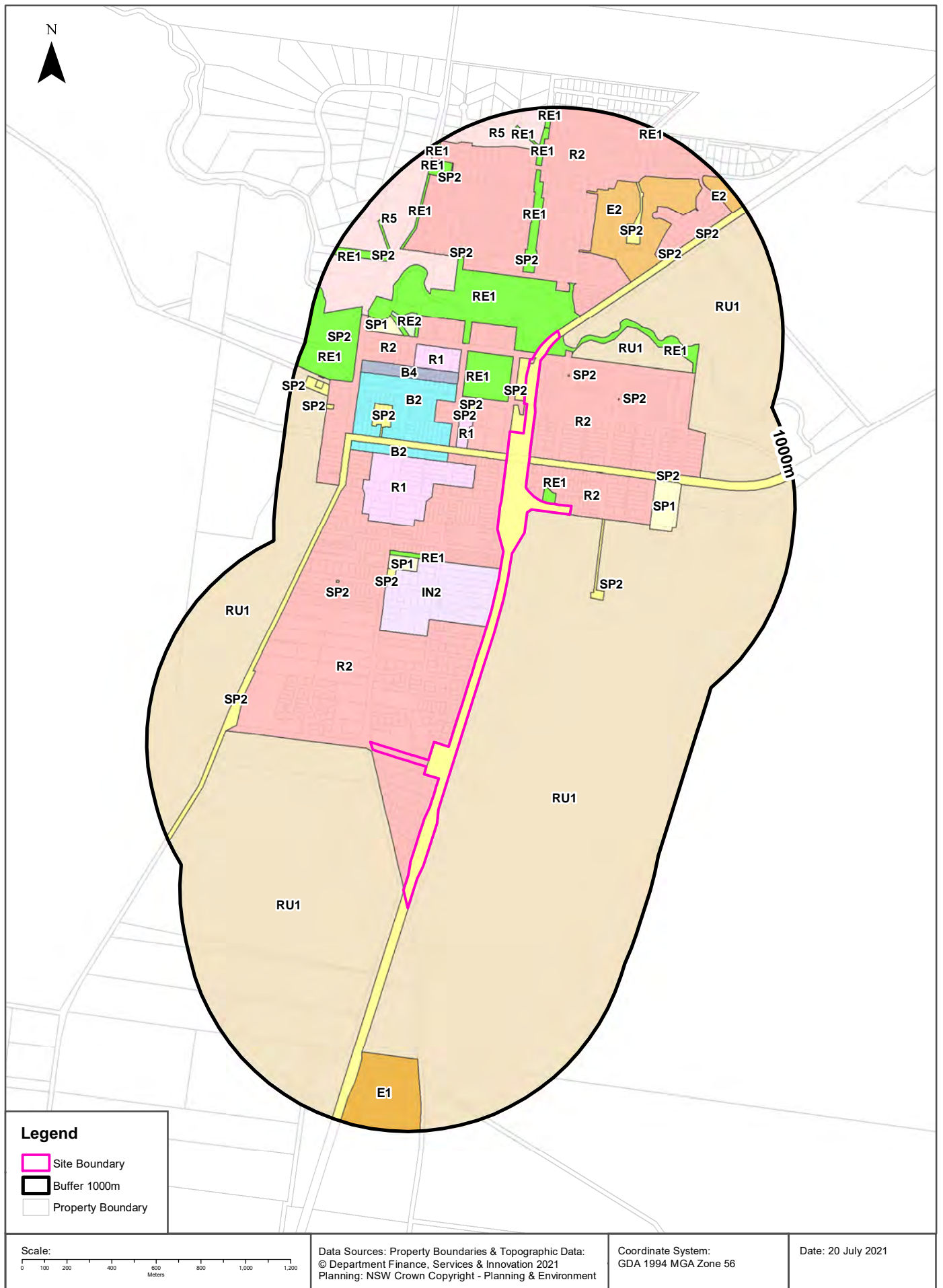
What SEPP State Significant Precincts exist within the dataset buffer?

Map Id	Precinct	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
N/A	No records in buffer							

State Environment Planning Policy Data Source: NSW Crown Copyright - Planning & Environment
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EPI Planning Zones

Rail Corridor - Bungendore, NSW 2621



Environmental Planning Instrument

Rail Corridor - Bungendore, NSW 2621

Land Zoning

What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Rail Infrastructure Facility	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		0m	On-site
R2	Low Density Residential		Palerang Local Environmental Plan 2014	22/06/2018	22/06/2018	30/10/2020	Amendment No 7	0m	On-site
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		0m	North East
RU1	Primary Production		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		0m	South East
SP2	Infrastructure	Classified Road	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		0m	North East
R2	Low Density Residential		Palerang Local Environmental Plan 2014	22/06/2018	22/06/2018	30/10/2020	Amendment No 7	0m	North East
SP2	Infrastructure	Public Administration Building	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		0m	North
IN2	Light Industrial		Palerang Local Environmental Plan 2014	22/06/2018	22/06/2018	30/10/2020	Amendment No 7	0m	West
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		0m	North
SP2	Infrastructure	Classified Road	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		0m	West
RU1	Primary Production		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		0m	South West
RU1	Primary Production		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		15m	North East
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		71m	North
RU1	Primary Production		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		89m	North East
R2	Low Density Residential		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		113m	North
SP2	Infrastructure	Sewerage System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		128m	North
R1	General Residential		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		135m	North West
SP2	Infrastructure	Water Supply System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		145m	East
R1	General Residential		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		171m	North
SP2	Infrastructure	Emergency Services Facility	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		179m	North
SP2	Infrastructure	Telecommunications	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		202m	North
B2	Local Centre		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		263m	North West
B2	Local Centre		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		264m	North West
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		282m	North
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		289m	North West
B4	Mixed Use		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		304m	North
R1	General Residential		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		304m	North

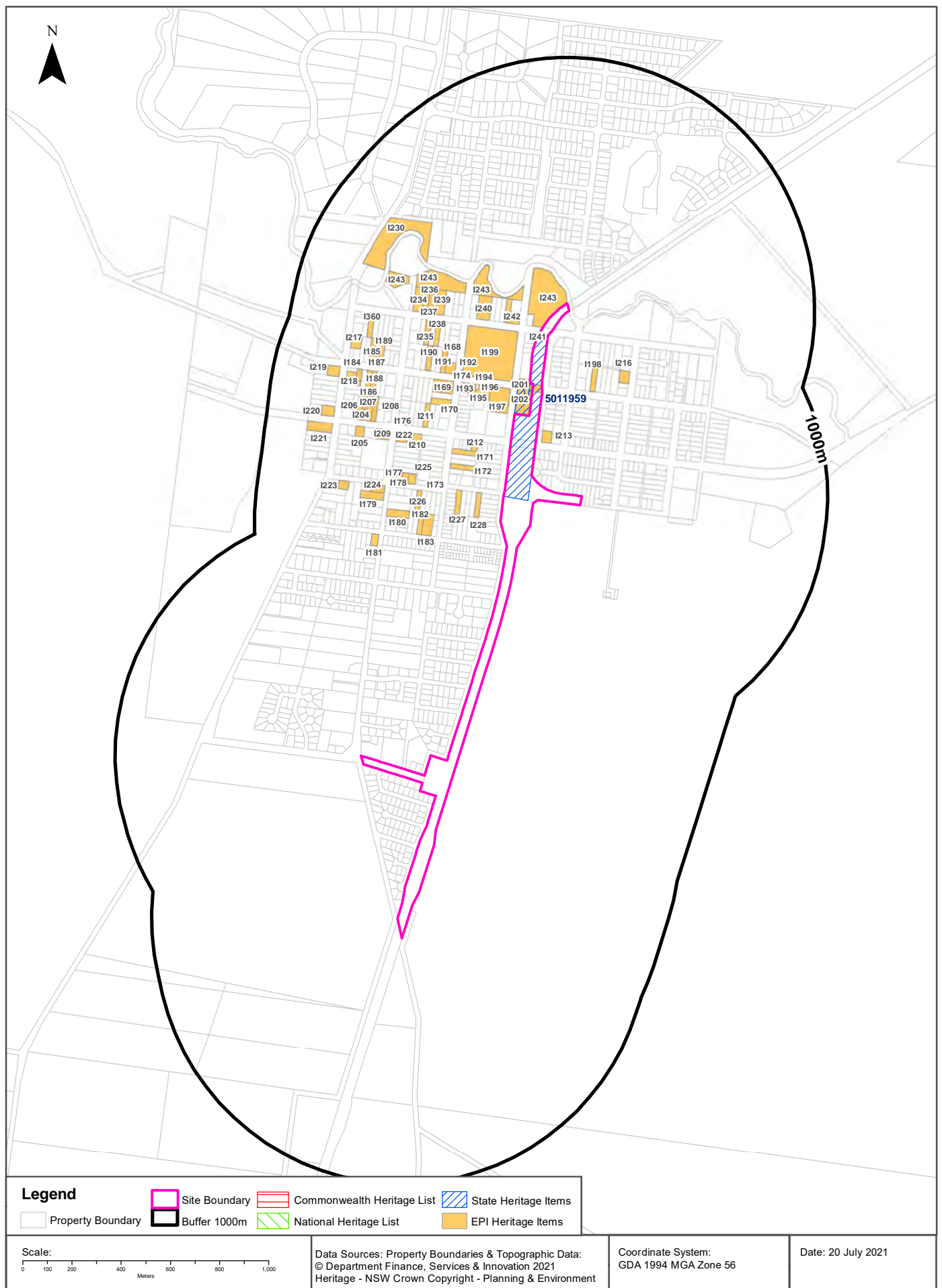
Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Sewerage System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		342m	North
SP1	Special Activities	Cemetery	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		357m	North East
E2	Environmental Conservation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		365m	North
SP2	Infrastructure	Sewerage System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		366m	North East
SP1	Special Activities	Depot	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		366m	North West
SP2	Infrastructure	Emergency Services Facility	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		453m	West
R5	Large Lot Residential		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		458m	North
SP2	Infrastructure	Water Supply System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		495m	North
SP2	Infrastructure	Sewerage System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		522m	North
RE2	Private Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		529m	North
SP2	Infrastructure	Public Car Park	Palerang Local Environmental Plan 2014	19/05/2017	19/05/2017	30/10/2020	Amendment No 4	535m	North West
SP1	Special Activities	Pound	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		575m	North
SP2	Infrastructure	Sewerage System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		598m	North East
RU1	Primary Production		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		632m	West
E1	National Parks and Nature Reserves		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		668m	South
SP2	Infrastructure	Sewerage System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		692m	West
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		742m	North
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		743m	North West
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		753m	North
SP2	Infrastructure	Sewerage System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		797m	North West
SP2	Infrastructure	Water Supply System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		803m	North
R5	Large Lot Residential		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		811m	North
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		822m	North
SP2	Infrastructure	Electricity Transmission & Distribution	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		832m	North West
SP2	Infrastructure	Sewerage System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		832m	North
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		846m	North
SP2	Infrastructure	Water Supply System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		851m	North West
SP2	Infrastructure	Water Supply System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		862m	North West
SP2	Infrastructure	Water Supply System	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		867m	North West
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		905m	North
E2	Environmental Conservation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		924m	North East
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		963m	North
RE1	Public Recreation		Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	30/10/2020		974m	North

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RU1	Primary Production		Palerang Local Environmental Plan 2014	15/05/2020	15/05/2020	30/10/2020	Amendment No 9	982m	North
R2	Low Density Residential		Palerang Local Environmental Plan 2014	15/05/2020	15/05/2020	30/10/2020	Amendment No 9	990m	North

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Heritage Items

Rail Corridor - Bungendore, NSW 2621



Heritage

Rail Corridor - Bungendore, NSW 2621

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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National Heritage List

What are the National Heritage List Items located within the dataset buffer?

Note. Please click on Place Id to activate a hyperlink to online website.

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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State Heritage Register - Curtilages

What are the State Heritage Register Items located within the dataset buffer?

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
5011959	Bungendore Railway Station & Yard Group	Gibraltar Street, Bungendore	QUEANBEYAN-PALERANG REGIONAL	02/04/1999	01105	2776	0m	On-site

Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage
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Environmental Planning Instrument - Heritage

What are the EPI Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I241	Railway signalmans cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	0m	On-site
I202	Railway station and yard, including station building, signal box, trolley shed, goods shed etc	Item - General	State	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	0m	On-site

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I201	Bungendore Stationmasters Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	0m	North
I243	Bungendore Common	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	0m	North
I213	Weatherboard Federation cottage, including verandahs, chimneys and windows	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	20m	North
I197	Public School Original Buildings	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	30m	North
I199	Bungendore Soldiers Memorial	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	71m	North
I242	Preschool	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	83m	North
I228	Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	92m	North
I196	School of Arts	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	122m	North
I212	Weatherboard Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	135m	North
I171	St Johns Uniting Church (former)	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	135m	North
I172	Weatherboard Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	135m	North
I243	Bungendore Common	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	135m	North
I195	Post Office and shop	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	140m	North
I227	The Atelier, including verandah and frieze	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	172m	North
I194	Police residence, including windows and arched lintels	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	179m	North
I198	Stone barn (former)	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	192m	North East
I193	Courthouse	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	199m	North
I240	St Josephs Convent (former)	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	201m	North
I174	P.J.B. Osborne Memorial Fountain	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	245m	North
I173	Rendered cottage, including iron columns on verandah	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	263m	North West
I170	Church hall, including decorative treatments	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	263m	North
I169	St Philips Anglican Church, including stained glass windows and 4 gargoyles	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	268m	North

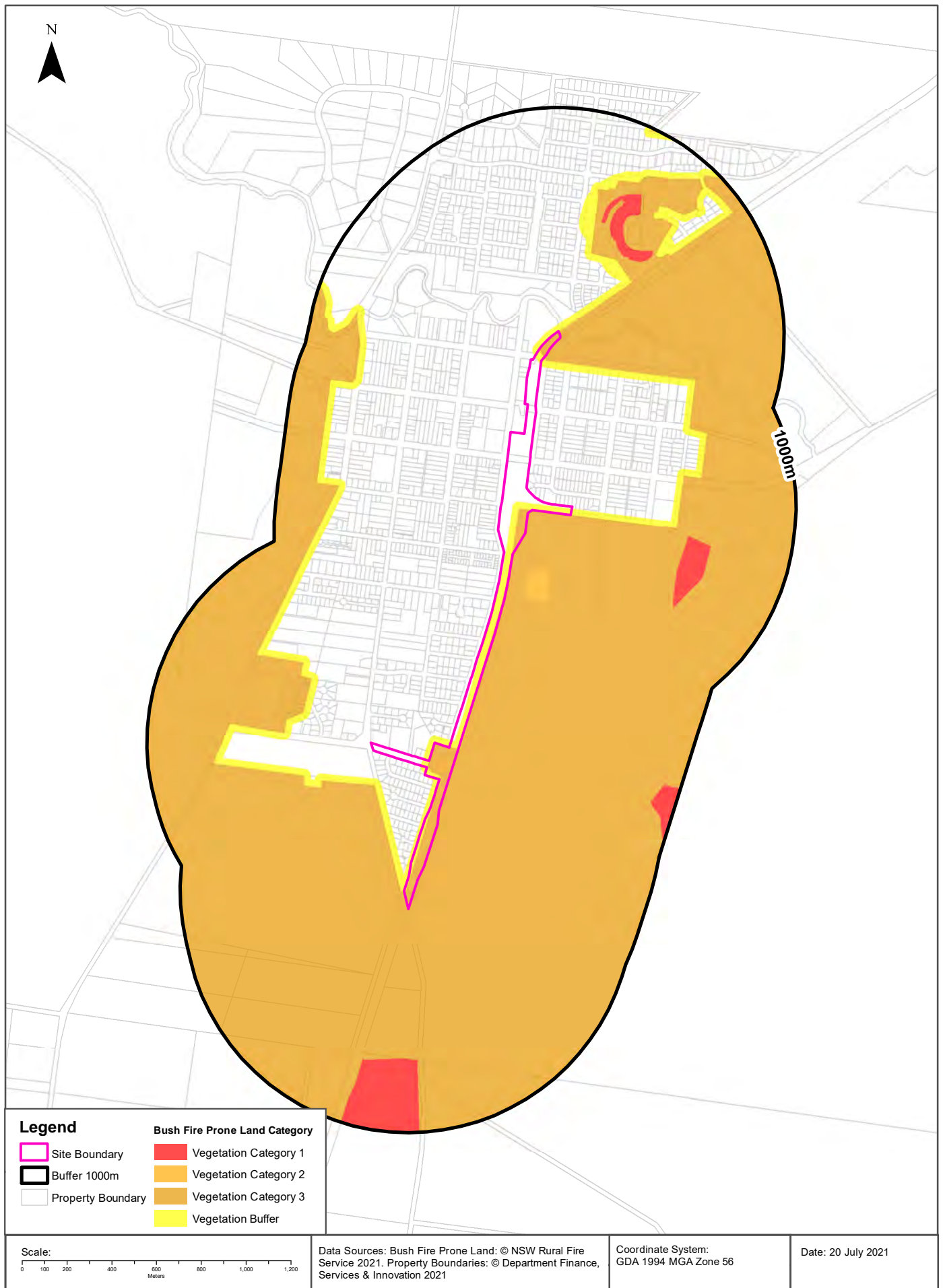
Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I183	Weatherboard Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	273m	North West
I192	Stone stables	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	294m	North
I168	Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	304m	North
I216	Cottage, including bush pole posts and roof structure	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	306m	North East
I182	Weatherboard Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	313m	North West
I191	CWA building	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	330m	North
I226	Weatherboard cottage, including internal pressed tin panelling	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	333m	North West
I243	Bungendore Common	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	338m	North
I211	Inter-war weatherboard cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	345m	North
I210	Weatherboard Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	365m	North West
I225	Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	365m	North West
I180	Weatherboard cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	374m	North West
I238	Old Royal Inn	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	385m	North
I190	Royal Hotel, including iron lacework	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	387m	North
I239	Birchfield	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	388m	North
I178	Stone Dwelling	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	397m	North West
I177	Dwelling	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	421m	North West
I222	Village Square, including complex of buildings	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	422m	North West
I235	Weatherboard Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	426m	North
I176	Corner Shop	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	427m	North West
I237	Roman Catholic Church Hall	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	433m	North
I236	St Marys Catholic Church	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	454m	North
I234	Catholic Presbytery	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	474m	North
I179	St Michael	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	485m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I224	Doctors House (former), including leadlight windows	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	485m	North West
I209	Carrington Inn, including brickwork	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	497m	North West
I181	Thornleigh	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	499m	North West
I230	Elmslea, including leadlighting and art deco glazing	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	534m	North
I208	Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	557m	North West
I243	Bungendore Common	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	561m	North
I189	2-storey stone shop	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	575m	North West
I188	Strathmore, including iron columns, balustrade and frieze	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	577m	North West
I207	Dwelling, including bargeboards and fireplaces	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	577m	North West
I187	Single-storey shop	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	591m	North West
I206	House	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	597m	North West
I186	Brick dwelling	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	598m	North West
I205	Dwelling, including verandah	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	599m	North West
I185	Duart, including windows and door	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	611m	North West
I204	Karingal, including decorative verandah trim and weatherboard cladding	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	618m	North West
I223	House	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	632m	North West
I218	Beehive Hotel (former), including chimneys and french doors	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	639m	North West
I184	Former stone barn	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	640m	North West
I360	Weatherboard Cottage	Item - General	Local	Palerang Local Environmental Plan 2014	01/06/2018	01/06/2018	01/06/2018	657m	North West
I217	Deniston, including verandah	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	682m	North West
I220	Elms Villa	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	730m	North West
I221	Brick semi detached cottages	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	730m	North West
I219	Commercial Bank (former)	Item - General	Local	Palerang Local Environmental Plan 2014	19/09/2014	31/10/2014	01/06/2018	731m	North West

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Natural Hazards - Bush Fire Prone Land

Rail Corridor - Bungendore, NSW 2621



Natural Hazards

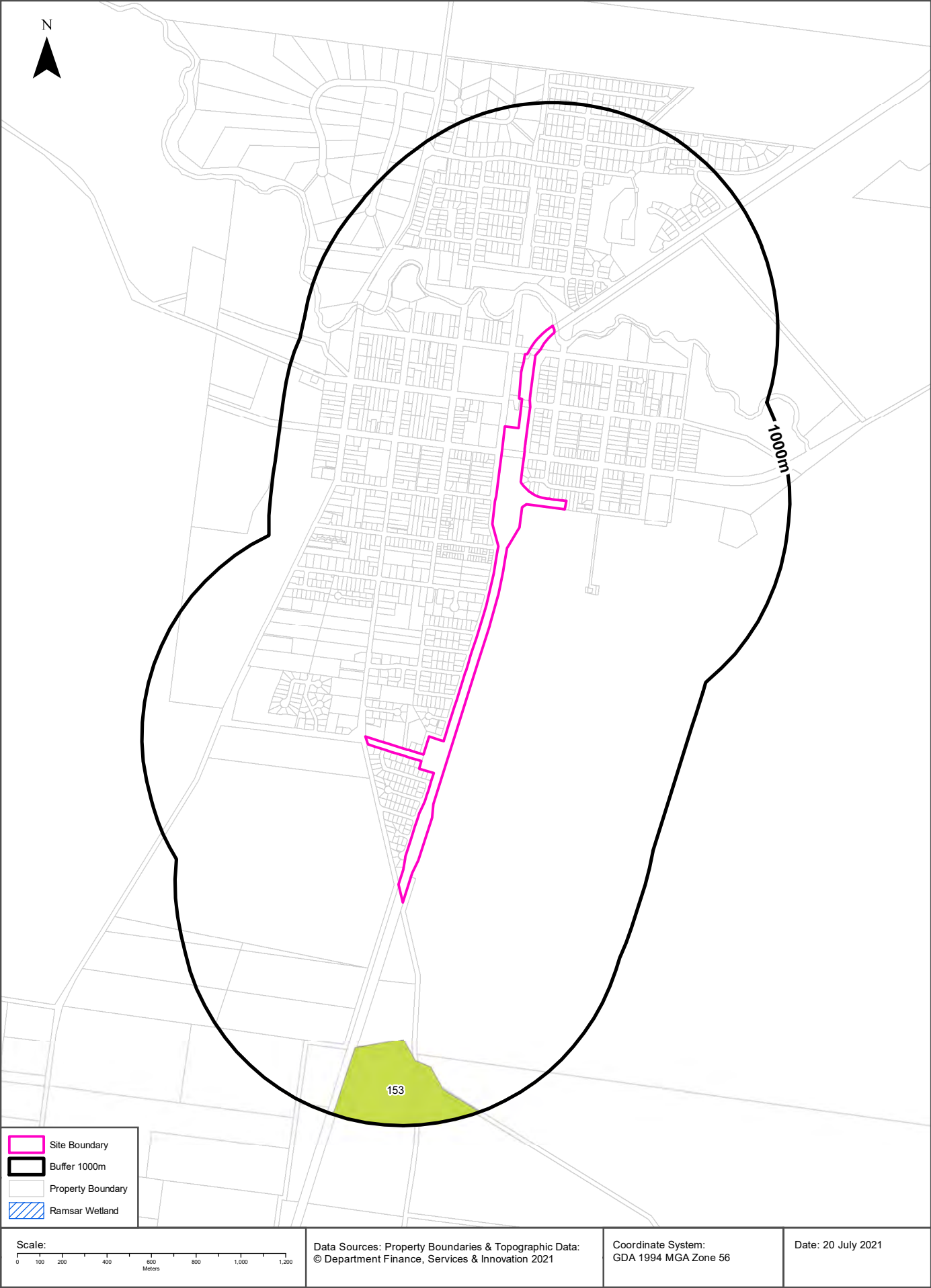
Rail Corridor - Bungendore, NSW 2621

Bush Fire Prone Land

What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
Vegetation Category 3	0m	On-site
Vegetation Buffer	0m	On-site
Vegetation Category 2	66m	North East
Vegetation Category 1	439m	North

NSW Bush Fire Prone Land - © NSW Rural Fire Service under Creative Commons 4.0 International Licence



Ecological Constraints

Rail Corridor - Bungendore, NSW 2621

Vegetation of the Southern Forests

What vegetation of the Southern Forests exists within the dataset buffer?

Veg Code	Formation	Class	Group	Distance	Direction
153	06 Grassy Woodlands/Grasslands	06d ST Temperate Grasslands	Tablelands and Slopes Herb Grassland/Woodland	614m	South

Vegetation of the Southern Forests: NSW Office of Environment and Heritage

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Ramsar Wetlands

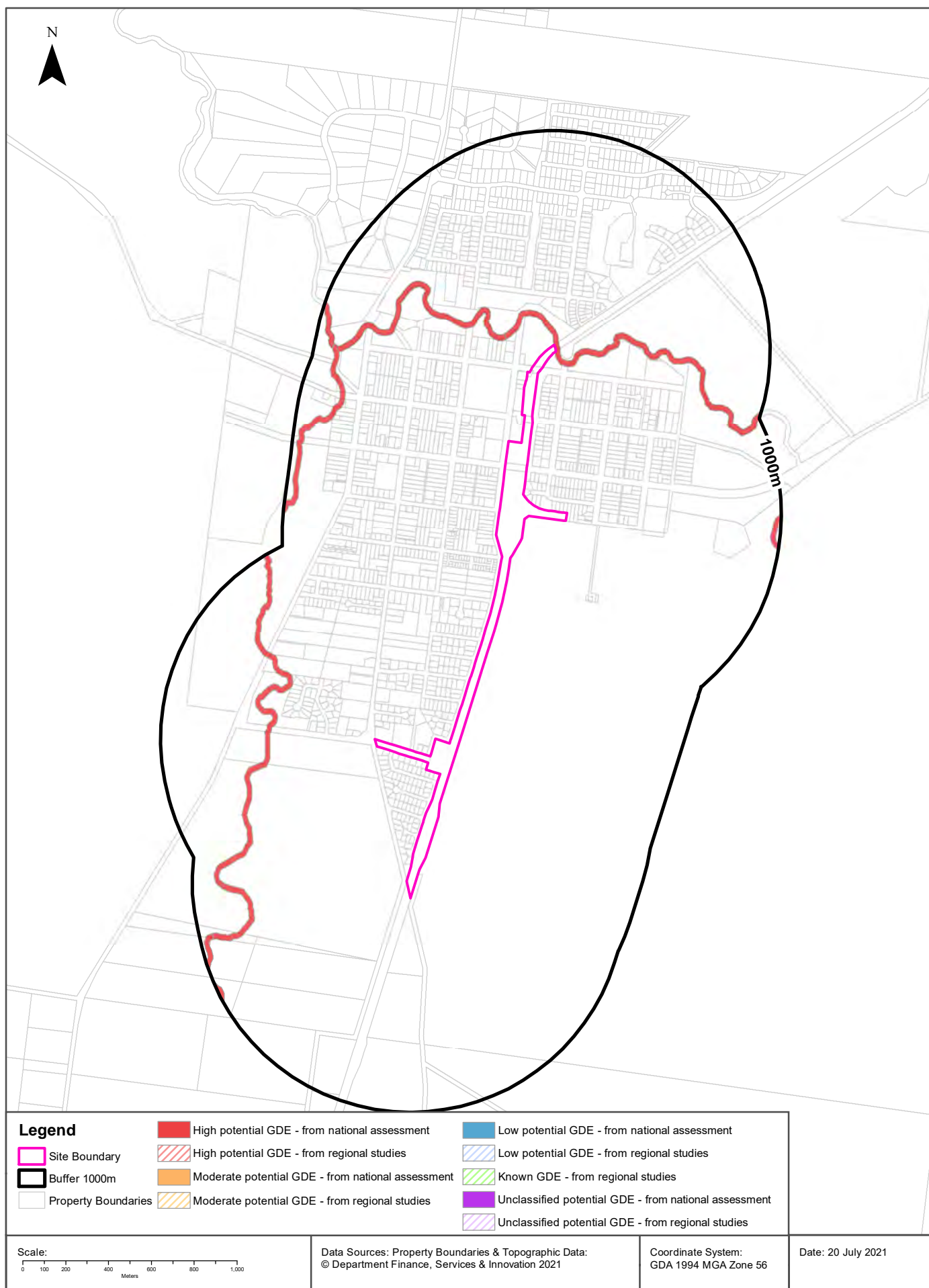
What Ramsar Wetland areas exist within the dataset buffer?

Map Id	Ramsar Name	Wetland Name	Designation Date	Source	Distance	Direction
N/A	No records in buffer					

Ramsar Wetlands Data Source: © Commonwealth of Australia - Department of Agriculture, Water and the Environment

Ecological Constraints - Groundwater Dependent Ecosystems Atlas

Rail Corridor - Bungendore, NSW 2621



Ecological Constraints

Rail Corridor - Bungendore, NSW 2621

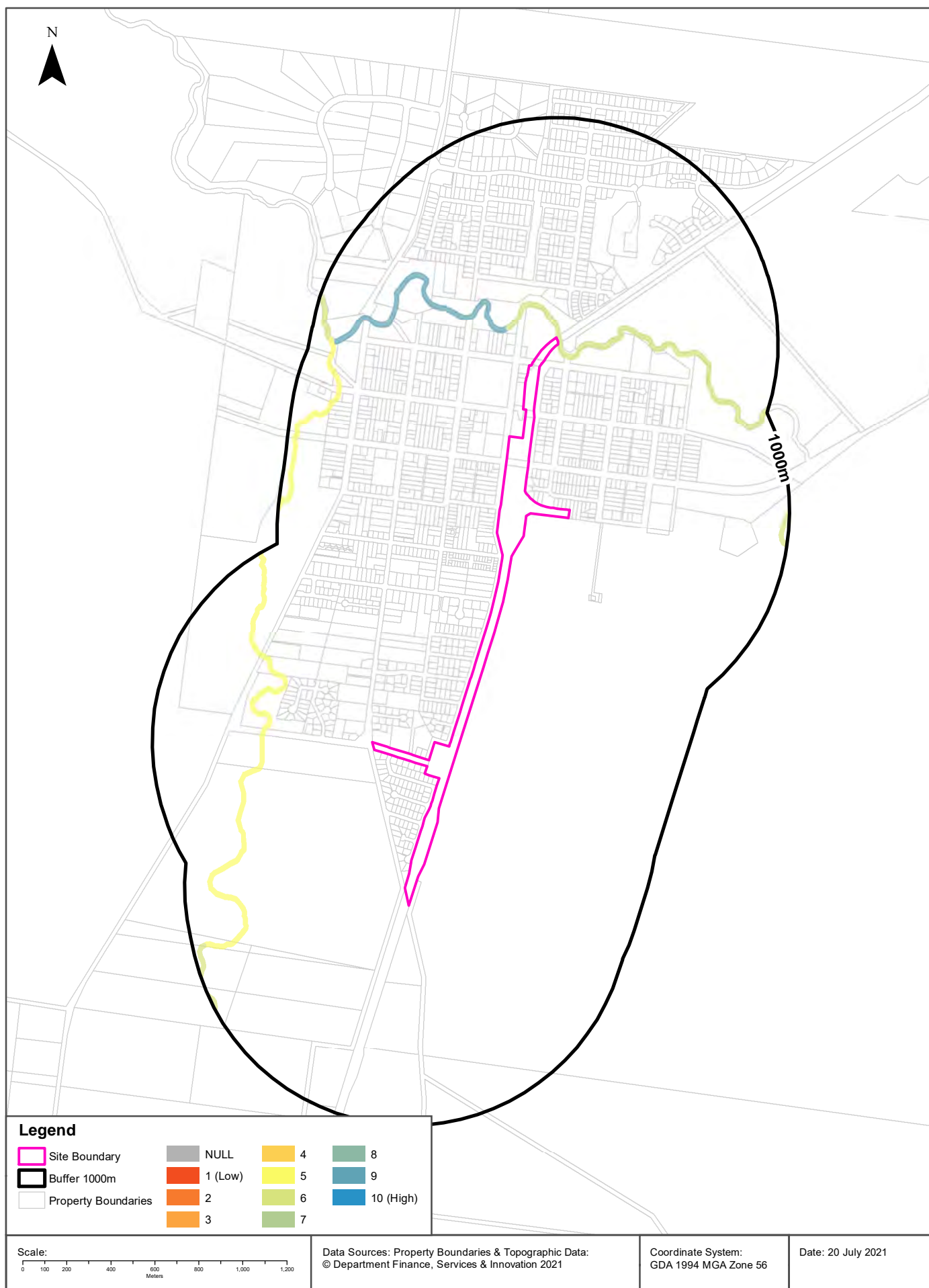
Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Aquatic	High potential GDE - from national assessment	Upland plains with separating strike-aligned hills, closed lake basins.	River		0m	On-site

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology
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Ecological Constraints - Inflow Dependent Ecosystems Likelihood

Rail Corridor - Bungendore, NSW 2621



Ecological Constraints

Rail Corridor - Bungendore, NSW 2621

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Aquatic	6	Upland plains with separating strike-aligned hills, closed lake basins.	River		0m	On-site
Aquatic	9	Upland plains with separating strike-aligned hills, closed lake basins.	River		171m	North
Aquatic	5	Upland plains with separating strike-aligned hills, closed lake basins.	River		459m	West

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology
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Ecological Constraints

Rail Corridor - Bungendore, NSW 2621

NSW BioNet Atlas

Species on the NSW BioNet Atlas that have a NSW or federal conservation status, a NSW sensitivity status, or are listed under a migratory species agreement, and are within 10km of the site?

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Litoria castanea	Yellow-spotted Tree Frog	Critically Endangered	Not Sensitive	Endangered	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus lathamii	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Chthonicola sagittata	Speckled Warbler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Epthianura albifrons	White-fronted Chat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pachycephala olivacea	Olive Whistler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Insecta	Synemon plana	Golden Sun Moth	Endangered	Not Sensitive	Critically Endangered	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Suta flagellum	Little Whip Snake	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Calotis glandulosa	Mauve Burr-daisy	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus aggregata	Black Gum	Vulnerable	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Eucalyptus macarthurii	Paddys River Box, Camden Woollybutt	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Lepidium hyssopifolium	Aromatic Peppercress	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Leucochrysum albicans var. tricolor	Hoary Sunray	Not Listed	Not Sensitive	Endangered	
Plantae	Flora	Senecio macrocarpus		Not Listed	Not Sensitive	Vulnerable	
Plantae	Flora	Swainsona recta	Small Purple-pea	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Swainsona sericea	Silky Swainson-pea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Wilsonia rotundifolia	Round-leafed Wilsonia	Endangered	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

NSW BioNet: © State of NSW and Office of Environment and Heritage

Location Confidences

Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a code is given under the field heading “LC” or “LocConf”. These codes lookup to the following location confidences:

LC Code	Location Confidence
Premise Match	Georeferenced to the site location / premise or part of site
Area Match	Georeferenced to an approximate or general area
Road Match	Georeferenced to a road or rail corridor
Road Intersection	Georeferenced to a road intersection
Buffered Point	A point feature buffered to x metres
Adjacent Match	Land adjacent to a georeferenced feature
Network of Features	Georeferenced to a network of features
Suburb Match	Georeferenced to a suburb boundary
As Supplied	Spatial data supplied by provider

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APPENDIX D DATA QUALITY OBJECTIVES

D1. DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in *Section 1.2*. The DQOs have been prepared in line with the seven-step approach outlined in National Environment Protection (Assessment of Site Contamination) Measure (the ASC NEPM) (NEPC, 1999) (as amended 2013), and with reference to relevant guidelines published by the ACT EPA, specifically the Contaminated Sites Environment Protection Policy (December 2017).

The DQO process is validated, in part, by the quality assurance and quality control (QA/QC) procedures and assessment presented in *Section 6.6* of this report. The seven steps of the DQO process, and how they were applied to this assessment, are presented in the following subsections.

D1.1 STEP 1: STATE THE PROBLEM

The site is currently owned by the State Rail Authority of NSW and is managed by JHR on behalf of TfNSW. ERM understands that the JHR would like to understand the likelihood of the presence of contamination at the Site and whether any identified contamination may present a risk of on or offsite receptors.

D1.2 STEP TWO: IDENTIFY THE DECISIONS

Overall the principal decision to be made is whether potential risk to human health or the environment exists as a result of historical site activities. In order to inform this decision, the following questions need to be considered:

- What potential sources of contamination are or were present at the site?
- Is the sampling pattern adequate to collect the required data to achieve the PSI objectives?
- What is the nature and extent of COPCs in near surface soils at the site?
- Is contamination in excess of relevant guideline values present?
- What receptors are potentially at risk of exposure?
- What potential exposure scenarios should be considered?
- Does the contamination likely warrant notification under the Environment Protection Act 1997?
- Is material remediation or management likely to be required?

D1.3 STEP 3: IDENTIFY INPUTS TO DECISION

The primary inputs required to make the above decisions are as follows:

- general observations of the Site;
- review of historical information pertaining to the site;
- the type, number and location of sampling points;
- direct measurement and observation of environmental variables;

- laboratory measurement of soil samples for the identified COPCs;
- field and laboratory quality assurance/quality control data;
- assessment of concentrations of COPCs against relevant published human health and ecological risk screening criteria; and
- likelihood of identified receptors being exposed to concentrations of COPCs above the relevant adopted criteria.

D1.4 STEP 4: DEFINE THE STUDY BOUNDARIES

D1.4.1 Spatial Boundaries

The spatial boundary of the investigation is limited to the site and specifically the soil investigation locations presented on Figures 2a-2d. The investigation included the surface soils (to ~0.1m) within the investigation area.

D1.4.2 Temporal Boundaries

Temporally, the investigation was intended to provide a preliminary assessment the nature and extent of potential soil lead contamination across the investigation area. The preliminary investigation occurred from 2 – 5th August 2021.

D1.5 STEP FIVE: DEVELOP A DECISION RULE

The DQOs have been developed to facilitate the collection of adequate soil data to address the decisions outlined in Step 2 of the DQO process. The potential significance of field observations / measurement have been considered throughout this investigation, however the primary decision rule utilised for this assessment was comparison of analytical data with relevant published human health and ecological risk screening criteria, and consideration of background conditions.

Individual soil data were compared to the relevant screening criteria. Exceedance of the screening criteria does not necessarily indicate the requirement for remediation or a risk to human health and / or the environment through the qualitative assessment of the potential linkage between the source and the receptor via a pathway and described through the initial conceptual site model (CSM). If individual concentrations exceeded the screening criteria, consideration of the extent of the impact, the potential for receptors to be exposed and regulatory compliance was considered.

D1.5.1 Screening Criteria

The Tier 1 screening criteria for soil data has been selected based on a review of the following reference documents:

- the ASC NEPM: Schedule B1: Guideline on the Investigation Levels for Soil and Groundwater.

Screening criteria were selected with consideration of the following items:

- the Site has been used as an operational railway line (considered to be commercial/industrial);
- ongoing commercial/ industrial use of the Site;
- residential properties border some of the Site;

- Recreation and/ or communal walking tracks are present onsite, as well as a community Mens Shed in the former Woolshed Siding area;
- primary lithology – range from sands to clays; and
- depth of media under assessment (i.e. <0.1m bgl).

Relevant screening criteria selected for comparison against the soil results are discussed in *Section 6.4* of this report.

D1.5.2 Appropriateness of Laboratory Limit of Reporting

Laboratory analytical techniques have limits to their precision, and the Limit of Reporting (LOR) describes the lowest concentration that can be reported with confidence. Where a given assessment criteria is lower than the LOR concentration, a meaningful comparison generally cannot be made.

This investigation has employed standard LORs. Comparison of the LOR with the assessment criteria will be undertaken to confirm that the assessment criteria are less than the laboratory LOR and any exceptions to this shall be appropriately noted and justified.

D1.6 STEP 6: SPECIFY LIMITS ON DECISION ERRORS

The acceptable limits on decision errors applied during the review of the results will be based on the Data Quality Indicators (DQIs) of Precision, Accuracy, Representativeness, Comparability and Completeness (PARCC) in accordance with the ASC NEPM, Schedule B(3) - Guidelines on Laboratory Analysis.

The potential for significant decision errors will be reduced by:

- completing a robust QA/QC assessment of the data, requiring that 95% of data satisfy the DQIs and therefore placing a limit on the decision error of 5% (see *Section 6.6* and *Appendix E*);
- assessing whether appropriate sampling and analytical density has been achieved for the purposes of meeting the project objectives; and
- ensuring that the assessment criteria selected are appropriate for the current and future commercial/industrial land use, as well as potential receptors including ecological, residential and open space.

D1.7 STEP 7: DEVELOP (OPTIMISE) THE PLAN FOR COMPLETING THE WORKS

The investigation scope was tailored to match DQOs with project objectives, to combine targeted investigation based on existing knowledge and discussions with JHR. During the site inspection the scope was continuously reviewed to accommodate new information such as potential sources of site contamination (e.g. areas of staining or topography).

APPENDIX E QUALITY ASSURANCE AND QUALITY CONTROL

E1. QUALITY ASSURANCE AND QUALITY CONTROL ASSESSMENT

The objective of this data assessment is to evaluate the quality of data gathered during the investigation detailed in the main body of this report. This process has been undertaken to assess whether the sample data is of a suitable standard to be utilised in this report. The data assessment consists of comparing field and laboratory QA/QC results to documented guidelines outlined in *Section 1.3*. The data assessment has been prepared in accordance with the ASC NEPM – Schedule B2: Guideline on Site Characterisation. Particular reference is made to the PARCC parameters (precision, accuracy, representativeness, completeness and comparability) in evaluating the data quality.

Table E1 presents the degree of QA/QC pertinent to the field investigations.

Table E1 Field QA/QC Assessment	
QA/QC Criterion	Comments
QA/QC program includes duplicate samples.	<p>In order to demonstrate the suitability of the 119 primary soil samples analysed, field quality control samples included 6 intra-laboratory duplicates and 6 inter-laboratory duplicates.</p> <p>The Relative Percentage Difference (RPDs) of soil sample duplicate pairs were generally within the acceptance limits, however there were a number of RPDs outside of the acceptable range for metals. RPDs as presented in <i>Table E4</i>.</p> <p>It is considered that the outlying RPD results are likely due to the heterogeneous nature of the materials sampled. As a conservative measure both the parent and duplicate samples have been presented against the adopted Tier 1 screening criteria.</p>
Appropriate decontamination procedures were adopted.	<p>Decontamination procedures were implemented between collections of samples in accordance with ERM SOPs. Samples were collected from hand auger which was decontaminated between each sample location.</p> <p>All non-dedicated sampling equipment was decontaminated between sampling locations where designated disposable materials are not used. Decontamination procedures were as follows:</p> <ul style="list-style-type: none"> ■ all loose soil removed with a stiff brush; ■ washed in potable (tap) water and brush scrubbing using tap water and a non-phosphate detergent (Decon 90®); ■ rinsed with potable water; and ■ air dried. <p>Field QAQC measures (including the use of new disposable nitrile gloves between samples, and decontamination of sampling tools) were considered appropriate to minimise cross-contamination between samples.</p> <p>Of the three rinsate blank samples were collected, none provided readings above the EQL (<i>Table E5</i>), indicating decontamination measures appropriately mitigated cross contamination.</p>
All relevant media assessed	<p>Soil was collected from near surface materials and submitted for laboratory analysis. This was considered appropriate for the preliminary nature of the investigation.</p>

QA/QC Criterion	Comments
Appropriateness of sampling strategy	<p>The primary objective of the PSI was to establish soil conditions at the site and provide an initial assessment of whether the current contamination status of near surface soils presents a risk to human health and/or the environment focusing on the near surface disturbance of soils and ballast in the during the proposed recommissioning works of the siding. The spatial coverage achieved was considered to be suitable in achieving the project objectives. In addition to comprehensive spatial coverage, sample locations were distributed across the area of investigation to target historical potential sources of impact to ensure coverage of the area's most likely to be contaminated.</p> <p>It is noted that samples T3-W1 and T3-W2 were collected within marginally outside the CRN boundary in the portion of the rail corridor managed by Sydney Trains. This does not affect the outcomes of the PSI.</p>
Sample collection, handling and transportation procedures.	<p>Samples were collected, handled and transported in line with ERM SOP's. Soil samples were placed in laboratory supplied sample bags, stored in a cool box, and forwarded to the NATA accredited laboratory under COC conditions. The methods used to collect the samples, the types of sample containers, preservation techniques and custody protocols were documented appropriately.</p>
Field QA/QC plan	<p>The sampling team was suitably qualified and experienced to conduct the required works.</p> <p>Field reports describing the media sampled, any indication of potential contamination, duplicate samples and sampling locations were completed.</p>

Table E2 presents the degree of QA/QC pertinent to the laboratory program.

Table E2 Laboratory QA/QC Assessment	
QA/QC Criterion	Comments
Appropriate methodologies used for sample analyses	<p>The laboratory used for the investigation works were NATA accredited</p> <p>All laboratory reports were NATA stamped and signed by a NATA signatory. All methodologies were considered appropriate for the identified contaminants of concern in the matrix.</p>
Appropriate Limit of Reporting (LOR)	<p>The laboratory LOR for each analyte is presented in the laboratory reports and summary tables. Soil samples results were reported with LORs below the relevant site assessment criteria.</p>
Laboratory QA/QC plan	<p>Copies of signed chain of custody forms were returned by the laboratory. The primary laboratory and secondary laboratory were both NATA accredited. All laboratory certificates are provided in <i>Appendix G</i>. It is noted that the analytical methods completed were NATA approved as documented on the laboratory reports.</p> <p>Samples were received and analysed within specified laboratory holding times. The types of QA/QC samples analysed by the laboratory for the documented samples were considered sufficient to assess the precision and accuracy of the laboratory methods used. The statistical data presented in the laboratory QA/QC report was considered adequate in demonstrating the precision and accuracy of the methods used to analyse field samples. Any QA/QC outliers are reported in laboratory documentation included in <i>Appendix G</i> and were considered appropriate by the laboratory.</p>

Table E3 below summarises the QA/QC results in relation to the data quality indicators of precision, accuracy, representativeness, comparability and completeness for the investigation sampling program.

Table E3 Overall Sampling and Analysis Methodology Assessment	
Field Considerations	Laboratory Considerations
Precision Requirements	
The soil sampling was conducted following ERM SOPs and any variations from these procedures were documented.	Analysis of the following were reported: <ul style="list-style-type: none"> ■ Laboratory duplicates; and ■ Field intra and inter-laboratory duplicates; and ■ Rinsate blanks.
Precision Comments	
No significant variations from ERM SOPs were noted. As reported in Table E4 Field inter and intra-laboratory duplicates were generally within the acceptance limits, with few exceptions.	
Accuracy Requirements	
The soil sampling was conducted following ERM SOPs and any variations from these procedures were documented.	Analysis of the following were reported where applicable: <ul style="list-style-type: none"> ■ Laboratory duplicates; ■ Field intra and inter-laboratory duplicates; ■ method blanks; ■ Laboratory control samples.
Accuracy Comments	
No significant variations from ERM SOPs were noted. Laboratory QA/QC samples were generally reported within the acceptance limits specified in the laboratory reports with the exception of those noted above.	
Representativeness Requirements	
Appropriate media were identified and sampled according to ERM SOPs and laboratory standards.	All primary samples were analysed according to the proposed Sampling and Analysis Plan
Representativeness Comments	
The number and type of samples collected as part of investigation works was considered to be representative of the areas of concern. The number of sample locations was in accordance with the Sampling and Analysis Plan with the exception of AOI-4 which was lost by the laboratory. Given the investigation density achieved over the site ERM considers that sufficient data is available to establish a suitable assessment of near surface soil conditions at the site.	
Comparability Requirements	
<p>The same SOPs were used during each sampling event.</p> <p>All sampling was conducted by an appropriately qualified and experienced sampler.</p> <p>Impacts of climatic conditions on sample integrity were minimised by storing samples in a chilled cooler.</p> <p>The types of samples collected were consistent.</p>	<p>Analytical methods suitable for the target media were used.</p> <p>The laboratory LORs used to report analyte concentrations were generally less than the adopted investigation criteria for significant contaminants of concern.</p> <p>The same units were used to report analyte concentrations where applicable.</p>

Field Considerations	Laboratory Considerations
	Results of laboratory analysis comparable with field screening results where applicable.
Comparability Comments	
No significant outliers from the requirements were noted.	
Completeness Requirements	
All relevant locations were sampled, with the exception of locations which were abandoned due to insufficient space for sampling. The sampling program was conducted following ERM SOPs and any variations from these procedures were documented as appropriate. All sampling was conducted by an appropriately qualified and experienced sampler. Documentation of field works was provided.	All critical samples were analysed according to the proposed Sampling and Analysis Plan in ERM proposal P0603593 with the exception of AOI-4 which was lost by the laboratory. Appropriate analysis methods and laboratory LORs were used. Sample documentation was provided. Sample holding times were complied with.
Completeness Comments	
The specified requirements for completeness of the dataset were met. The quality of the dataset and overall outcomes of the investigation remain unaffected by the noted RPD and laboratory QA/QC outliers and is considered suitable for the purposes of this investigation.	

		Lab Report Number Field ID Sampled Date/Time		ES2128631 T13-W1 3/08/2021 15:00	ES2128631 D01_210803 3/08/2021 15:00	RPD	ES2128631 T10-W1 3/08/2021 15:00	ES2128631 D02_210803 3/08/2021 15:00	RPD	ES2128631 SS-B5 5/08/2021 15:00	ES2128631 D01_210805 5/08/2021 15:00	RPD	ES2128631 SS-B1 5/08/2021 15:00	ES2128631 D02_210805 5/08/2021 15:00	RPD	ES2128631 T2-E2 5/08/2021 15:00	ES2128631 D03_210805 5/08/2021 15:00	RPD	ES2128631 AOI-5 5/08/2021 15:00	ES2128631 D04_210805 5/08/2021 15:00	RPD
Chem_Group	ChemName	Units	EQL																		
	Moisture Content	%	1	10.6	14.9	34	11.8	13.7	15	36.0	23.0	44	24.0	26.3	9	35.2	23.6	39	18.4	21.9	17
Metals	Arsenic	mg/kg	5 (Primary); 2 (Interlab)	188.0	167.0	12	156.0	170.0	9	<5.0	<5.0	0	9.0	10.0	11	14.0	51.0	114	63.0	83.0	27
	Barium	mg/kg	10	30.0	20.0	40	60.0	40.0	40	40.0	40.0	0	40.0	40.0	0	70.0	50.0	33	100.0	130.0	26
	Beryllium	mg/kg	1 (Primary); 2 (Interlab)	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0
	Boron	mg/kg	50 (Primary); 10 (Interlab)	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
	Cadmium	mg/kg	1 (Primary); 0.4 (Interlab)	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0
	Chromium (III+VI)	mg/kg	2 (Primary); 5 (Interlab)	30.0	22.0	31	9.0	8.0	12	19.0	19.0	0	10.0	16.0	46	14.0	16.0	13	22.0	25.0	13
	Cobalt	mg/kg	2 (Primary); 5 (Interlab)	3.0	2.0	40	<2.0	<2.0	0	5.0	5.0	0	3.0	3.0	0	5.0	3.0	50	3.0	<2.0	40
	Copper	mg/kg	5	204.0	179.0	13	217.0	166.0	27	9.0	10.0	11	38.0	45.0	17	21.0	72.0	110	404.0	342.0	17
	Lead	mg/kg	5	1430.0	1300.0	10	3770.0	2720.0	32	31.0	33.0	6	378.0	406.0	7	87.0	406.0	130	4710.0	4360.0	8
	Manganese	mg/kg	5	133.0	137.0	3	101.0	76.0	28	556.0	550.0	1	279.0	313.0	11	247.0	229.0	8	144.0	114.0	23
	Mercury	mg/kg	0.1	0.2	0.2	0	0.6	0.8	29	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	0.9	1.0	11
	Nickel	mg/kg	2 (Primary); 5 (Interlab)	6.0	4.0	40	5.0	3.0	50	3.0	4.0	29	2.0	3.0	40	4.0	7.0	55	6.0	7.0	15
	Selenium	mg/kg	5 (Primary); 2 (Interlab)	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0
	Vanadium	mg/kg	5 (Primary); 10 (Interlab)	58.0	29.0	67	21.0	13.0	47	28.0	27.0	4	18.0	23.0	24	20.0	20.0	0	32.0	27.0	17
	Zinc	mg/kg	5	156.0	152.0	3	226.0	163.0	21	109.0	89.0	20	254.0	275.0	8	70.0	357.0	134	1220.0	1330.0	9
		Lab Report Number Field ID Sampled Date/Time		ES2128631 T13-W1 3/08/2021 15:00	815855 T01_210803 3/08/2021 15:00	RPD	ES2128631 T10-W1 3/08/2021 15:00	815855 T02_210803 3/08/2021 15:00	RPD	ES2128631 SS-B5 5/08/2021 15:00	815855 T01_210805 5/08/2021 15:00	RPD	ES2128631 SS-B1 5/08/2021 15:00	815855 T02_210805 5/08/2021 15:00	RPD	ES2128631 T2-E1 5/08/2021 15:00	815855 T03_210805 5/08/2021 15:00	RPD	ES2128631 AOI-5 5/08/2021 15:00	815855 T04_210805 5/08/2021 15:00	RPD
Chem_Group	ChemName	Units	EQL																		
	Moisture Content	%	1	10.6			11.8			36.0			24.0						18.4		
Metals	Arsenic	mg/kg	5 (Primary); 2 (Interlab)	188.0	110.0	52	156.0	190.0	20	<5.0	2.0	0	9.0	41.0	128	38.0	7.6	133	63.0	81.0	25
	Barium	mg/kg	10	30.0	13.0	79	60.0	53.0	12	40.0	35.0	13	40.0	29.0	32	30.0	34.0	13	100.0	110.0	10
	Beryllium	mg/kg	1 (Primary); 2 (Interlab)	<1.0	<2.0	0	<1.0	<2.0	0	<1.0	<2.0	0	<1.0	<2.0	0	<1.0	<2.0	0	<1.0	<2.0	0
	Boron	mg/kg	50 (Primary); 10 (Interlab)	<50.0	<10.0	0	<50.0	<10.0	0	<50.0	<10.0	0	<50.0	<10.0	0	<50.0	<10.0	0	<50.0	<10.0	0
	Cadmium	mg/kg	1 (Primary); 0.4 (Interlab)	<1.0	<0.4	0	<1.0	<0.4	0	<1.0	<0.4	0	<1.0	0.9	0	<1.0	0.6	0	2.0	2.6	26
	Chromium (III+VI)	mg/kg	2 (Primary); 5 (Interlab)	30.0	12.0	86	9.0	12.0	29	19.0	15.0	24	10.0	17.0	52	14.0	11.0	24	22.0	26.0	17
	Cobalt	mg/kg	2 (Primary); 5 (Interlab)	3.0	<5.0	0	<2.0	<5.0	0	5.0	<5.0	0	3.0	7.8	89	2.0	<5.0	0	3.0	<5.0	0
	Copper	mg/kg	5	204.0	120.0	52	217.0	200.0	8	9.0	7.3	21	38.0	53.0	33	49.0	32.0	42	404.0	310.0	26
	Lead	mg/kg	5	1430.0	920.0	43	3770.0	3100.0	20	31.0	23.0	30	378.0	230.0	49	231.0	290.0	23	4710.0	3900.0	19
	Manganese	mg/kg	5	133.0	64.0	70	101.0	100.0	1	556.0	370.0	40	279.0	240.0	15	145.0	230.0	45	144.0	200.0	33
	Mercury	mg/kg	0.1	0.2	0.1	67	0.6	0.7	15	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	0.9	0.7	25
	Nickel	mg/kg	2 (Primary); 5 (Interlab)	6.0	<5.0	18	5.0	6.8	31	3.0	<5.0	0	2.0	7.7	118	5.0	<5.0	0	6.0	7.8	26
	Selenium	mg/kg	5 (Primary); 2 (Interlab)	<5.0	<2.0	0	<5.0	<2.0	0	<5.0	<2.0	0	<5.0	<2.0	0	<5.0	<2.0	0	<5.0	<2.0	0
	Vanadium	mg/kg	5 (Primary); 10 (Interlab)	58.0	17.0	109	21.0	23.0	9	28.0	20.0	33	18.0	23.0	24	17.0	18.0	6	32.0	56.0	55
	Zinc	mg/kg	5	156.0	87.0	57	226.0	220.0	3	109.0	96.0	13	254.0	220.0	14	268.0	180.0	39	1220.0	1000.0	20

*RPDs have only been considered where a concentration is greater than 1 times the EQL

**High RPDs are in bold (Acceptable RPDs for each EQL: multilevel range are: 80 (1-10 x EQL); 50 (10-30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

		Lab Report Number Field ID Sampled Date/Time		ES2128631 T13-W1 3/08/2021 15:00	ES2128631 D01_210803 3/08/2021 15:00	RPD	ES2128631 T10-W1 3/08/2021 15:00	ES2128631 D02_210803 3/08/2021 15:00	RPD	ES2128631 SS-B5 5/08/2021 15:00	ES2128631 D01_210805 5/08/2021 15:00	RPD	ES2128631 SS-B1 5/08/2021 15:00	ES2128631 D02_210805 5/08/2021 15:00	RPD	ES2128631 T2-E2 5/08/2021 15:00	ES2128631 D03_210805 5/08/2021 15:00	RPD	ES2128631 AOI-5 5/08/2021 15:00	ES2128631 D04_210805 5/08/2021 15:00	RPD
Chem. Group	ChemName	Units	EQL																		
	Moisture Content	%	1	10.6	14.9	34	11.8	13.7	15	36.0	23.0	44	24.0	26.3	9	35.2	23.6	39	18.4	21.9	17
Metals	Arsenic	mg/kg	5 (Primary); 2 (Interlab)	188.0	167.0	12	156.0	170.0	9	<5.0	<5.0	0	9.0	10.0	11	14.0	51.0	114	63.0	83.0	27
	Barium	mg/kg	10	30.0	20.0	40	60.0	40.0	40	40.0	40.0	0	40.0	40.0	0	70.0	50.0	33	100.0	130.0	26
	Beryllium	mg/kg	1 (Primary); 2 (Interlab)	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0
	Boron	mg/kg	50 (Primary); 10 (Interlab)	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
	Cadmium	mg/kg	1 (Primary); 0.4 (Interlab)	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0
	Chromium (III+VI)	mg/kg	2 (Primary); 5 (Interlab)	30.0	22.0	31	9.0	8.0	12	19.0	19.0	0	10.0	16.0	46	14.0	16.0	13	22.0	25.0	13
	Cobalt	mg/kg	2 (Primary); 5 (Interlab)	3.0	2.0	40	<2.0	<2.0	0	5.0	5.0	0	3.0	3.0	0	5.0	3.0	50	3.0	<2.0	40
	Copper	mg/kg	5	204.0	179.0	13	217.0	166.0	27	9.0	10.0	11	38.0	45.0	17	21.0	72.0	110	404.0	342.0	17
	Lead	mg/kg	5	1430.0	1300.0	10	3770.0	2720.0	32	31.0	33.0	6	378.0	406.0	7	87.0	406.0	130	4710.0	4360.0	8
	Manganese	mg/kg	5	133.0	137.0	3	101.0	76.0	28	556.0	550.0	1	279.0	313.0	11	247.0	229.0	8	144.0	114.0	23
	Mercury	mg/kg	0.1	0.2	0.2	0	0.6	0.8	29	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	0.9	1.0	11
	Nickel	mg/kg	2 (Primary); 5 (Interlab)	6.0	4.0	40	5.0	3.0	50	3.0	4.0	29	2.0	3.0	40	4.0	7.0	55	6.0	7.0	15
	Selenium	mg/kg	5 (Primary); 2 (Interlab)	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0
	Vanadium	mg/kg	5 (Primary); 10 (Interlab)	58.0	29.0	67	21.0	13.0	47	28.0	27.0	4	18.0	23.0	24	20.0	20.0	0	32.0	27.0	17
	Zinc	mg/kg	5	156.0	152.0	3	226.0	163.0	21	109.0	89.0	20	254.0	275.0	8	70.0	357.0	134	1220.0	1330.0	9
		Lab Report Number Field ID Sampled Date/Time		ES2128631 T13-W1 3/08/2021 15:00	815855 T01_210803 3/08/2021 15:00	RPD	ES2128631 T10-W1 3/08/2021 15:00	815855 T02_210803 3/08/2021 15:00	RPD	ES2128631 SS-B5 5/08/2021 15:00	815855 T01_210805 5/08/2021 15:00	RPD	ES2128631 SS-B1 5/08/2021 15:00	815855 T02_210805 5/08/2021 15:00	RPD	ES2128631 T2-E1 5/08/2021 15:00	815855 T03_210805 5/08/2021 15:00	RPD	ES2128631 AOI-5 5/08/2021 15:00	815855 T04_210805 5/08/2021 15:00	RPD
Chem. Group	ChemName	Units	EQL																		
	Moisture Content	%	1	10.6			11.8			36.0			24.0						18.4		
Metals	Arsenic	mg/kg	5 (Primary); 2 (Interlab)	188.0	110.0	52	156.0	190.0	20	<5.0	2.0	0	9.0	41.0	128	38.0	7.6	133	63.0	81.0	25
	Barium	mg/kg	10	30.0	13.0	79	60.0	53.0	12	40.0	35.0	13	40.0	29.0	32	30.0	34.0	13	100.0	110.0	10
	Beryllium	mg/kg	1 (Primary); 2 (Interlab)	<1.0	<2.0	0	<1.0	<2.0	0	<1.0	<2.0	0	<1.0	<2.0	0	<1.0	<2.0	0	<1.0	<2.0	0
	Boron	mg/kg	50 (Primary); 10 (Interlab)	<50.0	<10.0	0	<50.0	<10.0	0	<50.0	<10.0	0	<50.0	<10.0	0	<50.0	<10.0	0	<50.0	<10.0	0
	Cadmium	mg/kg	1 (Primary); 0.4 (Interlab)	<1.0	<0.4	0	<1.0	<0.4	0	<1.0	<0.4	0	<1.0	0.9	0	<1.0	0.6	0	2.0	2.6	26
	Chromium (III+VI)	mg/kg	2 (Primary); 5 (Interlab)	30.0	12.0	86	9.0	12.0	29	19.0	15.0	24	10.0	17.0	52	14.0	11.0	24	22.0	26.0	17
	Cobalt	mg/kg	2 (Primary); 5 (Interlab)	3.0	<5.0	0	<2.0	<5.0	0	5.0	<5.0	0	3.0	7.8	89	2.0	<5.0	0	3.0	<5.0	0
	Copper	mg/kg	5	204.0	120.0	52	217.0	200.0	8	9.0	7.3	21	38.0	53.0	33	49.0	32.0	42	404.0	310.0	26
	Lead	mg/kg	5	1430.0	920.0	43	3770.0	3100.0	20	31.0	23.0	30	378.0	230.0	49	231.0	290.0	23	4710.0	3900.0	19
	Manganese	mg/kg	5	133.0	64.0	70	101.0	100.0	1	556.0	370.0	40	279.0	240.0	15	145.0	230.0	45	144.0	200.0	33
	Mercury	mg/kg	0.1	0.2	0.1	67	0.6	0.7	15	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	0.9	0.7	25
	Nickel	mg/kg	2 (Primary); 5 (Interlab)	6.0	<5.0	18	5.0	6.8	31	3.0	<5.0	0	2.0	7.7	118	5.0	<5.0	0	6.0	7.8	26
	Selenium	mg/kg	5 (Primary); 2 (Interlab)	<5.0	<2.0	0	<5.0	<2.0	0	<5.0	<2.0	0	<5.0	<2.0	0	<5.0	<2.0	0	<5.0	<2.0	0
	Vanadium	mg/kg	5 (Primary); 10 (Interlab)	58.0	17.0	109	21.0	23.0	9	28.0	20.0	33	18.0	23.0	24	17.0	18.0	6	32.0	56.0	55
	Zinc	mg/kg	5	156.0	87.0	57	226.0	220.0	3	109.0	96.0	13	254.0	220.0	14	268.0	180.0	39	1220.0	1000.0	20

*RPDs have only been considered where a concentration is greater than 1 times the EQL

**High RPDs are in bold (Acceptable RPDs for each EQL multilevel range are: 80 (1-10 x EQL); 50 (10-30 x EQL); 30 (> 30 x EQL))

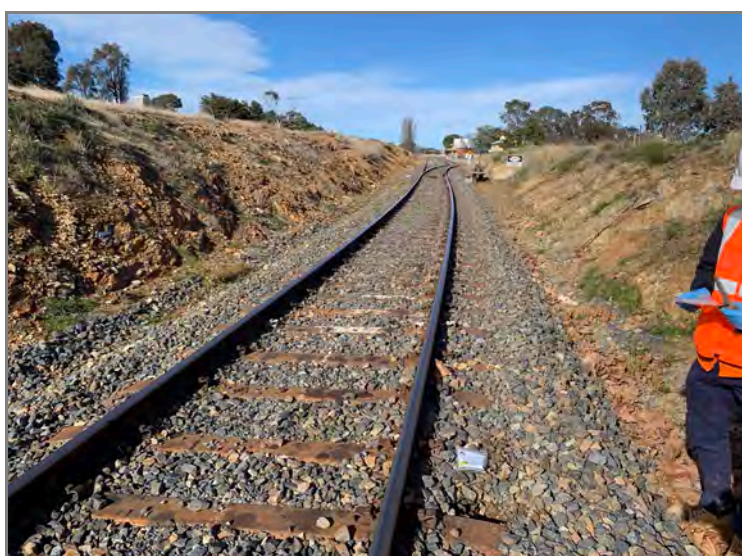
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

APPENDIX F PHOTOGRAPHIC LOG



Photograph 1

Turallo Creek Railway Bridge, facing east, at the northern boundary of the site, with the creek flowing westward under the railway.



Photograph 2

Railway cutting, north of Bungendore Station facing south.



Photograph 3

Bungendore Station and the western side of the corridor, facing south.

Photographs

0608750 – Bungendore Rail Corridor – Shallow Soil Investigation



Photograph 4

Bungendore station and the eastern side of the corridor, facing south (Sampling location AOI-5 in foreground).



Photograph 5

Stormwater inflows 100m south of the Kings Hwy railway crossing on the eastern side of the corridor.



Photograph 6

The 'Woolshed' heritage building from the eastern side of the corridor, facing south.

Photographs

0608750 – Bungendore Rail Corridor – PSI



Photograph 7

Area A on the western side of the corridor from the Woolshed platform, facing north.



Photograph 8

A disused siding, a potential area of lead contamination, intersected by an access road on the western side of the corridor south of Area A.



Photograph 9

SS-A5 – The highest sampled lead exceedance (53,900 mg/kg). Gravelly silt at a bare patch near the Woolshed.

Photographs

0608750 – Bungendore Rail Corridor – Shallow Soil Investigation



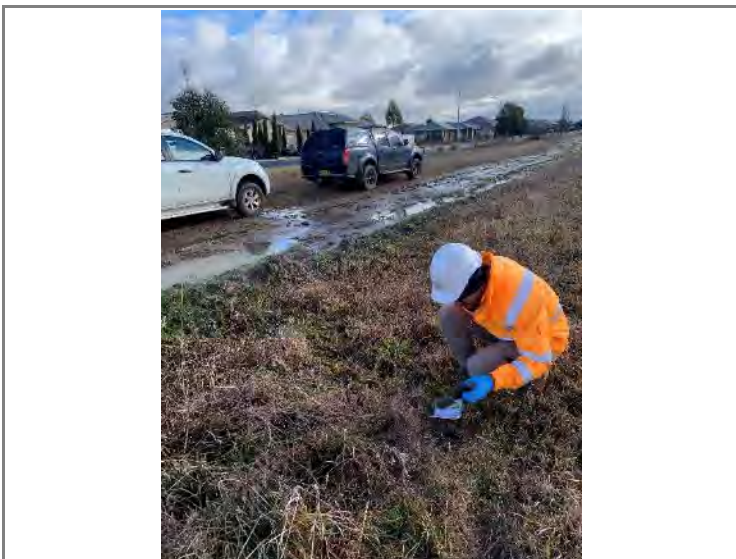
Photograph 10

The main rail line, raised on ballast, north of Area C facing north. On the west are residences and a rail access road. Vacant land lies to the east.



Photograph 11

The railway cutting adjacent to Area C, with water pooling on a graded area following rainfall.



Photograph 12

T2-W2 – Sampling just north of Hoskintown Road railway crossing, facing north-west, near southern boundary of the site.

Photographs

0608750 – Bungendore Rail Corridor – PSI



Photograph 13

T1-E2 – A highly vegetated sample location underlain by damp silty fill.



Photograph 14

T1-E2 – Steep incline towards the rail line.



Photograph 15

T3-W1 – brown/yellow sandy silt under rail ballast. This was commonly observed under ballast along the corridor.

Photographs

0608750 – Bungendore Rail Corridor – PSI



Photograph 16

T3-E2 – Sampling atop the railway cutting. Sandy gravelly fill similar to sub-ballast fill.



Photograph 17

T3-E3 – An un-vegetated sampling location with gravelly rock armour.



Photograph 18

T4-E2 – Facing east, an un-vegetated location, potentially indicative of contamination, above a drainage channel flowing west under the rail line.



Photograph 19

AOI-9 – Water pooling about the AOI-9 sampling location.



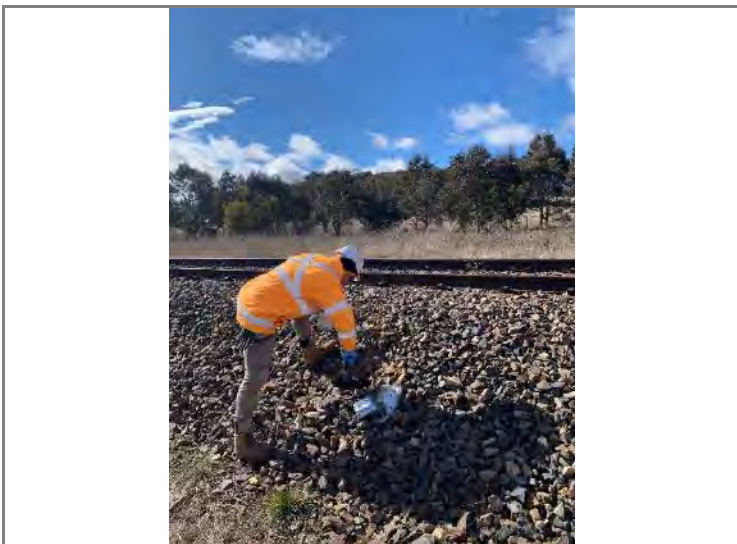
Photograph 20

T5-E2 – 47,000 mg/kg lead. Highly variable soil layers, including a green/grey layer at 0.05m bgl.



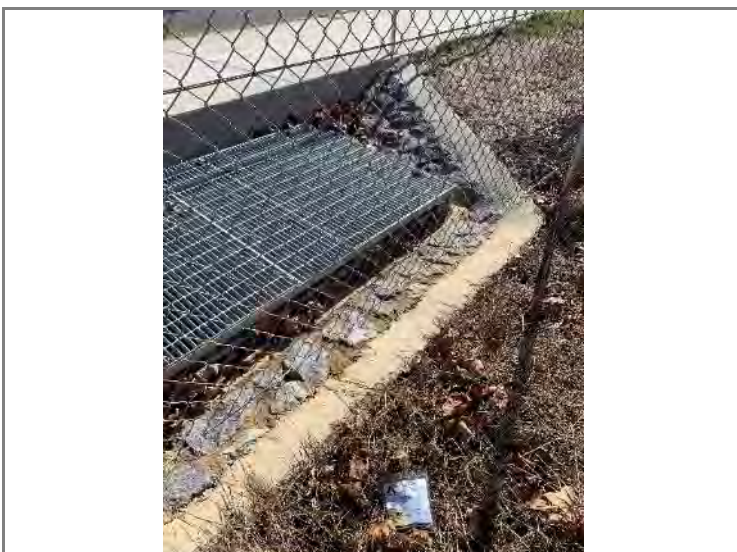
Photograph 21

AOI-8 – Facing west, an area west of the rail line receiving drainage.



Photograph 22

T8-W1 – Sampling partially up the ballast, below the main rail line, facing east.



Photograph 23

AOI-9 – Engineered drainage leading offsite.



Photograph 24

AO1 -1 – Facing north, switches adjacent to targeted sampling point in cutting that may have caused contaminants to rattle out of rail cars.

Photographs

0608750 – Bungendore Rail Corridor – PSI



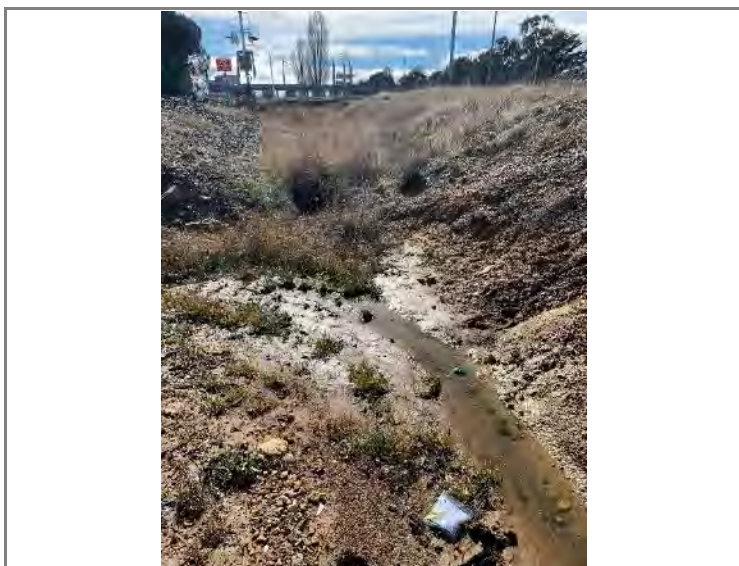
Photograph 25

AOI – 1 – Weathered, saturated orange silts generated from cutting wall under ballast. Taken from the eastern side of a railway switch.



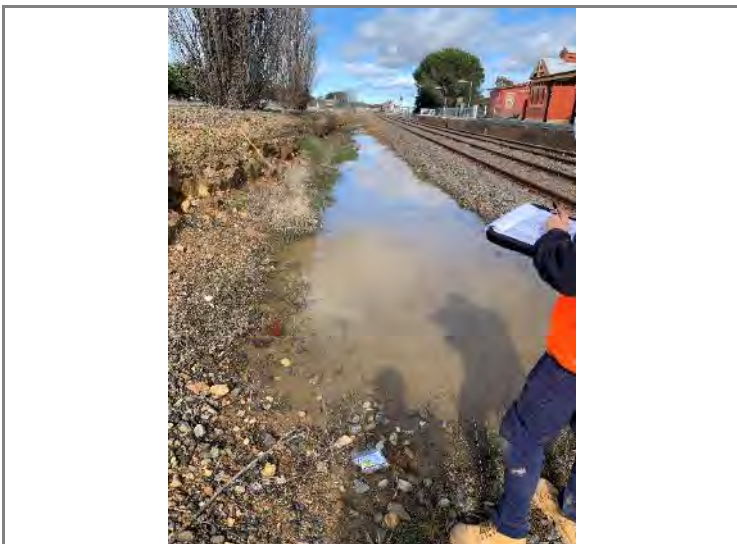
Photograph 26

AOI – 2 – sampling location of drainage channels near to Turallo Creek.



Photograph 27

AOI-3 – South of the Kings Hwy crossing in a deep drainage trench.



Photograph 28

AOI-5 – Pooling water adjacent to the rail line and directly across from the station.



Photograph 29

AOI-6 – the third highest lead exceedance (39,000 mg/kg) Sandy, dry soil below the woolshed platform adjacent to the unused rail.

Photographs

0608750 – Bungendore Rail Corridor – PSI

APPENDIX G LABORATORY DOCUMENTATION



CHAIN OF CUSTODY

AL5 Laboratory:
please tips →

[illegible]

SYDNEY 177-220 Woodpark Road Smiths Hill NSW 2154
Ph: 02 8764 8555 F: samples@sydneybiological.com
TOWNSVILLE 16-15 Denison Road North QLD 4810
Ph: 07 4793 6600 F: townsville@sydneybiological.com
WOLLONGONG 16-15 Kerry Street Wollongong NSW 2500
Ph: 02 4225 5315 F: wollongong@sydneybiological.com

CLIENT: ERM		TURNAROUND REQUIREMENTS :		Standard TAT (7 days)	
OFFICE: Newcastle		[Standard TAT may be longer for some tests e.g. Ultra Trace Organics]			
PROJECT: 0608790 - Bungendore Lead Investigation		ALS QUOTE NO.: National Price Discount		OCC SEQUENCE NUMBER (Circle)	
ORDER NUMBER:				OCC: 0 2 3 4 5 6 7	
PROJECT MANAGER: Matthew Crow		CONTACT PH: 0402652888		OF: 1 2 3 4 5 6 7	
SAMPLER: Michael Mercer		SAMPLER MOBILE: 0439623103		RECEIVED BY:	
COC emailed to ALS? YES		EDD FORMAT (or default):		DATE/TIME:	
Email Reports to (will default to PM if no other addresses are listed): PM		Michael Mercer		DATE/TIME:	
Email Invoice to (will default to PM if no other addresses are listed): PM		DATE/TIME:		DATE/TIME:	
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		320/821		DATE/TIME:	

ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

Additional information

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	HOLD	WC3 (15 Minutes)	Comments on body contaminant levels, durations, or samples requiring specific GC analysis etc.
1	SS-C1	3/08/2021	soil				x	
2	SS-C2	3/08/2021	soil				x	
3	SS-C3	3/08/2021	soil				x	
4	SS-C4	3/08/2021	soil				x	
5	SS-C5	3/08/2021	soil				x	
6	SS-C6	3/08/2021	soil				x	
7	SS-C7	3/08/2021	soil				x	
8	SS-C8	3/08/2021	soil				x	
9	T9-W1	3/08/2021	soil				x	
10	T9-W2	3/08/2021	soil				x	
11	T9-W3	3/08/2021	soil				x	
12	T9-E1	3/08/2021	soil				x	
13	T9-E2	3/08/2021	soil				x	
14	T9-E3	3/08/2021	soil				x	
15	T10-W1	3/08/2021	soil				x	
16	T10-W2	3/08/2021	soil				x	
17	T10-W3	3/08/2021	soil				x	
18	T10-E1	3/08/2021	soil				x	
19	T10-E2	3/08/2021	soil				x	
20	T10-E3	3/08/2021	soil				x	
21	T11-W1	3/08/2021	soil				x	
22	T11-W2	3/08/2021	soil				x	
23	T11-W3	3/08/2021	soil				x	
24	T11-E1	3/08/2021	soil				x	
25	T11-E2	3/08/2021	soil				x	
26	T11-E3	3/08/2021	soil				x	
27	T12-W1	3/08/2021	soil				x	
28	T12-W2	3/08/2021	soil				x	
29	T12-W3	3/08/2021	soil				x	
30	T12-E1	3/08/2021	soil				x	
31	T12-E2	3/08/2021	soil				x	
32	T12-E3	3/08/2021	soil				x	

RECEIVED

LAB OF ORIGIN:
NEWCASTLE

Environmental Division
Sydney
Work Order Reference
ES2128631

Telephone : 61-9-8184 0555

Environmental Division
Sydney
Work Order Reference
ES2128631



telestream : 61-2-0/BA 0545

G-L, Snd, 10/8, 4-40RM
5-5PC

#1815855

ES21286 31 (2 of 3)

[illegible]

(3 of 3)

LAB OF ORIGIN:
NEWCASTLE

Australia

Melbourne 6 Monterey Road Dandenong South VIC 3175 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254	Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217	Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794	Perth 46-48 Banksia Road Welshpool WA 6106 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736	Newcastle 4/52 Industrial Drive Mayfield East NSW 2304 PO Box 60 Wickham 2293 Phone : +61 2 4968 8448 NATA # 1261 Site # 25079	New Zealand	Auckland 35 O'Rorke Road Penrose, Auckland 1061 Phone : +64 9 526 45 51 IANZ # 1327	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 Phone : 0800 856 450 IANZ # 1290
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Sample Receipt Advice

Company name: ERM Sydney
Contact name: Matthew Crow
Project name: BUNGENDORE LEAD INVESTIGATION
Project ID: 0608750
Turnaround time: 5 Day
Date/Time received: Aug 10, 2021 4:40 PM
Eurofins reference: 815855

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ 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.
- ✗ Split sample sent to requested external lab.
- ✗ 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:

John Nguyen on phone : or by email: JohnNguyen@eurofins.com

Results will be delivered electronically via email to Matthew Crow - matthew.crow@erm.com.

Note: A copy of these results will also be delivered to the general ERM Sydney email address.

Australia

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

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

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

Perth
46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

New Zealand

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

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

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: ERM Sydney
Address: Level 15, 309 Kent St
Sydney
NSW 2000

Project Name: BUNGENDORE LEAD INVESTIGATION
Project ID: 0608750

Order No.:
Report #: 815855
Phone: 02 8584 8888
Fax: 02 8584 8800

Received: Aug 10, 2021 4:40 PM
Due: Aug 17, 2021
Priority: 5 Day
Contact Name: Matthew Crow

Eurofins Analytical Services Manager : John Nguyen

Sample Detail						Barium	Beryllium	Boron	Cobalt	Manganese	Selenium	Vanadium	Metals M8
Melbourne Laboratory - NATA Site # 1254													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
Mayfield Laboratory - NATA Site # 25079													
External Laboratory													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	T01_210803	Aug 03, 2021		Soil	S21-Au16986	X	X	X	X	X	X	X	X
2	T02_210803	Aug 03, 2021		Soil	S21-Au16987	X	X	X	X	X	X	X	X
3	T01_210805	Aug 03, 2021		Soil	S21-Au16988	X	X	X	X	X	X	X	X
4	T02_210805	Aug 03, 2021		Soil	S21-Au16989	X	X	X	X	X	X	X	X
5	T03_210805	Aug 03, 2021		Soil	S21-Au16990	X	X	X	X	X	X	X	X
6	T04_210805	Aug 03, 2021		Soil	S21-Au16991	X	X	X	X	X	X	X	X
Test Counts						6	6	6	6	6	6	6	6

ERM Sydney
Level 15, 309 Kent St
Sydney
NSW 2000



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: **Matthew Crow**

Report **815855-S**
Project name **BUNGENDORE LEAD INVESTIGATION**
Project ID **0608750**
Received Date **Aug 09, 2021**

Client Sample ID			T01_210803	T02_210803	T01_210805	T02_210805
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Au16986	S21-Au16987	S21-Au16988	S21-Au16989
Date Sampled			Aug 03, 2021	Aug 03, 2021	Aug 03, 2021	Aug 03, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	110	190	2.0	41
Barium	10	mg/kg	13	53	35	29
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2
Boron	10	mg/kg	< 10	< 10	< 10	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	0.9
Chromium	5	mg/kg	12	12	15	17
Cobalt	5	mg/kg	< 5	< 5	< 5	7.8
Copper	5	mg/kg	120	200	7.3	53
Lead	5	mg/kg	920	3100	23	230
Manganese	5	mg/kg	64	100	370	240
Mercury	0.1	mg/kg	0.1	0.7	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	6.8	< 5	7.7
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Vanadium	10	mg/kg	17	23	20	23
Zinc	5	mg/kg	87	220	96	220

Client Sample ID			T03_210805	T04_210805
Sample Matrix			Soil	Soil
Eurofins Sample No.			S21-Au16990	S21-Au16991
Date Sampled			Aug 03, 2021	Aug 03, 2021
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	2	mg/kg	7.6	81
Barium	10	mg/kg	34	110
Beryllium	2	mg/kg	< 2	< 2
Boron	10	mg/kg	< 10	< 10
Cadmium	0.4	mg/kg	0.6	2.6
Chromium	5	mg/kg	11	26
Cobalt	5	mg/kg	< 5	< 5
Copper	5	mg/kg	32	310
Lead	5	mg/kg	290	3900
Manganese	5	mg/kg	230	200
Mercury	0.1	mg/kg	< 0.1	0.7
Nickel	5	mg/kg	< 5	7.8

Client Sample ID			T03_210805	T04_210805
Sample Matrix			Soil	Soil
Eurofins Sample No.			S21-Au16990	S21-Au16991
Date Sampled			Aug 03, 2021	Aug 03, 2021
Test/Reference	LOR	Unit		
Heavy Metals				
Selenium	2	mg/kg	< 2	< 2
Vanadium	10	mg/kg	18	56
Zinc	5	mg/kg	180	1000

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
Metals M8	Sydney	Aug 12, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Heavy Metals	Sydney	Aug 12, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

Australia

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

Sydney
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16 Mars Road
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NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
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NATA # 1261 Site # 20794

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46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

Newcastle
4/52 Industrial Drive
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Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

New Zealand

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

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

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: ERM Sydney
Address: Level 15, 309 Kent St
Sydney
NSW 2000

Order No.:
Report #: 815855
Phone: 02 8584 8888
Fax: 02 8584 8800

Received: Aug 10, 2021 4:40 PM
Due: Aug 17, 2021
Priority: 5 Day
Contact Name: Matthew Crow

Project Name: BUNGENDORE LEAD INVESTIGATION
Project ID: 0608750

Eurofins Analytical Services Manager : John Nguyen

Sample Detail						Barium	Beryllium	Boron	Cobalt	Manganese	Selenium	Vanadium	Metals M8
Melbourne Laboratory - NATA Site # 1254													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
Mayfield Laboratory - NATA Site # 25079													
External Laboratory													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	T01_210803	Aug 03, 2021		Soil	S21-Au16986	X	X	X	X	X	X	X	X
2	T02_210803	Aug 03, 2021		Soil	S21-Au16987	X	X	X	X	X	X	X	X
3	T01_210805	Aug 03, 2021		Soil	S21-Au16988	X	X	X	X	X	X	X	X
4	T02_210805	Aug 03, 2021		Soil	S21-Au16989	X	X	X	X	X	X	X	X
5	T03_210805	Aug 03, 2021		Soil	S21-Au16990	X	X	X	X	X	X	X	X
6	T04_210805	Aug 03, 2021		Soil	S21-Au16991	X	X	X	X	X	X	X	X
Test Counts						6	6	6	6	6	6	6	6

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.

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

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. 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.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. 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								
Heavy Metals								
Arsenic			mg/kg	< 2		2	Pass	
Barium			mg/kg	< 10		10	Pass	
Beryllium			mg/kg	< 2		2	Pass	
Boron			mg/kg	< 10		10	Pass	
Cadmium			mg/kg	< 0.4		0.4	Pass	
Chromium			mg/kg	< 5		5	Pass	
Cobalt			mg/kg	< 5		5	Pass	
Copper			mg/kg	< 5		5	Pass	
Lead			mg/kg	< 5		5	Pass	
Manganese			mg/kg	< 5		5	Pass	
Mercury			mg/kg	< 0.1		0.1	Pass	
Nickel			mg/kg	< 5		5	Pass	
Selenium			mg/kg	< 2		2	Pass	
Vanadium			mg/kg	< 10		10	Pass	
Zinc			mg/kg	< 5		5	Pass	
LCS - % Recovery								
Heavy Metals								
Arsenic			%	111		80-120	Pass	
Barium			%	112		80-120	Pass	
Beryllium			%	103		80-120	Pass	
Boron			%	102		80-120	Pass	
Cadmium			%	109		80-120	Pass	
Chromium			%	106		80-120	Pass	
Cobalt			%	104		80-120	Pass	
Copper			%	104		80-120	Pass	
Lead			%	106		80-120	Pass	
Manganese			%	106		80-120	Pass	
Mercury			%	107		80-120	Pass	
Nickel			%	107		80-120	Pass	
Selenium			%	98		80-120	Pass	
Vanadium			%	108		80-120	Pass	
Zinc			%	101		80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	S21-Au16484	NCP	%	107		75-125	Pass	
Barium	S21-Au16484	NCP	%	102		75-125	Pass	
Beryllium	S21-Au16484	NCP	%	101		75-125	Pass	
Boron	S21-Au16484	NCP	%	97		75-125	Pass	
Cadmium	S21-Au16484	NCP	%	110		75-125	Pass	
Chromium	S21-Au16484	NCP	%	108		75-125	Pass	
Cobalt	S21-Au16484	NCP	%	104		75-125	Pass	
Copper	S21-Au16484	NCP	%	85		75-125	Pass	
Lead	S21-Au16484	NCP	%	110		75-125	Pass	
Manganese	S21-Au16484	NCP	%	103		75-125	Pass	
Mercury	S21-Au16484	NCP	%	114		75-125	Pass	
Nickel	S21-Au16484	NCP	%	104		75-125	Pass	
Selenium	S21-Au16484	NCP	%	98		75-125	Pass	
Vanadium	S21-Au16484	NCP	%	97		75-125	Pass	
Zinc	S21-Au16484	NCP	%	80		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Au16505	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Barium	S21-Au16505	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Beryllium	S21-Au16505	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Boron	S21-Au16505	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Cadmium	S21-Au16505	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Au16505	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Cobalt	S21-Au16505	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S21-Au16505	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S21-Au16505	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Manganese	S21-Au16505	NCP	mg/kg	< 5	7.6	61	30%	Fail	Q15
Mercury	S21-Au16505	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Au16505	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Selenium	S21-Au16505	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Vanadium	S21-Au16505	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Zinc	S21-Au16505	NCP	mg/kg	13	14	13	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
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:

Emma Beesley Analytical Services Manager
 John Nguyen Senior Analyst-Metal (NSW)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CERTIFICATE OF ANALYSIS

Work Order : **ES2128631**
Client : **ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)**
Contact : MR MATTHEW CROW
Address : LEVEL 1 45 WATT STREET
 NEWCASTLE NSW 2300
Telephone : +61 02 4964 2150
Project : 0608750 - Bungendore Lead Investigation
Order number : ----
C-O-C number : ----
Sampler : Michael Mercer
Site : ----
Quote number : EN/114/20
No. of samples received : 129
No. of samples analysed : 128

Page : 1 of 28
Laboratory : Environmental Division Sydney
Contact : Monica Wright
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555
Date Samples Received : 06-Aug-2021 13:20
Date Analysis Commenced : 11-Aug-2021
Issue Date : 17-Aug-2021 18:39



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

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

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

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

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

- EG005: Poor precision was obtained for Mn on sample ES2128631-1. Results have been confirmed by re-extraction and reanalysis.
- EG005: Poor precision was obtained for Arsenic and Zn on sample ES2128631-52. Results have been confirmed by re-extraction and reanalysis.
- EG035T: Positive Hg result has been confirmed by reanalysis
- EG035T: Positive Hg result has been confirmed by reanalysis.



Analytical Results

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

Sample ID

				SS-C1	SS-C2	SS-C3	SS-C4	SS-C5
Sampling date / time				03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-001	ES2128631-002	ES2128631-003	ES2128631-004	ES2128631-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	15.2	24.1	25.3	20.4	23.7
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	17	5	5	6	7
Barium	7440-39-3	10	mg/kg	120	90	70	40	80
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	27	18	20	8	34
Cobalt	7440-48-4	2	mg/kg	13	10	10	4	11
Copper	7440-50-8	5	mg/kg	16	13	13	9	14
Lead	7439-92-1	5	mg/kg	27	12	13	62	15
Manganese	7439-96-5	5	mg/kg	772	469	381	264	628
Nickel	7440-02-0	2	mg/kg	8	7	7	3	9
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	39	31	35	13	38
Zinc	7440-66-6	5	mg/kg	47	19	17	22	21
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS-C6	SS-C7	SS-C8	T9-W1	T9-W2
Sampling date / time					03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		ES2128631-006	ES2128631-007	ES2128631-008	ES2128631-009	ES2128631-010
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		20.1	27.0	21.4	13.4	26.4
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	6	11	24	<5
Barium	7440-39-3	10	mg/kg		50	90	80	110	80
Beryllium	7440-41-7	1	mg/kg		<1	<1	<1	1	<1
Boron	7440-42-8	50	mg/kg		<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		12	25	33	46	17
Cobalt	7440-48-4	2	mg/kg		5	18	17	27	7
Copper	7440-50-8	5	mg/kg		10	14	15	56	14
Lead	7439-92-1	5	mg/kg		7	23	20	369	39
Manganese	7439-96-5	5	mg/kg		255	686	541	828	756
Nickel	7440-02-0	2	mg/kg		5	7	12	13	6
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg		21	32	80	77	30
Zinc	7440-66-6	5	mg/kg		26	27	29	252	76
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				T9-W3	T9-E1	T9-E2	T9-E3	T10-W1
Sampling date / time				03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-011	ES2128631-012	ES2128631-013	ES2128631-014	ES2128631-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	17.6	14.7	34.6	19.1	11.8
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	208	10	6	156
Barium	7440-39-3	10	mg/kg	70	160	110	130	60
Beryllium	7440-41-7	1	mg/kg	<1	1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	24	12	23	31	9
Cobalt	7440-48-4	2	mg/kg	9	3	6	9	<2
Copper	7440-50-8	5	mg/kg	17	246	35	19	217
Lead	7439-92-1	5	mg/kg	17	3630	186	38	3770
Manganese	7439-96-5	5	mg/kg	482	72	692	1190	101
Nickel	7440-02-0	2	mg/kg	8	6	8	9	5
Selenium	7782-49-2	5	mg/kg	<5	6	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	34	27	34	40	21
Zinc	7440-66-6	5	mg/kg	37	216	246	97	226
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	1.9	<0.1	<0.1	0.6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	T10-W2	T10-W3	T10-E1	T10-E2	T10-E3
Sampling date / time					03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		ES2128631-016	ES2128631-017	ES2128631-018	ES2128631-019	ES2128631-020
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		15.3	17.5	15.6	20.6	19.9
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		34	6	25	16	9
Barium	7440-39-3	10	mg/kg		70	80	60	90	100
Beryllium	7440-41-7	1	mg/kg		<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg		<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg		1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		26	28	16	39	18
Cobalt	7440-48-4	2	mg/kg		8	8	3	15	5
Copper	7440-50-8	5	mg/kg		12	21	21	15	12
Lead	7439-92-1	5	mg/kg		21	12	196	37	56
Manganese	7439-96-5	5	mg/kg		562	261	196	777	379
Nickel	7440-02-0	2	mg/kg		7	13	5	9	4
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg		45	47	24	61	28
Zinc	7440-66-6	5	mg/kg		450	28	89	45	135
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

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

Sample ID

				T11-W1	T11-W2	T11-W3	T11-E1	T11-E2
Sampling date / time				03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-021	ES2128631-022	ES2128631-023	ES2128631-024	ES2128631-025
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	32.3	31.1	13.9	34.9	12.9
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	203	178	66	119	215
Barium	7440-39-3	10	mg/kg	80	50	70	70	70
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	12	15	20	24	42
Cobalt	7440-48-4	2	mg/kg	4	5	9	12	5
Copper	7440-50-8	5	mg/kg	555	143	17	190	104
Lead	7439-92-1	5	mg/kg	6010	1040	42	1190	304
Manganese	7439-96-5	5	mg/kg	215	149	495	369	313
Nickel	7440-02-0	2	mg/kg	11	13	7	13	8
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	32	21	35	44	59
Zinc	7440-66-6	5	mg/kg	613	249	70	221	296
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.8	0.1	<0.1	0.2	0.2



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				T11-E3	T12-W1	T12-W2	T12-W3	T12-E1
Sampling date / time				03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-026	ES2128631-027	ES2128631-028	ES2128631-029	ES2128631-030
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	19.3	7.9	17.1	21.9	13.2
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	133	47	5	116
Barium	7440-39-3	10	mg/kg	100	20	110	40	50
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	1
Chromium	7440-47-3	2	mg/kg	28	11	34	15	15
Cobalt	7440-48-4	2	mg/kg	13	3	6	4	17
Copper	7440-50-8	5	mg/kg	20	80	25	15	141
Lead	7439-92-1	5	mg/kg	42	634	50	25	904
Manganese	7439-96-5	5	mg/kg	932	183	428	434	502
Nickel	7440-02-0	2	mg/kg	10	5	8	3	8
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	45	27	59	27	45
Zinc	7440-66-6	5	mg/kg	285	86	55	47	307
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	<0.1	<0.1	0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	T12-E2	T12-E3	T13-W1	T13-W2	T13-W3
Sampling date / time					03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		ES2128631-031	ES2128631-032	ES2128631-033	ES2128631-034	ES2128631-035
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		22.6	18.2	10.6	20.7	22.6
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	9	188	6	<5
Barium	7440-39-3	10	mg/kg		60	70	30	90	40
Beryllium	7440-41-7	1	mg/kg		<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg		<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		17	24	30	27	20
Cobalt	7440-48-4	2	mg/kg		5	5	3	10	7
Copper	7440-50-8	5	mg/kg		12	11	204	14	9
Lead	7439-92-1	5	mg/kg		66	46	1430	28	16
Manganese	7439-96-5	5	mg/kg		652	635	133	780	616
Nickel	7440-02-0	2	mg/kg		5	5	6	8	5
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg		29	41	58	53	35
Zinc	7440-66-6	5	mg/kg		72	52	156	47	34
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	0.2	<0.1	<0.1



Analytical Results

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

Sample ID

				T13-E1	T13-E2	T13-E3	T14-W1	T14-W2
Sampling date / time				03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-036	ES2128631-037	ES2128631-038	ES2128631-039	ES2128631-040
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	21.0	25.5	16.0	20.7	18.7
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	<5	<5	9	8
Barium	7440-39-3	10	mg/kg	70	60	50	40	100
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	33	17	18	29	39
Cobalt	7440-48-4	2	mg/kg	14	11	14	7	14
Copper	7440-50-8	5	mg/kg	15	17	9	39	14
Lead	7439-92-1	5	mg/kg	43	35	17	197	34
Manganese	7439-96-5	5	mg/kg	873	502	508	275	977
Nickel	7440-02-0	2	mg/kg	6	5	6	10	8
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	59	36	45	53	64
Zinc	7440-66-6	5	mg/kg	54	60	16	200	51
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	T14-W3	T14-E1	T14-E2	T14-E3	D01_210803
Sampling date / time					03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00	03-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		ES2128631-041	ES2128631-042	ES2128631-043	ES2128631-044	ES2128631-045
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		21.2	10.9	26.7	14.3	14.9
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		5	24	6	<5	167
Barium	7440-39-3	10	mg/kg		60	30	60	110	20
Beryllium	7440-41-7	1	mg/kg		<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg		<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		25	32	20	18	22
Cobalt	7440-48-4	2	mg/kg		10	8	11	21	2
Copper	7440-50-8	5	mg/kg		18	19	25	14	179
Lead	7439-92-1	5	mg/kg		32	31	86	82	1300
Manganese	7439-96-5	5	mg/kg		644	389	632	1500	137
Nickel	7440-02-0	2	mg/kg		7	6	7	9	4
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg		33	35	26	24	29
Zinc	7440-66-6	5	mg/kg		72	65	109	72	152
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D02_210803	SS-A1	SS-A2	SS-A3	SS-A4
Sampling date / time					03-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		ES2128631-046	ES2128631-048	ES2128631-049	ES2128631-050	ES2128631-051
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.7	39.5	23.1	27.3	13.0
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		170	34	22	24	67
Barium	7440-39-3	10	mg/kg		40	80	100	80	90
Beryllium	7440-41-7	1	mg/kg		<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg		<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg		<1	2	2	2	4
Chromium	7440-47-3	2	mg/kg		8	16	12	11	13
Cobalt	7440-48-4	2	mg/kg		<2	8	3	4	8
Copper	7440-50-8	5	mg/kg		166	107	184	161	333
Lead	7439-92-1	5	mg/kg		2720	1230	1160	1490	2120
Manganese	7439-96-5	5	mg/kg		76	566	416	607	433
Nickel	7440-02-0	2	mg/kg		3	7	6	5	8
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg		13	25	17	15	25
Zinc	7440-66-6	5	mg/kg		183	603	732	734	1630
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.8	0.1	<0.1	<0.1	0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				SS-A5	SS-A6	SS-A7	SS-A8	SS-A9
Sampling date / time				04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-052	ES2128631-053	ES2128631-054	ES2128631-055	ES2128631-056
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	12.5	5.5	16.9	20.2	11.4
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	257	20	18	10	16
Barium	7440-39-3	10	mg/kg	80	40	50	40	60
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	4	<1	1	<1	5
Chromium	7440-47-3	2	mg/kg	6	9	12	11	16
Cobalt	7440-48-4	2	mg/kg	<2	3	4	4	4
Copper	7440-50-8	5	mg/kg	962	87	113	96	136
Lead	7439-92-1	5	mg/kg	53900	1010	746	627	1020
Manganese	7439-96-5	5	mg/kg	41	124	237	356	143
Nickel	7440-02-0	2	mg/kg	<2	5	6	2	5
Selenium	7782-49-2	5	mg/kg	19	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	13	16	21	18	20
Zinc	7440-66-6	5	mg/kg	3120	203	728	138	576
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	23.6	0.2	<0.1	0.1	0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SS-A10	SS-A11	SS-A12	SS-A13	SS-A14
Sampling date / time					04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		ES2128631-057	ES2128631-058	ES2128631-059	ES2128631-060	ES2128631-061
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		14.2	24.8	8.4	18.8	23.7
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		23	12	16	42	27
Barium	7440-39-3	10	mg/kg		90	50	40	60	30
Beryllium	7440-41-7	1	mg/kg		<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg		<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	4	<1
Chromium	7440-47-3	2	mg/kg		11	13	13	14	11
Cobalt	7440-48-4	2	mg/kg		5	3	3	5	2
Copper	7440-50-8	5	mg/kg		73	35	35	187	38
Lead	7439-92-1	5	mg/kg		260	950	154	817	225
Manganese	7439-96-5	5	mg/kg		348	192	296	582	273
Nickel	7440-02-0	2	mg/kg		6	4	3	4	2
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg		18	17	20	21	17
Zinc	7440-66-6	5	mg/kg		192	154	154	1740	182
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	0.3	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				SS-A15	SS-A16	SS-A17	SS-A18	T4-W1
Sampling date / time				04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-062	ES2128631-063	ES2128631-064	ES2128631-065	ES2128631-066
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	29.5	35.4	14.8	28.7	6.4
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	75	6	14	250
Barium	7440-39-3	10	mg/kg	60	170	30	160	100
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	3	<1	1	2
Chromium	7440-47-3	2	mg/kg	12	8	12	11	22
Cobalt	7440-48-4	2	mg/kg	<2	3	2	2	3
Copper	7440-50-8	5	mg/kg	26	219	6	106	1240
Lead	7439-92-1	5	mg/kg	193	1920	33	174	26300
Manganese	7439-96-5	5	mg/kg	274	269	280	212	202
Nickel	7440-02-0	2	mg/kg	3	5	<2	7	7
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	6
Vanadium	7440-62-2	5	mg/kg	14	14	16	12	34
Zinc	7440-66-6	5	mg/kg	151	711	80	565	1020
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.4	0.2	<0.1	<0.1	1.6



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				T4-W2	T4-E1	T4-E2	T4-E3	T5-W1
Sampling date / time				04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-067	ES2128631-068	ES2128631-069	ES2128631-070	ES2128631-071
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	5.3	5.6	12.2	35.9	10.1
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	137	138	70	6	158
Barium	7440-39-3	10	mg/kg	50	30	80	50	80
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	2	<1	1	<1	6
Chromium	7440-47-3	2	mg/kg	16	9	27	20	38
Cobalt	7440-48-4	2	mg/kg	4	3	4	4	5
Copper	7440-50-8	5	mg/kg	473	124	252	24	473
Lead	7439-92-1	5	mg/kg	2750	957	2730	146	7710
Manganese	7439-96-5	5	mg/kg	222	166	227	420	205
Nickel	7440-02-0	2	mg/kg	6	3	8	4	6
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	30	14	35	29	26
Zinc	7440-66-6	5	mg/kg	833	200	684	182	1320
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.4	0.2	0.3	<0.1	1.3



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				T5-W2	T5-E1	T5-E2	T5-E3	T6-W1
Sampling date / time				04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-072	ES2128631-073	ES2128631-074	ES2128631-075	ES2128631-076
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	9.4	11.8	15.0	18.4	10.1
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	20	105	335	48	93
Barium	7440-39-3	10	mg/kg	80	60	90	40	60
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	3	4	3	<1	2
Chromium	7440-47-3	2	mg/kg	12	20	9	15	16
Cobalt	7440-48-4	2	mg/kg	2	3	<2	6	5
Copper	7440-50-8	5	mg/kg	146	644	835	51	199
Lead	7439-92-1	5	mg/kg	711	15600	47000	367	771
Manganese	7439-96-5	5	mg/kg	135	247	26	343	307
Nickel	7440-02-0	2	mg/kg	4	5	<2	4	7
Selenium	7782-49-2	5	mg/kg	<5	6	29	<5	<5
Vanadium	7440-62-2	5	mg/kg	16	23	13	24	27
Zinc	7440-66-6	5	mg/kg	559	1260	1570	216	388
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.1	2.9	20.4	<0.1	0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				T6-W2	T6-E1	T6-E2	T6-E3	T7-W1
Sampling date / time				04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-077	ES2128631-078	ES2128631-079	ES2128631-080	ES2128631-081
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	11.8	10.6	26.4	22.4	10.8
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	72	12	<5	<5	38
Barium	7440-39-3	10	mg/kg	50	40	40	60	20
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	2	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	27	14	14	43
Cobalt	7440-48-4	2	mg/kg	3	4	3	6	9
Copper	7440-50-8	5	mg/kg	528	90	10	10	138
Lead	7439-92-1	5	mg/kg	2450	272	53	46	395
Manganese	7439-96-5	5	mg/kg	212	338	314	860	408
Nickel	7440-02-0	2	mg/kg	4	7	3	2	46
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	36	20	18	17	20
Zinc	7440-66-6	5	mg/kg	633	192	46	226	151
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.5	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	T7-W2	T7-W3	T7-E1	T7-E2	T7-E3
Sampling date / time					04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		ES2128631-082	ES2128631-083	ES2128631-084	ES2128631-085	ES2128631-086
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		28.8	16.0	15.6	34.5	26.0
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		22	15	119	24	8
Barium	7440-39-3	10	mg/kg		30	40	30	40	40
Beryllium	7440-41-7	1	mg/kg		<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg		<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg		<1	<1	1	<1	<1
Chromium	7440-47-3	2	mg/kg		29	26	23	48	23
Cobalt	7440-48-4	2	mg/kg		3	5	2	6	4
Copper	7440-50-8	5	mg/kg		22	31	190	29	11
Lead	7439-92-1	5	mg/kg		63	80	941	54	23
Manganese	7439-96-5	5	mg/kg		400	523	202	346	519
Nickel	7440-02-0	2	mg/kg		4	8	3	4	2
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg		20	25	24	37	28
Zinc	7440-66-6	5	mg/kg		198	188	189	124	129
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	T8-W1	T8-W2	T8-W3	T8-E1	T8-E2
Sampling date / time					04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00	04-Aug-2021 00:00
Compound	CAS Number	LOR	Unit		ES2128631-087	ES2128631-088	ES2128631-089	ES2128631-090	ES2128631-091
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.2	27.9	24.6	11.8	33.5
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		37	14	<5	125	9
Barium	7440-39-3	10	mg/kg		40	50	20	20	40
Beryllium	7440-41-7	1	mg/kg		<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg		<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg		2	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		22	15	12	11	19
Cobalt	7440-48-4	2	mg/kg		10	5	3	2	3
Copper	7440-50-8	5	mg/kg		76	28	8	339	19
Lead	7439-92-1	5	mg/kg		646	147	28	2360	101
Manganese	7439-96-5	5	mg/kg		337	448	231	151	223
Nickel	7440-02-0	2	mg/kg		6	4	3	6	3
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg		40	27	21	19	32
Zinc	7440-66-6	5	mg/kg		975	387	67	240	135
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	0.4	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				T8-E3	T1-W1	T1-W2	T1-W3	T1-E1
Sampling date / time				04-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-092	ES2128631-094	ES2128631-095	ES2128631-096	ES2128631-097
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	18.3	15.3	17.7	26.1	18.2
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	282	9	6	45
Barium	7440-39-3	10	mg/kg	50	50	40	100	70
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	3	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	2	<1	<1	3
Chromium	7440-47-3	2	mg/kg	14	18	8	16	20
Cobalt	7440-48-4	2	mg/kg	7	7	4	8	9
Copper	7440-50-8	5	mg/kg	8	169	35	23	196
Lead	7439-92-1	5	mg/kg	26	919	70	62	870
Manganese	7439-96-5	5	mg/kg	724	358	174	277	482
Nickel	7440-02-0	2	mg/kg	3	5	5	14	9
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	24	33	16	43	30
Zinc	7440-66-6	5	mg/kg	52	427	77	136	879
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.4	<0.1	<0.1	0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				T1-E2	T1-E3	T2-E1	T2-E2	T2-E3
Sampling date / time				05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-098	ES2128631-099	ES2128631-100	ES2128631-101	ES2128631-102
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	25.7	27.9	19.7	35.2	19.6
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	18	7	38	14	<5
Barium	7440-39-3	10	mg/kg	70	80	30	70	40
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	13	21	14	14	12
Cobalt	7440-48-4	2	mg/kg	5	8	2	5	9
Copper	7440-50-8	5	mg/kg	35	25	49	21	8
Lead	7439-92-1	5	mg/kg	165	60	231	87	11
Manganese	7439-96-5	5	mg/kg	319	300	145	247	282
Nickel	7440-02-0	2	mg/kg	6	12	5	4	2
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	18	39	17	20	16
Zinc	7440-66-6	5	mg/kg	461	211	268	70	19
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				T2-W1	T2-W2	T3-W1	T3-W2	T3-E1
Sampling date / time				05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-103	ES2128631-104	ES2128631-105	ES2128631-106	ES2128631-107
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	14.4	16.7	11.2	15.9	18.3
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	60	35	22	9	155
Barium	7440-39-3	10	mg/kg	40	20	30	40	120
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	1
Chromium	7440-47-3	2	mg/kg	12	13	6	12	12
Cobalt	7440-48-4	2	mg/kg	6	2	<2	3	2
Copper	7440-50-8	5	mg/kg	151	30	73	13	506
Lead	7439-92-1	5	mg/kg	1370	189	581	88	7430
Manganese	7439-96-5	5	mg/kg	323	142	81	288	104
Nickel	7440-02-0	2	mg/kg	12	3	3	2	5
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	10
Vanadium	7440-62-2	5	mg/kg	23	20	15	19	18
Zinc	7440-66-6	5	mg/kg	334	104	124	142	673
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	<0.1	1.8



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				T3-E2	T3-E3	SS-B1	SS-B2	SS-B3
Sampling date / time				05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-108	ES2128631-109	ES2128631-110	ES2128631-111	ES2128631-112
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	12.4	20.0	24.0	9.3	33.7
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	87	73	9	147	<5
Barium	7440-39-3	10	mg/kg	30	40	40	50	80
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	11	13	10	14	10
Cobalt	7440-48-4	2	mg/kg	<2	<2	3	7	4
Copper	7440-50-8	5	mg/kg	180	53	38	26	12
Lead	7439-92-1	5	mg/kg	2010	320	378	317	59
Manganese	7439-96-5	5	mg/kg	52	31	279	418	573
Nickel	7440-02-0	2	mg/kg	3	3	2	4	3
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	15	21	18	29	20
Zinc	7440-66-6	5	mg/kg	339	118	254	176	130
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				SS-B4	SS-B5	AOI-1	AOI-2	AOI-3
Sampling date / time				05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-113	ES2128631-114	ES2128631-115	ES2128631-116	ES2128631-117
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	23.3	36.0	23.8	15.6	23.7
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	5	<5	26	<5	15
Barium	7440-39-3	10	mg/kg	50	40	20	30	150
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	2
Chromium	7440-47-3	2	mg/kg	18	19	9	10	29
Cobalt	7440-48-4	2	mg/kg	6	5	<2	3	13
Copper	7440-50-8	5	mg/kg	12	9	93	11	47
Lead	7439-92-1	5	mg/kg	58	31	542	8	495
Manganese	7439-96-5	5	mg/kg	531	556	64	135	415
Nickel	7440-02-0	2	mg/kg	4	3	<2	4	16
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	26	28	12	18	53
Zinc	7440-66-6	5	mg/kg	77	109	250	22	1210
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				AOI-9	AOI-5	AOI-6	AOI-7	AOI-8
Sampling date / time				05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-118	ES2128631-119	ES2128631-120	ES2128631-121	ES2128631-122
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	22.3	18.4	12.4	18.9	24.4
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	5	63	502	410	17
Barium	7440-39-3	10	mg/kg	40	100	90	150	60
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	2	6	6	<1
Chromium	7440-47-3	2	mg/kg	17	22	263	6	17
Cobalt	7440-48-4	2	mg/kg	5	3	<2	<2	6
Copper	7440-50-8	5	mg/kg	12	404	906	1120	25
Lead	7439-92-1	5	mg/kg	28	4710	39000	9200	148
Manganese	7439-96-5	5	mg/kg	412	144	109	32	413
Nickel	7440-02-0	2	mg/kg	3	6	4	<2	3
Selenium	7782-49-2	5	mg/kg	<5	<5	7	23	<5
Vanadium	7440-62-2	5	mg/kg	27	32	17	12	34
Zinc	7440-66-6	5	mg/kg	47	1220	2570	829	208
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.9	1.9	11.0	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				D01_210805	D02_210805	D03_210805	D04_210805	AOI-10
Sampling date / time				05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00	05-Aug-2021 00:00
Compound	CAS Number	LOR	Unit	ES2128631-125	ES2128631-126	ES2128631-127	ES2128631-128	ES2128631-130
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	23.0	26.3	23.6	21.9	13.0
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	10	51	83	46
Barium	7440-39-3	10	mg/kg	40	40	50	130	30
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	1	4	<1
Chromium	7440-47-3	2	mg/kg	19	16	16	25	25
Cobalt	7440-48-4	2	mg/kg	5	3	3	<2	5
Copper	7440-50-8	5	mg/kg	10	45	72	342	62
Lead	7439-92-1	5	mg/kg	33	406	408	4360	169
Manganese	7439-96-5	5	mg/kg	550	313	229	114	234
Nickel	7440-02-0	2	mg/kg	4	3	7	7	16
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	5	<5
Vanadium	7440-62-2	5	mg/kg	27	23	20	27	30
Zinc	7440-66-6	5	mg/kg	89	275	357	1330	165
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	1.0	<0.1



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				R01_210803	R01_210804	R01_210805	----	----
Sampling date / time				03-Aug-2021 00:00	04-Aug-2021 00:00	05-Aug-2021 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2128631-047	ES2128631-093	ES2128631-129	-----	-----
				Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	<0.05	----	----
Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----

QUALITY CONTROL REPORT

Work Order	: ES2128631	Page	: 1 of 17
Client	: ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)	Laboratory	: Environmental Division Sydney
Contact	: MR MATTHEW CROW	Contact	: Monica Wright
Address	: LEVEL 1 45 WATT STREET NEWCASTLE NSW 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4964 2150	Telephone	: +61-2-8784 8555
Project	: 0608750 - Bungendore Lead Investigation	Date Samples Received	: 06-Aug-2021
Order number	: ----	Date Analysis Commenced	: 11-Aug-2021
C-O-C number	: ----	Issue Date	: 17-Aug-2021
Sampler	: Michael Mercer		
Site	: ----		
Quote number	: EN/114/20		
No. of samples received	: 129		
No. of samples analysed	: 128		



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

This Quality Control Report contains the following information:

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843246)									
ES2128631-001	SS-C1	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	120	140	13.7	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	27	22	19.1	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	13	15	14.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	9	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	17	21	20.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	16	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	27	26	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	772	# 1500	64.4	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	39	36	6.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	47	46	0.0	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
ES2128631-011	T9-W3	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	70	80	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	24	23	0.0	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	9	8	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	8	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	12	30.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	14	14.1	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	482	478	0.9	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843246) - continued									
ES2128631-011	T9-W3	EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	34	33	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	37	46	21.4	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843248)									
ES2128631-021	T11-W1	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	1	2	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	80	100	15.3	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	13	0.0	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	4	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	11	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	203	215	5.9	0% - 20%
		EG005T: Copper	7440-50-8	5	mg/kg	555	584	5.1	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	6010	6580	9.1	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	215	226	5.1	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	32	27	15.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	613	687	11.3	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
ES2128631-031	T12-E2	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	60	60	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	16	6.6	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	5	5	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	12	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	66	69	4.0	0% - 50%
		EG005T: Manganese	7439-96-5	5	mg/kg	652	681	4.3	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	29	27	6.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	72	78	8.0	0% - 50%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843252)									
ES2128631-052	SS-A5	EG005T: Lead	7439-92-1	5	mg/kg	53900	54100	0.4	0% - 20%
ES2128631-041	T14-W3	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	60	50	21.8	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	25	24	6.5	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	10	10	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843252) - continued									
ES2128631-041	T14-W3	EG005T: Nickel	7440-02-0	2	mg/kg	7	7	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	19	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	32	32	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	644	593	8.2	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	33	34	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	72	71	0.0	0% - 50%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
ES2128631-052	SS-A5	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	4	5	31.2	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	80	70	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.0	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	257	# 334	26.0	0% - 20%
		EG005T: Copper	7440-50-8	5	mg/kg	962	1160	18.4	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	41	41	0.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	19	21	9.8	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	13	12	9.1	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	3120	# 4520	36.7	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843254)							
ES2128631-062	SS-A15	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	60	60	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	13	13.3	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	26	26	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	193	191	1.0	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	274	247	10.4	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	14	16	14.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	151	156	2.9	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
ES2128631-072	T5-W2	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	3	3	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	80	80	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843254) - continued									
ES2128631-072	T5-W2	EG005T: Chromium	7440-47-3	2	mg/kg	12	13	0.0	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	2	3	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	5	40.5	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	20	30	39.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	146	158	8.2	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	711	709	0.3	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	135	145	6.9	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	16	23	34.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	559	567	1.5	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843259)									
ES2128631-082	T7-W2	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	30	40	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	29	32	10.6	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	3	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	22	24	9.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	22	23	7.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	63	67	6.9	0% - 50%
		EG005T: Manganese	7439-96-5	5	mg/kg	400	418	4.5	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	20	22	12.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	198	208	4.8	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
ES2128631-092	T8-E3	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	50	50	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	18	25.8	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	7	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	9	17.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	26	26	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	724	645	11.5	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	24	27	12.1	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	52	63	18.8	0% - 50%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843261)									
ES2128631-104	T2-W2	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	20	20	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	13	12	10.6	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	2	2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	35	30	15.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	30	27	12.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	189	155	19.8	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	142	148	4.0	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	20	18	7.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	104	105	0.0	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
ES2128631-113	SS-B4	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	50	40	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	15	20.9	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	6	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	11	9.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	58	58	0.0	0% - 50%
		EG005T: Manganese	7439-96-5	5	mg/kg	531	522	1.7	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	26	26	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	77	81	4.2	0% - 50%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843895)									
ES2128631-125	D01_210805	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	40	40	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	19	0.0	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	5	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	11	12.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	33	32	5.1	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	550	495	10.5	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3843895) - continued									
ES2128631-125	D01_210805	EG005T: Vanadium	7440-62-2	5	mg/kg	27	26	3.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	89	96	7.1	0% - 50%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
ES2129058-001	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	200	210	0.0	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	13	14	0.0	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	19	22	16.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	11	13	20.9	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	19	20	6.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	19	24	21.2	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	1380	1540	10.9	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	31	33	7.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	53	54	0.0	0% - 50%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3847106)							
ES2128631-130	AOI-10	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	30	30	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	25	18	30.4	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	5	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	12	27.1	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	46	30	40.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	62	91	38.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	169	202	17.6	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	234	220	6.1	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	30	40	29.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	165	159	3.7	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3843250)									
ES2128631-003	SS-C3	EA055: Moisture Content	----	0.1	%	25.3	23.0	9.6	0% - 20%
ES2128631-014	T9-E3	EA055: Moisture Content	----	0.1	%	19.1	19.3	1.4	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3843251)									
ES2128631-023	T11-W3	EA055: Moisture Content	----	0.1	%	13.9	14.8	6.2	0% - 50%
ES2128631-034	T13-W2	EA055: Moisture Content	----	0.1	%	20.7	20.9	0.7	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3843256)									

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3843256) - continued									
ES2128631-043	T14-E2	EA055: Moisture Content	----	0.1	%	26.7	26.2	1.7	0% - 20%
ES2128631-055	SS-A8	EA055: Moisture Content	----	0.1	%	20.2	20.3	0.8	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3843257)									
ES2128631-064	SS-A17	EA055: Moisture Content	----	0.1	%	14.8	14.9	0.0	0% - 50%
ES2128631-075	T5-E3	EA055: Moisture Content	----	0.1	%	18.4	17.6	4.1	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3843263)									
ES2128631-084	T7-E1	EA055: Moisture Content	----	0.1	%	15.6	15.4	1.4	0% - 50%
ES2128631-096	T1-W3	EA055: Moisture Content	----	0.1	%	26.1	26.8	2.7	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3843264)									
ES2128631-105	T3-W1	EA055: Moisture Content	----	0.1	%	11.2	10.7	4.5	0% - 50%
ES2128631-117	AOI-3	EA055: Moisture Content	----	0.1	%	23.7	26.2	9.7	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3843901)									
ES2128631-127	D03_210805	EA055: Moisture Content	----	0.1	%	23.6	25.4	7.1	0% - 20%
ES2128933-006	Anonymous	EA055: Moisture Content	----	0.1	%	60.9	61.1	0.3	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3847108)									
ES2129155-001	Anonymous	EA055: Moisture Content	----	0.1	%	9.2	10.3	11.3	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843247)									
ES2128631-001	SS-C1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2128631-011	T9-W3	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843249)									
ES2128631-021	T11-W1	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.8	0.8	0.0	No Limit
ES2128631-031	T12-E2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843253)									
ES2128631-052	SS-A5	EG035T: Mercury	7439-97-6	0.1	mg/kg	23.6	25.9	9.3	0% - 20%
ES2128631-041	T14-W3	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843255)									
ES2128631-062	SS-A15	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.4	0.5	0.0	No Limit
ES2128631-072	T5-W2	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.2	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843260)									
ES2128631-082	T7-W2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2128631-092	T8-E3	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843262)									
ES2128631-104	T2-W2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2128631-113	SS-B4	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843896)									
ES2128631-125	D01_210805	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2129236-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3847107)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3847107) - continued									
ES2128631-130	AOI-10	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3838966)									
ES2128351-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.042	0.041	0.0	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.006	0.006	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.011	0.010	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	0.25	0.24	4.6	No Limit
ES2128788-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.027	0.027	0.0	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.016	0.017	0.0	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.0	No Limit
ES2128351-001	Anonymous	EG020A-T: Copper	7440-50-8	0.001	mg/L	0.007	0.006	27.6	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	1.23	1.20	2.3	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3838970)									
ES2128631-093	R01_210804	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2128649-008	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit



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

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

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843246)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	97.5	88.0	113
EG005T: Barium	7440-39-3	10	mg/kg	<10	90.5 mg/kg	104	65.0	136
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.5 mg/kg	103	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	79.6	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	101	68.0	132
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	10.4 mg/kg	91.8	83.0	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	101	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	94.0	82.0	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	534 mg/kg	103	83.0	117
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	97.0	80.0	120
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	58.6 mg/kg	114	75.0	125
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	88.4	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843248)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	103	88.0	113
EG005T: Barium	7440-39-3	10	mg/kg	<10	90.5 mg/kg	109	65.0	136
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.5 mg/kg	104	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	84.7	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	103	68.0	132
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	10.4 mg/kg	91.2	83.0	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	103	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	92.4	82.0	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	534 mg/kg	102	83.0	117
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	97.6	80.0	120
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	58.6 mg/kg	120	75.0	125
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	84.7	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843252)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	97.6	88.0	113
EG005T: Barium	7440-39-3	10	mg/kg	<10	90.5 mg/kg	95.4	65.0	136
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.5 mg/kg	91.1	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843252) - continued								
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	84.4	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	95.3	68.0	132
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	10.4 mg/kg	93.8	83.0	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	99.9	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	86.6	82.0	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	534 mg/kg	96.7	83.0	117
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	89.8	80.0	120
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	58.6 mg/kg	76.9	75.0	125
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	85.5	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843254)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	89.7	88.0	113
EG005T: Barium	7440-39-3	10	mg/kg	<10	90.5 mg/kg	89.1	65.0	136
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.5 mg/kg	78.9	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	86.5	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	88.0	68.0	132
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	10.4 mg/kg	83.6	83.0	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	90.3	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	86.2	82.0	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	534 mg/kg	89.9	83.0	117
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	82.9	80.0	120
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	58.6 mg/kg	112	75.0	125
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	75.7	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843259)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	88.6	88.0	113
EG005T: Barium	7440-39-3	10	mg/kg	<10	90.5 mg/kg	94.1	65.0	136
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.5 mg/kg	87.5	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	107	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	92.9	68.0	132
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	10.4 mg/kg	90.5	83.0	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	96.2	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	87.1	82.0	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	534 mg/kg	98.0	83.0	117
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	89.4	80.0	120
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	58.6 mg/kg	87.0	75.0	125



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843259) - continued								
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	85.6	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843261)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	98.0	88.0	113
EG005T: Barium	7440-39-3	10	mg/kg	<10	90.5 mg/kg	100.0	65.0	136
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.5 mg/kg	94.5	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	77.1	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	101	68.0	132
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	10.4 mg/kg	97.2	83.0	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	107	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	84.8	82.0	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	534 mg/kg	102	83.0	117
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	95.1	80.0	120
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	58.6 mg/kg	92.7	75.0	125
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	88.6	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843895)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	90.0	88.0	113
EG005T: Barium	7440-39-3	10	mg/kg	<10	90.5 mg/kg	100.0	65.0	136
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.5 mg/kg	92.2	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	90.0	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	102	68.0	132
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	10.4 mg/kg	85.0	83.0	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	99.5	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	86.5	82.0	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	534 mg/kg	94.0	83.0	117
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	91.8	80.0	120
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	58.6 mg/kg	101	75.0	125
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	82.7	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3847106)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	92.7	88.0	113
EG005T: Barium	7440-39-3	10	mg/kg	<10	90.5 mg/kg	98.3	65.0	136
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.5 mg/kg	95.5	70.0	130
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	81.4	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	101	68.0	132



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3847106) - continued								
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	10.4 mg/kg	87.6	83.0	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	100	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	92.9	82.0	119
EG005T: Manganese	7439-96-5	5	mg/kg	<5	534 mg/kg	96.7	83.0	117
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	90.9	80.0	120
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	58.6 mg/kg	104	75.0	125
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	84.9	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843247)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	86.2	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843249)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	92.5	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843253)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	75.7	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843255)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	81.5	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843260)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	85.2	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843262)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	87.2	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843896)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	82.0	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3847107)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	90.3	70.0	125

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020T: Total Metals by ICP-MS (QCLot: 3838966)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.9	82.0	114
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	97.1	79.0	119
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	99.7	84.0	116
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.1	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.9	86.0	116
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	95.8	84.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.7	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.9	85.0	115
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	94.7	85.0	113



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020T: Total Metals by ICP-MS (QCLot: 3838966) - continued								
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.8	84.0	116
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	92.9	68.0	126
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	98.4	85.0	113
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.0	79.0	117
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	94.2	75.0	129
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3838970)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	98.4	77.0	111

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843246)							
ES2128631-001	SS-C1	EG005T: Arsenic	7440-38-2	50 mg/kg	103	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.6	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	90.2	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	97.4	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	98.6	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	98.1	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	97.1	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843248)							
ES2128631-021	T11-W1	EG005T: Arsenic	7440-38-2	50 mg/kg	76.5	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	87.4	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	79.5	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	77.2	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	# Not Determined	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	90.8	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	78.9	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843252)							
ES2128631-041	T14-W3	EG005T: Arsenic	7440-38-2	50 mg/kg	92.3	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	83.0	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	88.6	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	99.9	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	97.4	70.0	130



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843252) - continued							
ES2128631-041	T14-W3	EG005T: Nickel	7440-02-0	50 mg/kg	98.6	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	97.4	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843254)							
ES2128631-062	SS-A15	EG005T: Arsenic	7440-38-2	50 mg/kg	94.4	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	80.6	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	97.7	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	96.2	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	98.1	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	94.5	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	99.6	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843259)							
ES2128631-082	T7-W2	EG005T: Arsenic	7440-38-2	50 mg/kg	97.1	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	88.0	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	102	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	90.6	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	88.3	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	86.9	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	93.3	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843261)							
ES2128631-104	T2-W2	EG005T: Arsenic	7440-38-2	50 mg/kg	70.7	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	85.5	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	92.8	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	83.8	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	81.1	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	87.5	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	83.4	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3843895)							
ES2128631-125	D01_210805	EG005T: Arsenic	7440-38-2	50 mg/kg	103	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	102	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	104	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	107	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	102	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	102	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3847106)							
ES2128631-130	AOI-10	EG005T: Arsenic	7440-38-2	50 mg/kg	114	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	110	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	73.6	68.0	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3847106) - continued							
ES2128631-130	AOI-10	EG005T: Copper	7440-50-8	250 mg/kg	106	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	111	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	78.1	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	92.8	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843247)							
ES2128631-001	SS-C1	EG035T: Mercury	7439-97-6	5 mg/kg	113	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843249)							
ES2128631-021	T11-W1	EG035T: Mercury	7439-97-6	5 mg/kg	111	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843253)							
ES2128631-041	T14-W3	EG035T: Mercury	7439-97-6	5 mg/kg	110	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843255)							
ES2128631-062	SS-A15	EG035T: Mercury	7439-97-6	5 mg/kg	110	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843260)							
ES2128631-082	T7-W2	EG035T: Mercury	7439-97-6	5 mg/kg	86.7	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843262)							
ES2128631-104	T2-W2	EG035T: Mercury	7439-97-6	5 mg/kg	89.6	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843896)							
ES2128631-125	D01_210805	EG035T: Mercury	7439-97-6	5 mg/kg	113	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3847107)							
ES2128631-130	AOI-10	EG035T: Mercury	7439-97-6	5 mg/kg	119	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3838966)							
EN2106849-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	96.1	70.0	130
		EG020A-T: Beryllium	7440-41-7	1 mg/L	102	70.0	130
		EG020A-T: Barium	7440-39-3	1 mg/L	94.1	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	104	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	98.8	70.0	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	101	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	# Not Determined	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	99.2	70.0	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	99.4	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.3	70.0	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	94.2	70.0	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3838966) - continued							
EN2106849-002	Anonymous	EG020A-T: Zinc	7440-66-6	1 mg/L	85.1	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3838970)							
ES2128631-047	R01_210803	EG035T: Mercury	7439-97-6	0.01 mg/L	92.9	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2128631	Page	: 1 of 13
Client	: ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)	Laboratory	: Environmental Division Sydney
Contact	: MR MATTHEW CROW	Telephone	: +61-2-8784 8555
Project	: 0608750 - Bungendore Lead Investigation	Date Samples Received	: 06-Aug-2021
Site	: ----	Issue Date	: 17-Aug-2021
Sampler	: Michael Mercer	No. of samples received	: 129
Order number	: ----	No. of samples analysed	: 128

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- Duplicate outliers exist - please see following pages for full details.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Duplicates. Method Blanks. Laboratory Control Samples and Matrix Spikes

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES2128631--052	SS-A5	Arsenic	7440-38-2	26.0 %	0% - 20%	RPD exceeds LOR based limits
EG005(ED093)T: Total Metals by ICP-AES	ES2128631--001	SS-C1	Manganese	7439-96-5	64.4 %	0% - 20%	RPD exceeds LOR based limits
EG005(ED093)T: Total Metals by ICP-AES	ES2128631--052	SS-A5	Zinc	7440-66-6	36.7 %	0% - 20%	RPD exceeds LOR based limits
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	ES2128631--021	T11-W1	Lead	7439-92-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG020T: Total Metals by ICP-MS	EN2106849--002	Anonymous	Copper	7440-50-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA055)							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content (Dried @ 105-110°C) - Continued									
SS-C1, SS-C3, SS-C5, SS-C7, T9-W1, T9-W3, T9-E2, T10-W1, T10-W3, T10-E2, T11-W1, T11-W3, T11-E2, T12-W1, T12-W3, T12-E2, T13-W1, T13-W3, T13-E2, T14-W1, T14-W3, T14-E2, D01_210803,	SS-C2, SS-C4, SS-C6, SS-C8, T9-W2, T9-E1, T9-E3, T10-W2, T10-E1, T10-E3, T11-W2, T11-E1, T11-E3, T12-W2, T12-E1, T12-E3, T13-W2, T13-E1, T13-E3, T14-W2, T14-E1, T14-E3, D02_210803	03-Aug-2021	----	----	----	12-Aug-2021	17-Aug-2021	✓	
Snap Lock Bag - Friable Asbestos/PSD Bag (EA055)									



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C) - Continued								
SS-A1, SS-A3, SS-A5, SS-A7, SS-A9, SS-A11, SS-A13, SS-A15, SS-A17, T4-W1, T4-E1, T4-E3, T5-W2, T5-E2, T6-W1, T6-E1, T6-E3, T7-W2, T7-E1, T7-E3, T8-W2, T8-E1, T8-E3	SS-A2, SS-A4, SS-A6, SS-A8, SS-A10, SS-A12, SS-A14, SS-A16, SS-A18, T4-W2, T4-E2, T5-W1, T5-E1, T5-E3, T6-W2, T6-E2, T7-W1, T7-W3, T7-E2, T8-W1, T8-W3, T8-E2,	04-Aug-2021	----	----	----	12-Aug-2021	18-Aug-2021	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA055)								
T1-W1, T1-W3, T1-E2, T2-E1, T2-E3, T2-W2, T3-W2, T3-E2, SS-B1, SS-B3, SS-B5, AOI-2, AOI-9, AOI-6, AOI-8	T1-W2, T1-E1, T1-E3, T2-E2, T2-W1, T3-W1, T3-E1, T3-E3, SS-B2, SS-B4, AOI-1, AOI-3, AOI-5, AOI-7,	05-Aug-2021	----	----	----	12-Aug-2021	19-Aug-2021	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA055)								
D01_210805, D03_210805,	D02_210805, D04_210805	05-Aug-2021	----	----	----	13-Aug-2021	19-Aug-2021	✓

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 Work Order : ES2128631
 Client : ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)
 Project : 0608750 - Bungendore Lead Investigation



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C) - Continued							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA055) AOI-10	05-Aug-2021	----	----	----	16-Aug-2021	19-Aug-2021	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES								
Snap Lock Bag - Friable Asbestos/PSD Bag (EG005T)		03-Aug-2021	12-Aug-2021	30-Jan-2022	✔	13-Aug-2021	30-Jan-2022	✔
SS-C1,	SS-C2,							
SS-C3,	SS-C4,							
SS-C5,	SS-C6,							
SS-C7,	SS-C8,							
T9-W1,	T9-W2,							
T9-W3,	T9-E1,							
T9-E2,	T9-E3,							
T10-W1,	T10-W2,							
T10-W3,	T10-E1,							
T10-E2,	T10-E3,							
T11-W1,	T11-W2,							
T11-W3,	T11-E1,							
T11-E2,	T11-E3,							
T12-W1,	T12-W2,							
T12-W3,	T12-E1,							
T12-E2,	T12-E3,							
T13-W1,	T13-W2,							
T13-W3,	T13-E1,							
T13-E2,	T13-E3,							
T14-W1,	T14-W2,							
T14-W3,	T14-E1,							
T14-E2,	T14-E3,							
D01_210803,	D02_210803							
Snap Lock Bag - Friable Asbestos/PSD Bag (EG005T)								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES - Continued								
SS-A1, SS-A3, SS-A5, SS-A7, SS-A9, SS-A11, SS-A13, SS-A15, SS-A17, T4-W1, T4-E1, T4-E3, T5-W2, T5-E2, T6-W1, T6-E1, T6-E3, T7-W2, T7-E1, T7-E3, T8-W2, T8-E1, T8-E3	SS-A2, SS-A4, SS-A6, SS-A8, SS-A10, SS-A12, SS-A14, SS-A16, SS-A18, T4-W2, T4-E2, T5-W1, T5-E1, T5-E3, T6-W2, T6-E2, T7-W1, T7-W3, T7-E2, T8-W1, T8-W3, T8-E2,	04-Aug-2021	12-Aug-2021	31-Jan-2022	✓	13-Aug-2021	31-Jan-2022	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EG005T)								
T1-W1, T1-W3, T1-E2, T2-E1, T2-E3, T2-W2, T3-W2, T3-E2, SS-B1, SS-B3, SS-B5, AOI-2, AOI-9, AOI-6, AOI-8	T1-W2, T1-E1, T1-E3, T2-E2, T2-W1, T3-W1, T3-E1, T3-E3, SS-B2, SS-B4, AOI-1, AOI-3, AOI-5, AOI-7,	05-Aug-2021	12-Aug-2021	01-Feb-2022	✓	13-Aug-2021	01-Feb-2022	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EG005T)								
D01_210805, D03_210805,	D02_210805, D04_210805	05-Aug-2021	13-Aug-2021	01-Feb-2022	✓	13-Aug-2021	01-Feb-2022	✓



Matrix: **SOIL** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES - Continued							
Snap Lock Bag - Friable Asbestos/PSD Bag (EG005T) AOI-10	05-Aug-2021	16-Aug-2021	01-Feb-2022	✔	16-Aug-2021	01-Feb-2022	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Snap Lock Bag - Friable Asbestos/PSD Bag (EG035T)		03-Aug-2021	12-Aug-2021	31-Aug-2021	✔	16-Aug-2021	31-Aug-2021	✔
SS-C1,	SS-C2,							
SS-C3,	SS-C4,							
SS-C5,	SS-C6,							
SS-C7,	SS-C8,							
T9-W1,	T9-W2,							
T9-W3,	T9-E1,							
T9-E2,	T9-E3,							
T10-W1,	T10-W2,							
T10-W3,	T10-E1,							
T10-E2,	T10-E3,							
T11-W1,	T11-W2,							
T11-W3,	T11-E1,							
T11-E2,	T11-E3,							
T12-W1,	T12-W2,							
T12-W3,	T12-E1,							
T12-E2,	T12-E3,							
T13-W1,	T13-W2,							
T13-W3,	T13-E1,							
T13-E2,	T13-E3,							
T14-W1,	T14-W2,							
T14-W3,	T14-E1,							
T14-E2,	T14-E3,							
D01_210803,	D02_210803							
Snap Lock Bag - Friable Asbestos/PSD Bag (EG035T)								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS - Continued								
SS-A1, SS-A3, SS-A5, SS-A7, SS-A9, SS-A11, SS-A13, SS-A15, SS-A17, T4-W1, T4-E1, T4-E3, T5-W2, T5-E2, T6-W1, T6-E1, T6-E3, T7-W2, T7-E1, T7-E3, T8-W2, T8-E1, T8-E3	SS-A2, SS-A4, SS-A6, SS-A8, SS-A10, SS-A12, SS-A14, SS-A16, SS-A18, T4-W2, T4-E2, T5-W1, T5-E1, T5-E3, T6-W2, T6-E2, T7-W1, T7-W3, T7-E2, T8-W1, T8-W3, T8-E2,	04-Aug-2021	12-Aug-2021	01-Sep-2021	✓	16-Aug-2021	01-Sep-2021	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EG035T)								
T1-W1, T1-W3, T1-E2, T2-E1, T2-E3, T2-W2, T3-W2, T3-E2, SS-B1, SS-B3, SS-B5, AOI-2, AOI-9, AOI-6, AOI-8	T1-W2, T1-E1, T1-E3, T2-E2, T2-W1, T3-W1, T3-E1, T3-E3, SS-B2, SS-B4, AOI-1, AOI-3, AOI-5, AOI-7,	05-Aug-2021	12-Aug-2021	02-Sep-2021	✓	16-Aug-2021	02-Sep-2021	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EG035T)								
D01_210805, D03_210805,	D02_210805, D04_210805	05-Aug-2021	13-Aug-2021	02-Sep-2021	✓	16-Aug-2021	02-Sep-2021	✓

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Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS - Continued							
Snap Lock Bag - Friable Asbestos/PSD Bag (EG035T) AOI-10	05-Aug-2021	16-Aug-2021	02-Sep-2021	✔	17-Aug-2021	02-Sep-2021	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) R01_210803	03-Aug-2021	11-Aug-2021	30-Jan-2022	✓	11-Aug-2021	30-Jan-2022	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) R01_210804	04-Aug-2021	11-Aug-2021	31-Jan-2022	✓	11-Aug-2021	31-Jan-2022	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) R01_210805	05-Aug-2021	11-Aug-2021	01-Feb-2022	✓	11-Aug-2021	01-Feb-2022	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) R01_210803	03-Aug-2021	----	----	----	11-Aug-2021	31-Aug-2021	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) R01_210804	04-Aug-2021	----	----	----	11-Aug-2021	01-Sep-2021	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) R01_210805	05-Aug-2021	----	----	----	11-Aug-2021	02-Sep-2021	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	15	150	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	15	149	10.07	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	16	149	10.74	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	8	149	5.37	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	9	149	6.04	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	8	149	5.37	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	8	149	5.37	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	8	149	5.37	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	8	149	5.37	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	3	19	15.79	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2128631

<p>Client : ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)</p> <p>Contact : MR MATTHEW CROW</p> <p>Address : LEVEL 1 45 WATT STREET NEWCASTLE NSW 2300</p> <p>E-mail : matthew.crow@erm.com</p> <p>Telephone : +61 02 4964 2150</p> <p>Facsimile : +61 02 4962 2152</p> <p>Project : 0608750 - Bungendore Lead Investigation</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler : Michael Mercer</p>	<p>Laboratory : Environmental Division Sydney</p> <p>Contact : Monica Wright</p> <p>Address : 277-289 Woodpark Road Smithfield NSW Australia 2164</p> <p>E-mail : monica.wright@alsglobal.com</p> <p>Telephone : +61-2-8784 8555</p> <p>Facsimile : +61-2-8784 8500</p> <p>Page : 1 of 18</p> <p>Quote number : EP2020ENVRES0018 (EN/114/20)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

<p>Date Samples Received : 06-Aug-2021 13:20</p> <p>Client Requested Due Date : 17-Aug-2021</p>	<p>Issue Date : 17-Aug-2021</p> <p>Scheduled Reporting Date : 17-Aug-2021</p>
---	--

Delivery Details

<p>Mode of Delivery : Undefined</p> <p>No. of coolers/boxes : ----</p> <p>Receipt Detail :</p>	<p>Security Seal : Not Available</p> <p>Temperature : ----</p> <p>No. of samples received / analysed : 128 / 128</p> <p>No. of samples NOT collected : 1</p>
---	--

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Sample ID T01_210803, T02_210803, T01_210805, T02_210805, T03_210805 & T04_210803 will be forwarded to Eurofins.**
- **Updated SRN is for sample ID AOI-04 was not received.**
- **Updated SRN is for correcting sample 8 matrix.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Moisture Content : EA055		
SS-C1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C4	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C6	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C7	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C8	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Moisture Content : EA055		
T12-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D01_210803	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D02_210803	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A4	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A6	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A7	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A8	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A9	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A10	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A11	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A12	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A13	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A14	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Moisture Content : EA055		
SS-A15	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A16	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A17	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A18	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Moisture Content : EA055		
T1-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B4	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-9	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-6	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-7	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-8	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D01_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D02_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Moisture Content : EA055		
D03_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D04_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-10	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
Total Mercury by FIMS : EG035T		
SS-C1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C4	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C6	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C7	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C8	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Total Mercury by FIMS : EG035T		
T12-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D01_210803	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D02_210803	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A4	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A6	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A7	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A8	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A9	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A10	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A11	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A12	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Total Mercury by FIMS : EG035T		
SS-A13	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A14	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A15	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A16	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A17	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A18	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Total Mercury by FIMS : EG035T		
T8-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B4	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-9	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-6	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-7	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-8	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Total Mercury by FIMS : EG035T		
D01_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D02_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D03_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D04_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-10	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
Total Metals by ICP-AES : EG005T		
SS-C1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C4	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C6	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C7	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-C8	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T9-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T10-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T11-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Total Metals by ICP-AES : EG005T		
T11-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T12-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T13-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T14-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D01_210803	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D02_210803	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A4	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A6	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A7	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A8	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A9	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A10	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Total Metals by ICP-AES : EG005T		
SS-A11	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A12	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A13	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A14	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A15	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A16	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A17	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-A18	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T4-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T5-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T6-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T7-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Total Metals by ICP-AES : EG005T		
T8-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T8-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-W3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T1-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T2-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-W1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-W2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-E1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-E2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
T3-E3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B4	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
SS-B5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-1	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-2	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-3	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-9	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-5	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-6	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved



Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Total Metals by ICP-AES : EG005T		
AOI-7	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-8	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D01_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D02_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D03_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
D04_210805	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved
AOI-10	- Snap Lock Bag - Friable Asbestos/PSD Bag	- Soil Glass Jar - Unpreserved

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - S-03 15 Metals (NEPM 2013 Suite - incl. Digestion)
ES2128631-001	03-Aug-2021 00:00	SS-C1	✓	✓
ES2128631-002	03-Aug-2021 00:00	SS-C2	✓	✓
ES2128631-003	03-Aug-2021 00:00	SS-C3	✓	✓
ES2128631-004	03-Aug-2021 00:00	SS-C4	✓	✓
ES2128631-005	03-Aug-2021 00:00	SS-C5	✓	✓
ES2128631-006	03-Aug-2021 00:00	SS-C6	✓	✓
ES2128631-007	03-Aug-2021 00:00	SS-C7	✓	✓
ES2128631-008	03-Aug-2021 00:00	SS-C8	✓	✓
ES2128631-009	03-Aug-2021 00:00	T9-W1	✓	✓
ES2128631-010	03-Aug-2021 00:00	T9-W2	✓	✓
ES2128631-011	03-Aug-2021 00:00	T9-W3	✓	✓
ES2128631-012	03-Aug-2021 00:00	T9-E1	✓	✓
ES2128631-013	03-Aug-2021 00:00	T9-E2	✓	✓
ES2128631-014	03-Aug-2021 00:00	T9-E3	✓	✓
ES2128631-015	03-Aug-2021 00:00	T10-W1	✓	✓
ES2128631-016	03-Aug-2021 00:00	T10-W2	✓	✓
ES2128631-017	03-Aug-2021 00:00	T10-W3	✓	✓
ES2128631-018	03-Aug-2021 00:00	T10-E1	✓	✓
ES2128631-019	03-Aug-2021 00:00	T10-E2	✓	✓
ES2128631-020	03-Aug-2021 00:00	T10-E3	✓	✓
ES2128631-021	03-Aug-2021 00:00	T11-W1	✓	✓
ES2128631-022	03-Aug-2021 00:00	T11-W2	✓	✓
ES2128631-023	03-Aug-2021 00:00	T11-W3	✓	✓
ES2128631-024	03-Aug-2021 00:00	T11-E1	✓	✓
ES2128631-025	03-Aug-2021 00:00	T11-E2	✓	✓



			SOIL - EA055-103 Moisture Content	SOIL - S-03 15 Metals (NEPM 2013 Suite - incl. Digestion)
ES2128631-026	03-Aug-2021 00:00	T11-E3	✓	✓
ES2128631-027	03-Aug-2021 00:00	T12-W1	✓	✓
ES2128631-028	03-Aug-2021 00:00	T12-W2	✓	✓
ES2128631-029	03-Aug-2021 00:00	T12-W3	✓	✓
ES2128631-030	03-Aug-2021 00:00	T12-E1	✓	✓
ES2128631-031	03-Aug-2021 00:00	T12-E2	✓	✓
ES2128631-032	03-Aug-2021 00:00	T12-E3	✓	✓
ES2128631-033	03-Aug-2021 00:00	T13-W1	✓	✓
ES2128631-034	03-Aug-2021 00:00	T13-W2	✓	✓
ES2128631-035	03-Aug-2021 00:00	T13-W3	✓	✓
ES2128631-036	03-Aug-2021 00:00	T13-E1	✓	✓
ES2128631-037	03-Aug-2021 00:00	T13-E2	✓	✓
ES2128631-038	03-Aug-2021 00:00	T13-E3	✓	✓
ES2128631-039	03-Aug-2021 00:00	T14-W1	✓	✓
ES2128631-040	03-Aug-2021 00:00	T14-W2	✓	✓
ES2128631-041	03-Aug-2021 00:00	T14-W3	✓	✓
ES2128631-042	03-Aug-2021 00:00	T14-E1	✓	✓
ES2128631-043	03-Aug-2021 00:00	T14-E2	✓	✓
ES2128631-044	03-Aug-2021 00:00	T14-E3	✓	✓
ES2128631-045	03-Aug-2021 00:00	D01_210803	✓	✓
ES2128631-046	03-Aug-2021 00:00	D02_210803	✓	✓
ES2128631-048	04-Aug-2021 00:00	SS-A1	✓	✓
ES2128631-049	04-Aug-2021 00:00	SS-A2	✓	✓
ES2128631-050	04-Aug-2021 00:00	SS-A3	✓	✓
ES2128631-051	04-Aug-2021 00:00	SS-A4	✓	✓
ES2128631-052	04-Aug-2021 00:00	SS-A5	✓	✓
ES2128631-053	04-Aug-2021 00:00	SS-A6	✓	✓
ES2128631-054	04-Aug-2021 00:00	SS-A7	✓	✓
ES2128631-055	04-Aug-2021 00:00	SS-A8	✓	✓
ES2128631-056	04-Aug-2021 00:00	SS-A9	✓	✓
ES2128631-057	04-Aug-2021 00:00	SS-A10	✓	✓
ES2128631-058	04-Aug-2021 00:00	SS-A11	✓	✓
ES2128631-059	04-Aug-2021 00:00	SS-A12	✓	✓
ES2128631-060	04-Aug-2021 00:00	SS-A13	✓	✓
ES2128631-061	04-Aug-2021 00:00	SS-A14	✓	✓
ES2128631-062	04-Aug-2021 00:00	SS-A15	✓	✓
ES2128631-063	04-Aug-2021 00:00	SS-A16	✓	✓
ES2128631-064	04-Aug-2021 00:00	SS-A17	✓	✓
ES2128631-065	04-Aug-2021 00:00	SS-A18	✓	✓
ES2128631-066	04-Aug-2021 00:00	T4-W1	✓	✓
ES2128631-067	04-Aug-2021 00:00	T4-W2	✓	✓



			SOIL - EA055-103 Moisture Content	SOIL - S-03 15 Metals (NEPM 2013 Suite - incl. Digestion)
ES2128631-068	04-Aug-2021 00:00	T4-E1	✓	✓
ES2128631-069	04-Aug-2021 00:00	T4-E2	✓	✓
ES2128631-070	04-Aug-2021 00:00	T4-E3	✓	✓
ES2128631-071	04-Aug-2021 00:00	T5-W1	✓	✓
ES2128631-072	04-Aug-2021 00:00	T5-W2	✓	✓
ES2128631-073	04-Aug-2021 00:00	T5-E1	✓	✓
ES2128631-074	04-Aug-2021 00:00	T5-E2	✓	✓
ES2128631-075	04-Aug-2021 00:00	T5-E3	✓	✓
ES2128631-076	04-Aug-2021 00:00	T6-W1	✓	✓
ES2128631-077	04-Aug-2021 00:00	T6-W2	✓	✓
ES2128631-078	04-Aug-2021 00:00	T6-E1	✓	✓
ES2128631-079	04-Aug-2021 00:00	T6-E2	✓	✓
ES2128631-080	04-Aug-2021 00:00	T6-E3	✓	✓
ES2128631-081	04-Aug-2021 00:00	T7-W1	✓	✓
ES2128631-082	04-Aug-2021 00:00	T7-W2	✓	✓
ES2128631-083	04-Aug-2021 00:00	T7-W3	✓	✓
ES2128631-084	04-Aug-2021 00:00	T7-E1	✓	✓
ES2128631-085	04-Aug-2021 00:00	T7-E2	✓	✓
ES2128631-086	04-Aug-2021 00:00	T7-E3	✓	✓
ES2128631-087	04-Aug-2021 00:00	T8-W1	✓	✓
ES2128631-088	04-Aug-2021 00:00	T8-W2	✓	✓
ES2128631-089	04-Aug-2021 00:00	T8-W3	✓	✓
ES2128631-090	04-Aug-2021 00:00	T8-E1	✓	✓
ES2128631-091	04-Aug-2021 00:00	T8-E2	✓	✓
ES2128631-092	04-Aug-2021 00:00	T8-E3	✓	✓
ES2128631-094	05-Aug-2021 00:00	T1-W1	✓	✓
ES2128631-095	05-Aug-2021 00:00	T1-W2	✓	✓
ES2128631-096	05-Aug-2021 00:00	T1-W3	✓	✓
ES2128631-097	05-Aug-2021 00:00	T1-E1	✓	✓
ES2128631-098	05-Aug-2021 00:00	T1-E2	✓	✓
ES2128631-099	05-Aug-2021 00:00	T1-E3	✓	✓
ES2128631-100	05-Aug-2021 00:00	T2-E1	✓	✓
ES2128631-101	05-Aug-2021 00:00	T2-E2	✓	✓
ES2128631-102	05-Aug-2021 00:00	T2-E3	✓	✓
ES2128631-103	05-Aug-2021 00:00	T2-W1	✓	✓
ES2128631-104	05-Aug-2021 00:00	T2-W2	✓	✓
ES2128631-105	05-Aug-2021 00:00	T3-W1	✓	✓
ES2128631-106	05-Aug-2021 00:00	T3-W2	✓	✓
ES2128631-107	05-Aug-2021 00:00	T3-E1	✓	✓
ES2128631-108	05-Aug-2021 00:00	T3-E2	✓	✓
ES2128631-109	05-Aug-2021 00:00	T3-E3	✓	✓



			SOIL - EA055-103 Moisture Content	SOIL - S-03 15 Metals (NEPM 2013 Suite - incl. Digestion)
ES2128631-110	05-Aug-2021 00:00	SS-B1	✓	✓
ES2128631-111	05-Aug-2021 00:00	SS-B2	✓	✓
ES2128631-112	05-Aug-2021 00:00	SS-B3	✓	✓
ES2128631-113	05-Aug-2021 00:00	SS-B4	✓	✓
ES2128631-114	05-Aug-2021 00:00	SS-B5	✓	✓
ES2128631-115	05-Aug-2021 00:00	AOI-1	✓	✓
ES2128631-116	05-Aug-2021 00:00	AOI-2	✓	✓
ES2128631-117	05-Aug-2021 00:00	AOI-3	✓	✓
ES2128631-118	05-Aug-2021 00:00	AOI-9	✓	✓
ES2128631-119	05-Aug-2021 00:00	AOI-5	✓	✓
ES2128631-120	05-Aug-2021 00:00	AOI-6	✓	✓
ES2128631-121	05-Aug-2021 00:00	AOI-7	✓	✓
ES2128631-122	05-Aug-2021 00:00	AOI-8	✓	✓
ES2128631-125	05-Aug-2021 00:00	D01_210805	✓	✓
ES2128631-126	05-Aug-2021 00:00	D02_210805	✓	✓
ES2128631-127	05-Aug-2021 00:00	D03_210805	✓	✓
ES2128631-128	05-Aug-2021 00:00	D04_210805	✓	✓
ES2128631-130	05-Aug-2021 00:00	AOI-10	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - W-03T 15 Metals (Total) (NEPM)
ES2128631-047	03-Aug-2021 00:00	R01_210803	✓
ES2128631-093	04-Aug-2021 00:00	R01_210804	✓
ES2128631-129	05-Aug-2021 00:00	R01_210805	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



CHAIN OF CUSTODY

ALS Laboratory.
please click →

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Ph: 06 8706 7855 E: samples.pernambuco@galglobal.com

JSYDNEY 277-285 Woodpark Road Smiths old NSW 2164
Ph: 02 8784 8555 E: samplesydney@aol.com
LITONHVSILLE 14-15 Desna Court Dor a Cl 4878
Ph: 07 4796 6600 E: townesie@environmentalglobal.com
WOLLONGONG 96 Kerry Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkomba@aol.com

CLIENT: ERM		TURNAROUND REQUIREMENTS :		Standard TAT (7 days)		FOR LABORATORY USE ONLY (To be filled in by the laboratory)	
OFFICE: Newcastle		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)					
PROJECT: 0608750 - Bungendore Lead Investigation		ALS QUOTE NO.: National Price Discount		COC SEQUENCE NUMBER (Circle)			
ORDER NUMBER:				COC: 0 2 3 4 5 6 7			
				OF: 1 2 3 4 5 6 7			
PROJECT MANAGER: Matthew Crow		CONTACT PH: 0402652889					
SAMPLER: Michael Mercer		SAMPLER MOBILE: 0439623103		RELINQUISHED BY:		RELINQUISHED BY:	
COC emailed to ALS? YES		EDD FORMAT (or default):		Michael Mercer		MG.	
Email Reports to (will default to PM if no other addresses are listed): PM				DATE/TIME:		DATE/TIME:	
Email Invoice to (will default to PM if no other addresses are listed): PM				02/08/21		6/8/21 1:10	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

reling: C. L. S. 24

ANALYSIS REQUIRED including **SUITES** (NB. Suite Codes must be listed to attract suite price)
Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required)

Additional Information

[illegible]

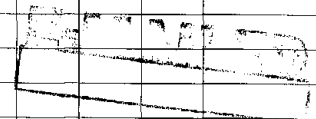
Environmental Division
Sydney
Work Order Reference
ES2128631



telephone : : 61-2-8784 8654

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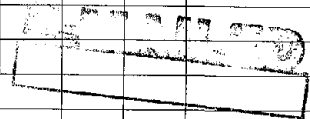
33	T13-W1	3/08/2021	soil					x									
34	T13-W2	3/08/2021	soil					x									
35	T13-W3	3/08/2021	soil					x									
36	T13-E1	3/08/2021	soil					x									
37	T13-E2	3/08/2021	soil					x									
38	T13-E3	3/08/2021	soil					x									
39	T14-W1	3/08/2021	soil					x									
40	T14-W2	3/08/2021	soil					x									
41	T14-W3	3/08/2021	soil					x									
42	T14-E1	3/08/2021	soil					x									
43	T14-E2	3/08/2021	soil					x									
44	T14-E3	3/08/2021	soil					x									
45	D01_210803	3/08/2021	soil					x									
	T01_210803	3/08/2021	soil					x									
46	D02_210803	3/08/2021	soil					x									Interlab sample, fed to Eurofins
	T02_210803	3/08/2021	soil					x									Interlab sample, fed to Eurofins
47	R01_210803	3/08/2021	water					x									
48	SS-A1	4/08/2021	soil					x									
49	SS-A2	4/08/2021	soil					x									
50	SS-A3	4/08/2021	soil					x									
51	SS-A4	4/08/2021	soil					x									
52	SS-A5	4/08/2021	soil					x									
53	SS-A6	4/08/2021	soil					x									
54	SS-A7	4/08/2021	soil					x									
55	SS-A8	4/08/2021	soil					x									
56	SS-A9	4/08/2021	soil					x									
57	SS-A10	4/08/2021	soil					x									
58	SS-A11	4/08/2021	soil					x									
59	SS-A12	4/08/2021	soil					x									
60	SS-A13	4/08/2021	soil					x									
61	SS-A14	4/08/2021	soil					x									
62	SS-A15	4/08/2021	soil					x									
63	SS-A16	4/08/2021	soil					x									
64	SS-A17	4/08/2021	soil					x									
65	SS-A18	4/08/2021	soil					x									
66	T4-W1	4/08/2021	soil					x									
67	T4-W2	4/08/2021	soil					x									
68	T4-E1	4/08/2021	soil					x									
69	T4-E2	4/08/2021	soil					x									
70	T4-E3	4/08/2021	soil					x									
71	T5-W1	4/08/2021	soil					x									
72	T5-W2	4/08/2021	soil					x									
73	T5-E1	4/08/2021	soil					x									
74	T5-E2	4/08/2021	soil					x									
75	T5-E3	4/08/2021	soil					x									
76	T6-W1	4/08/2021	soil					x									
77	T6-W2	4/08/2021	soil					x									
78	T6-E1	4/08/2021	soil					x									
79	T6-E2	4/08/2021	soil					x									
80	T6-E3	4/08/2021	soil					x									



LAB OF ORIGIN:
NEWCASTLE

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81	T7-W1	4/08/2021	soil					x											
82	T7-W2	4/08/2021	soil					x											
83	T7-W3	4/08/2021	soil					x											
84	T7-E1	4/08/2021	soil					x											
85	T7-E2	4/08/2021	soil					x											
86	T7-E3	4/08/2021	soil					x											
87	T8-W1	4/08/2021	soil					x											
88	T8-W2	4/08/2021	soil					x											
89	T8-W3	4/08/2021	soil					x											
90	T8-E1	4/08/2021	soil					x											
91	T8-E2	4/08/2021	soil					x											
92	T8-E3	4/08/2021	soil					x											
93	R01_210804	4/08/2021	water					x											
94	T1-W1	5/08/2021	Soil					x											
95	T1-W2	5/08/2021	Soil					x											
96	T1-W3	5/08/2021	Soil					x											
97	T1-E1	5/08/2021	Soil					x											
98	T1-E2	5/08/2021	Soil					x											
99	T1-E3	5/08/2021	Soil					x											
100	T2-E1	5/08/2021	Soil					x											
101	T2-E2	5/08/2021	Soil					x											
102	T2-E3	5/08/2021	Soil					x											
103	T2-W1	5/08/2021	Soil					x											
104	T2-W2	5/08/2021	Soil					x											
105	T3-W1	5/08/2021	Soil					x											
106	T3-W2	5/08/2021	Soil					x											
107	T3-E1	5/08/2021	Soil					x											
108	T3-E2	5/08/2021	Soil					x											
109	T3-E3	5/08/2021	Soil					x											
110	SS-B1	5/08/2021	Soil					x											
111	SS-B2	5/08/2021	Soil					x											
112	SS-B3	5/08/2021	Soil					x											
113	SS-B4	5/08/2021	Soil					x											
114	SS-B5	5/08/2021	Soil					x											
115	AOI-1	5/08/2021	Soil					x											
116	AOI-2	5/08/2021	Soil					x											
117	AOI-3	5/08/2021	Soil					x											
118	AOI-4	5/08/2021	Soil					x											
119	AOI-5	5/08/2021	Soil					x											
120	AOI-6	5/08/2021	Soil					x											
121	AOI-7	5/08/2021	Soil					x											
122	AOI-8	5/08/2021	Soil					x											
123	AOI-9	5/08/2021	Soil					x											
124	AOI-10	5/08/2021	Soil					x											
	T01_210805	5/08/2021	Soil					x											
125	D01_210805	5/08/2021	Soil					x											interlab sample, fed to eurofins
	T02_210805	5/08/2021	Soil					x											
126	D02_210805	5/08/2021	Soil					x											interlab sample, fed to eurofins
	T03_210805	5/08/2021	Soil					x											
127	D03_210805	5/08/2021	Soil					x											interlab sample, fed to eurofins
	T04_210805	5/08/2021	Soil					x											
128	D04_210805	5/08/2021	Soil					x											interlab sample, fed to eurofins
129	R01_210805	5/08/2021	Water					x											



LAB OF ORIGIN:
NEWCASTLE

ERM has over 160 offices across the following countries and territories worldwide

Argentina	The Netherlands
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Belgium	Norway
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Canada	Peru
Chile	Poland
China	Portugal
Colombia	Puerto Rico
France	Romania
Germany	Russia
Ghana	Senegal
Guyana	Singapore
Hong Kong	South Africa
India	South Korea
Indonesia	Spain
Ireland	Sweden
Italy	Switzerland
Japan	Taiwan
Kazakhstan	Tanzania
Kenya	Thailand
Malaysia	UAE
Mexico	UK
Mozambique	US
Myanmar	Vietnam

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