Preliminary Site Investigation and Soil Assessment

15 Bob Irvin Road, Yoogali NSW 2680

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ARC ENVIRONMENTAL

Preliminary Site Investigation and Contamination Assessment

15 Bob Irvin Road, Yoogali NSW 2680

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Prepared for:

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List of Acronyms

Acronym	Definition
ACM	Asbestos Containing Materials
AHD	Australian Height Datum
ARC	ARC Environmental
AS	Australian Standard
ASRIS	Australian Soil Resource Information System
AST	Above-Ground Storage Tank
BESS	Battery Energy Storage System
BTEXN	Benzene, toluene, ethylbenzene, xylenes, naphthalene
COC	Chain of Custody
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DA	Development Application
DPHI	Department of Planning, Housing and Infrastructure
EAT	Emerson Aggregate Test
EC	Electrical Conductivity
EIL	Ecological Investigation Level
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EPL	Environment Protection Licence
ESP	Exchangeable Sodium Percentage
ESL	Ecological Screening Level
HIL	Human Health Investigation Level
HSL	Human Health Screening Level
km	kilometres
LOR	Limits of Reporting
LSC	Land and Soil Capability
m	metre
mbgl	metres below ground level
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NSW	New South Wales
OCP	Organochlorine Pesticides
OPP	Organophosphorous Pesticides
PAH	Polycyclic Aromatic hydrocarbon
PID	Photo-ionisation Detector
POEO	Protection of the Environment Operations
ppm	Parts per million
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance / Quality Control
RPD	Relative Percentage Difference
SAR	Sodium Absorption Ratio

Acronym	Definition
SB	Soil Bore
SEPP	State Environmental Planning Policy
SMP	Soil Management Plan
SSD	State Significant Development
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
USCS	Unified Soil Classification System
VOCs	Volatile Organic Compounds

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Executive Summary

ARC Environmental (ARC) has completed a Preliminary Site Investigation (PSI) and Contamination Assessment at 15 Bob Irvin Road, Yoogali NSW 2680 ('the Site'). ARC understands that the Site is proposed to host a utility-scale Battery Energy Storage System (BESS).

The objective was to undertake an investigation for the potential of contamination at the Site based on its current and historical use, in the context of the proposed land use and the suitability for potential future development of the BESS, as well as a preliminary assessment on the soil quality at the Site. The objectives were achieved through desktop review of available data in relation to the environmental setting and history of the Site and surrounding areas; Site inspection to confirm results of the desktop review of the Site and adjacent off-Site areas; soil investigations at Site for assessment against regulatory framework for current and proposed land use and assessing soil parameters against best practice guidance for proposed land use.

The review of historical land uses and activities in the PSI desktop study indicated that the Site has generally been used for agricultural purposes since at least 1958. It is considered that based on the historical agricultural use including potential pesticide/herbicide application and machinery usage/maintenance at the Site, the potential for contamination within the Site soils is low and acceptable.

The findings of the soil survey assessing for potential contaminants of concern identified in the PSI desktop study determined that there are no elevations of chemical analytes nor Tier 1 criteria exceedances. No further assessment for soil contamination or remediation activities is considered warranted prior to redevelopment of the land for the proposed BESS area.

Salinity is very low across most sampled locations, posing no constraint to vegetation or infrastructure; with a few locations showing low to moderate salinity, where salt-tolerant landscaping may be advisable, and only SB02_1.1 exhibiting very high salinity, potentially necessitating the requirement for management and raising minor infrastructure concerns relating to potential for concrete degradation as a result.

Sodicity is minimal in shallow soils, indicating lateral stability and suitability for reuse without treatment, but increases at depth, to sodic and strongly sodic levels, which introduces potential risk of dispersion, poor infiltration, and erosion within deeper installation or structures.

Stability assessed via the Emerson Aggregate Test revealed most samples are dispersive / unstable across the Site, indicating a potential for erosion, with only one location (SB03_0.1) showing partial stability, still requiring caution in reuse or exposure via lack of surface cover during and post site development.

The soil characteristics assessed at Site are considered unlikely to significantly impact upon the proposed BESS project, given the redevelopment design is proposed to be a flat and shallow establishment with an absence of significant slopes, which minimizes risks related to erosion, dispersion, or drainage constraints and the likely maintenance of surface cover over soils around site structures. However, the soil properties indicate that any amendment to the proposed design (such as establishment of slopes or deeper settlement) would require further assessment and management due to elevated sodicity, salinity, and potential structural limitations of shallow site soils (instability).

Based on the results of the soil survey, ARC recommend the following:

- *Further geotechnical soil assessment with consideration of proposed Site development to be undertaken by a suitably qualified soil geotechnical professional, and to provide sufficient information for the development of a Site Soil Management Plan (SMP), if required.*
- *Avoid development designs that increase the potential for dispersion and erosion of the in situ soil assessed (e.g., avoid inundation of BESS area with floodwater or creating uncovered slope batters with reworked Site soils which would promote runoff).*
- *Consider implementing management practices for the reuse of soil at Site, including chemical amelioration (i.e. gypsum) for managing sodicity and restricting soil use for landscaping due to elevated salinity.*

1. Introduction

ARC Environmental (ARC) was engaged by Eku Energy on behalf of Griffith BESS Co Pty Ltd (the Proponent) to conduct a Preliminary Site Investigation and Soil Assessment at 15 Bob Irvin Road, Yoogali NSW 2680 ('the Site'). ***Figure 1*** defines the location of the Site.

The Site is proposed to host a utility-scale Battery Energy Storage System (BESS). Given the estimated capital investment value, the project qualifies as State Significant Development (SSD) under the *Environmental Planning and Assessment Act 1979 (NSW)*. As a result, a Preliminary Site Investigation (PSI) is required to support the Development Application (DA) to be submitted to the Department of Planning, Housing, and Infrastructure (DPHI), as set out in the Secretary's Environmental Assessment Requirements (SEARs) application number SSD-85372970. The focus of the assessment involves the undertaking of a desktop study of historical documentation and addressing potential contamination issues through judgmental soil sampling.

1.1 Objectives

As specified in the SEARs, the following key Land issues are to be included in the Environmental Impact Statement (EIS) for the BESS development at Site:

- a detailed justification of the suitability of the site and that the site can accommodate the proposed development having regard to its potential environmental impacts, land contamination, permissibility, strategic context and existing site constraints;
- an assessment of the potential impacts of the development on existing land uses on the site and adjacent land, including:
    - a soil survey to determine the soil characteristics and consider the potential for salinity, acid sulfate soils, and erosion to occur;
- a preliminary investigation into potential contamination across the site, in accordance with the State Environmental Planning Policy (Resilience and Hazards) 2021 (Hazards SEPP) (as required).

To assist with the specifications above, the objective of this PSI and Soil Survey is to provide a preliminary assessment for the potential of contamination at the Site based on its current and historical use, supplemented by judgmental soil assessment. A further objective is to provide a preliminary assessment on soil quality at the Site for the proposed redevelopment of the BESS.

1.2 Scope of Works

Based on the project objectives, the scope of works completed by ARC included the following:

- A desktop review of available data in relation to the environmental setting and history of the Site and surrounding areas;
- Review of the Yoogali Solar Farm consent conditions and existing plans, to determine any off-site considerations;

- Site inspection to confirm results of the desktop review of the Site and adjacent off-Site areas;
- Advancement of eight (8) soil bores to a maximum depth of 1.2 metres below ground level (mbgl);
- Description of the soil profile in general accordance with the Unified Soil Classification System (USCS) and other logging procedures, with features such as seepage, discolouration, staining, odours, and other indicators of contamination noted;
- Collection of soil samples at near surface, 0.5 mbgl and 1.0 mbgl, as well as at horizons exhibiting visual or olfactory evidence of contamination;
- Collection of duplicate samples in separate zip lock bags to screen for volatile organic compounds (VOCs) using a calibrated photo-ionisation detector (PID);
- Laboratory analysis of selected soil samples by a laboratory accredited by the National Association of Testing Authorities (NATA) for the methods used; and
- Collation and interpretation of the data, including a quality assurance / quality control (QA/QC) data validation process, and preparation of this PSI report.

2. Site Information

2.1 Site Setting

A summary of Site identification details is provided in ***Table 2.1***. The information was collated from the Site visit and review of available mapping as part of this investigation. The Site location is shown on ***Figure 1***.

Table 2.1 Site Identification Summary

Information	Details
Street Address	15 Bob Irvin Road, Yoogali NSW 2680
Lot Details	2/-/DP1252779
Title Identifiers	Folio 2/1252779
Current Site Owner	Emery Family Enterprises Pty Ltd as trustee for Emery Family Enterprises Trust
Current Site Tenant	Yoogali Solar Farm Pty Ltd
Site Area	~ 6.8 hectares Site area includes proposed BESS Area and Transmission Corridor extending north to the Griffith Substation
Zoning	RU1 – Primary Production
Overlays	N/A
Local Government Authority	Griffith City Council

Note: Although the Site is located within a larger property boundary, the information presented in ***Table 2.1*** and throughout this report pertains solely to the defined assessment area referred to as the Site, as shown in ***Figure 2.***

The planning property report including zoning and overlay information for the Site is provided in ***Appendix A***. The historical title for the property and surrounding properties associated with the project development area are provided in ***Appendix B***.

2.2 Site Features

2.2.1 Proposed Site Uses

ARC understands that Site is proposed to host a utility-scale BESS to operate adjacent, but separate to the proposed Yoogali Solar Farm to be situated in the surrounding area (managed separately). The relevant development plans are provided in ***Appendix C***.

2.2.2 Surrounding Land Use

The surrounding land uses are summarised in ***Table 2.2***.

Table 2.2 Summary of Surrounding Land Use

Direction	Land Use
North	Bob Irvin Road / Irrigation Way (road), Yoogali East train station and railway, Griffith electrical substation, then agricultural land.
South	The remainder of Site's property address (vacant land), then Mirrool Branch Canal and agricultural land, then Mirrool Creek.
East	Open irrigation channel, Irrigation Way (road), railway line, residential property, Griffith Solar Farm, then agricultural land.
West	Agricultural property, then agricultural land with residences.

2.2.3 Nearby Sensitive Land Use

A review of local mapping showed five (5) residences within a 1,000 metre (m) radius of the Site. There were otherwise no sensitive land uses identified by the review. A figure of nearby sensitive receivers is presented in ***Appendix D***.

2.3 Previous Site Assessments

The following Site assessment reports provided to ARC for review have been considered relevant for this assessment:

- Cogency, 2025: Griffith BESS Scoping Report – 15 Bob Irvin Road, Yoogali NSW 2680. Dated 29 May 2025.
- Zenith Town Planning, 2018: Statement of Environmental Effects – Lots 140 and 141 DP 751709, No. 41 Bob Irvin Road, Yoogali. Dated December 2018.

The following are summaries of reports with relevance to scope of work:

Griffith BESS Scoping Report - Cogency (2025)

The Scoping Report prepared for Eku Energy has combined relevant preliminary assessments at the Site to provide a basis for further technical impact assessments that will form part of the Project's Environmental Impact Statement (EIS). Some key findings from the preliminary assessments that have been summarised in the Scoping Report are:

- The Project Site has a recent history of irrigation agriculture. Due to its proximity to Griffith and the main irrigation channel along Irrigation Way, it is likely that the Project Site has been cropped for much of Griffith's contemporary history since established in the early 20th century. More recently, the land containing the Project Site has been notably cropped for rice.
- Australian Soil Classification desktop review of the Site area determined the Site soils to likely be classified as vertosols or cracking clay (alluvium).
- Models from recent flood studies determined that the Project Site is not expected to be subject to flooding and inundation, largely due to the protection of nearby drainage to Mirrool Canal and Creek.
- The Project Site is within the RU1 Primary Production zone of the Griffith Local Environment Plan (LEP) has been classified as class 3 under the Land and Soil Capability (LSC) assessment scheme version 4.5 (NSW Office of Environment & Heritage, 2021). Class 3 land has "limitations that must be managed to prevent soil and land degradation.', generally indicating poor soil quality that requires extensive irrigation for agricultural productivity.

Statement of Environmental Effects – Zenith Town Planning (2018)

The purpose of the Statement of Environmental Effects was to support the application to develop a solar farm at 41 Bob Irvin Road, Yoogali (Yoogali Solar Farm). The scope of this report was to describe the location and physical characteristics of the site on which the development is proposed, identify relevant provisions of plans and policies applying to the land, and to discuss any potential environmental impacts of the development and proposed servicing arrangements.

Regarding potential for site contamination, the following comment was made in the Statement:

- The property has been cleared and farmed for many years and is not known to be listed on a Council register of potentially contaminated land. There has been no known historical usage that would cause the land to be contaminated. The use of farm chemicals such as pesticides and fertilisers is not considered to contaminate soils to the extent that mediation is required. It is considered that a preliminary investigation is not required for the development of a solar farm.

2.4 Site Environmental Setting

The following section describes the site environmental setting based on information as collated by Lotsearch on 21 July 2025. The Lotsearch report is included in ***Appendix E.***

2.4.1 Topography

The Site lies approximately between 120 and 130 m above Australian Height Datum (AHD) and was observed to be generally flat during the Site Inspection.

2.4.2 Acid Sulphate Soils Potential

The Australian Soil Resource Information System (ASRIS), provided by the CSIRO, defines the probability of Acid Sulfate Soils affecting the Site as low probability (6–70%) of occurrence with low confidence.

2.4.3 Regional Geology

The NSW Department of Mineral Resources, NSW 2022 1:1,500,0000 Geological Survey indicates that the Site is underlain by Cenozoic alluvial floodplain deposits, characterised by silt, very fine to medium-grained lithic to quartz-rich sand and clays. The Lotsearch report indicates the Site is underlain by sodosols, however, client-supplied reports indicate that the Site is underlain by vertosols (refer to **Section 2.3**).

2.4.4 Regional Hydrogeology and Groundwater Quality

According to the Murray Basin Hydrogeological Map of Narrandera 1:250,000, regional expected salinity from total dissolved solids (TDS) is between 7,000 – 14,000 mg/L with the likely depth to groundwater between 5 – 20 mbgl, occurring in the Shepparton Formation: Late Tertiary to Quaternary unconsolidated to poorly consolidated, mottled, variegated clay, silty clay with lenses of polymictic, coarse to fine sand and gravel; partly modified by pedogenesis, includes intercalated red-brown paleosols.

The regional groundwater flow is expected to be to the southeast towards Mirrool Creek.

2.4.5 Groundwater Resource Utilisation

The Lotsearch report indicates that five (5) groundwater bores are registered within 2,000 m of the Site. The bores identified in the search area are either used for monitoring, or their use is unknown.

The search results are summarised in **Error! Reference source not found.**.

Table 2.3 Summary of Active Groundwater Extraction Bores

NSW Bore ID	Date Installed	Distance & Direction from Site	Bore Use	Total Depth (m)
GW408499	01/06/1955	830 m northeast	Monitoring	32.60
GW004328	-	1,449 m southeast	Unknown	52.10
GW405897	01/02/1954	1,478 m northwest	Monitoring	14.02
GW405751	01/12/1953	1,542 m northwest	Unknown	34.44
GW405926	01/04/1954	1,843 m north	Monitoring	31.39

Note: "-" indicates an absence of data

2.4.6 Nearby Surface Water

The nearest surface water body is the Mirrool Branch Canal, located 1.1 kilometres (km) to the southeast of the Site, and then Mirrool Creek, located 1.89 km southeast.

2.4.7 NSW EPA Contaminated Sites and Environmental Licence Registers

The Lotsearch report indicates that the Site falls in an area currently and formerly affected by New South Wales (NSW) Environment Protection Authority (EPA) Licensed Activities under the Protection of the Environment Operations (POEO) Act (1997), the details of which are summarised in ***Table 2.4*****Error! Reference source not found.**.

Table 2.4 Summary of NSW EPA Data

Environment Protection Licence No. (EPL)	Date Issued	Organisation	Status	Activity	Distance and Direction from Site
4651	19/10/2000	Murrumbidgee Irrigation Limited	Current	Irrigated agriculture	On-site
13421	13/01/2012	UGL Regional Linx Pty Ltd	Current	Railway systems activities	20 m northeast
4653	06/09/2000	Luhrmann Environment Management Pty Ltd	Surrendered	Non-scheduled activity – application of herbicides (waterways throughout NSW)	0 m north and east
4838	07/09/2000	Robert Orchard	Surrendered	Non-scheduled activity – application of herbicides (waterways throughout NSW)	0 m north and east

Environment Protection Licence No. (EPL)	Date Issued	Organisation	Status	Activity	Distance and Direction from Site
6630	09/11/2000	Sydney Weed & Pest Management Pty Ltd	Surrendered	Non-scheduled activity – application of herbicides (waterways throughout NSW)	0 m north and east

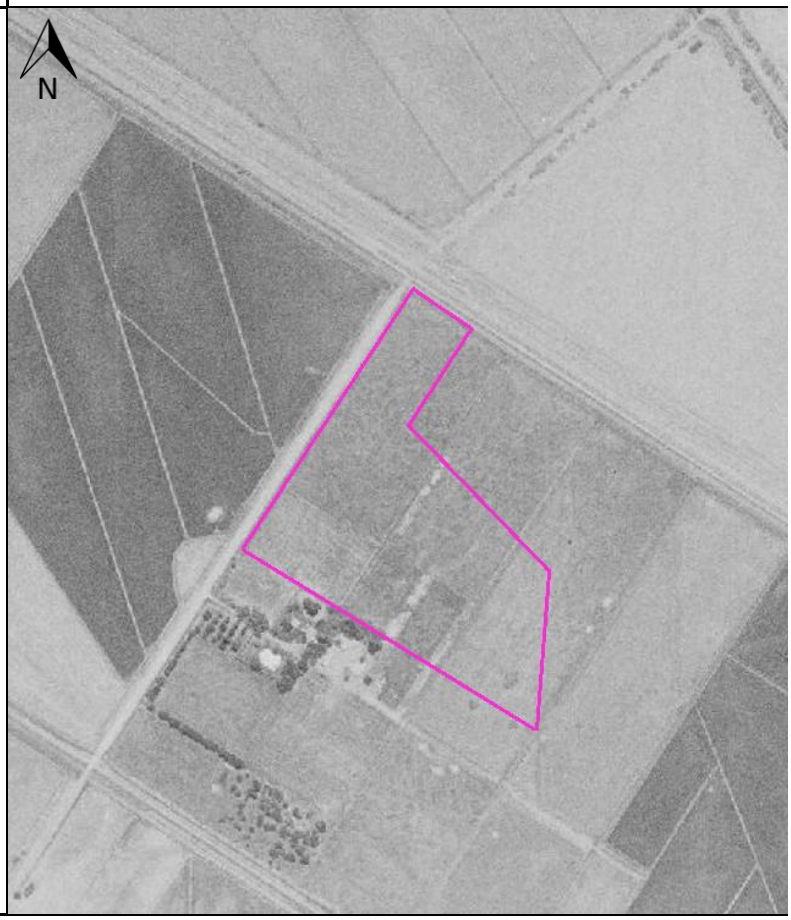
There are no NSW Contaminated Sites notified to the EPA within a 1,000 m radius of the Site.

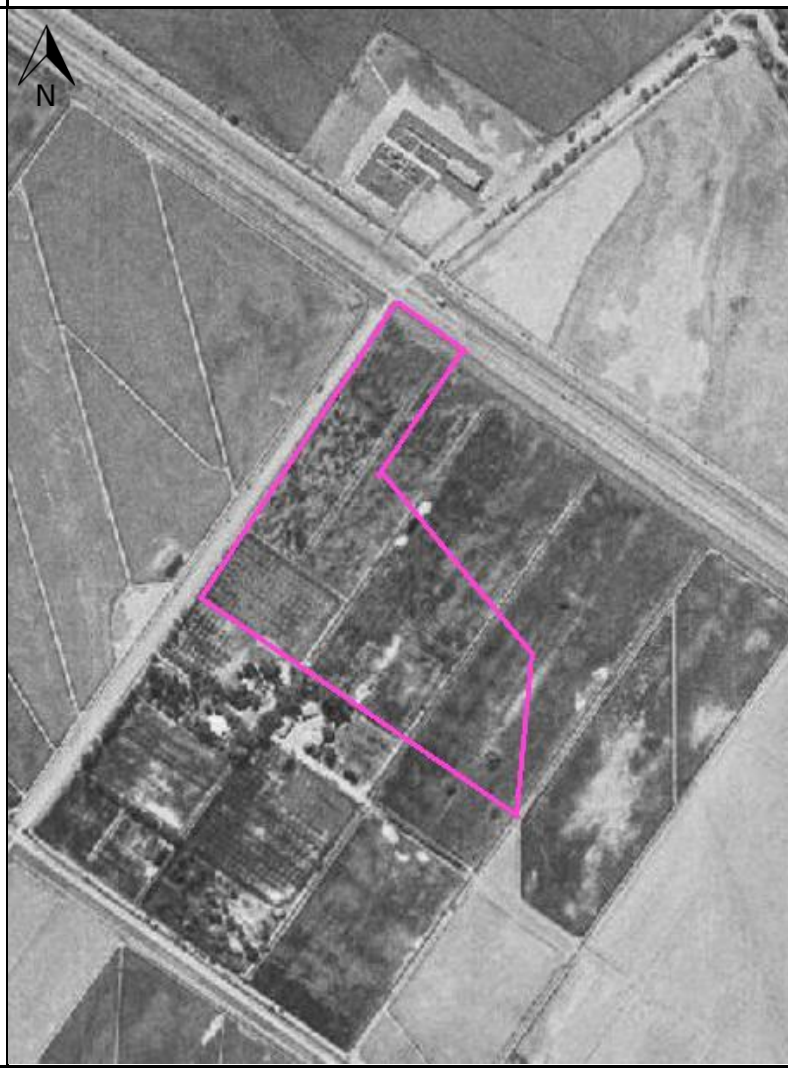
2.5 Site History

2.5.1 Historical Aerial Photographs

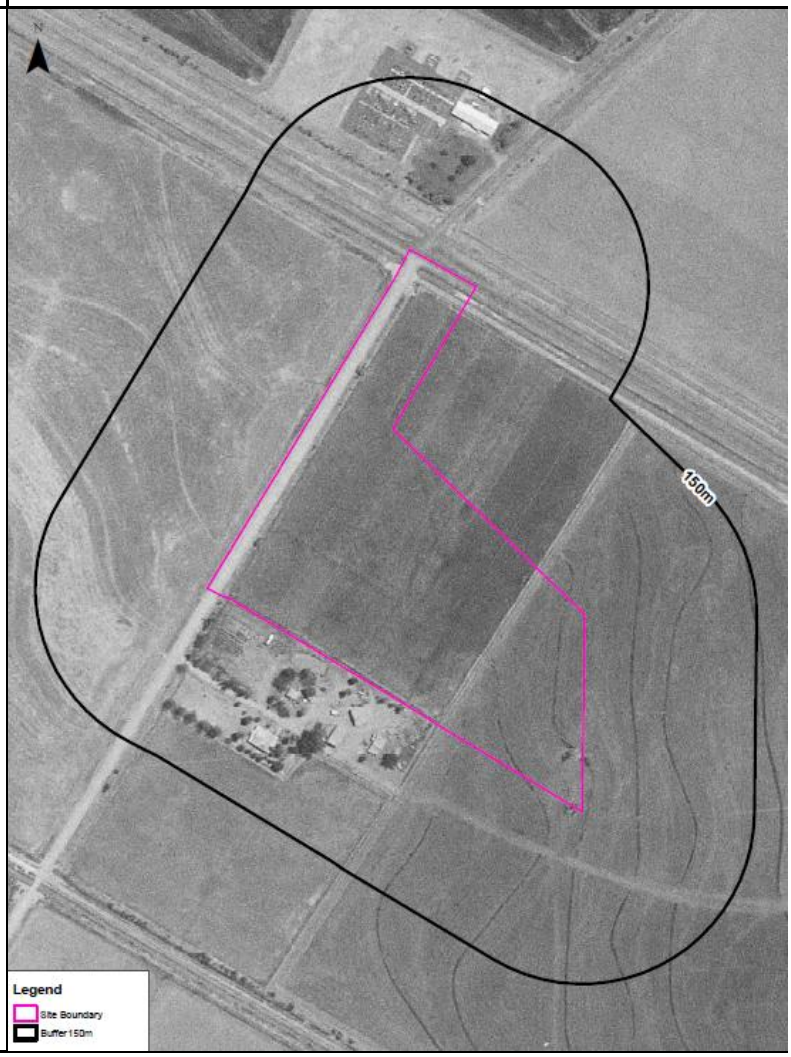
Viewing of selected historical aerial photographs dating back to 1958 was undertaken to assess land use and developmental changes over time. Observations from the images are summarised in ***Table 2.5***.

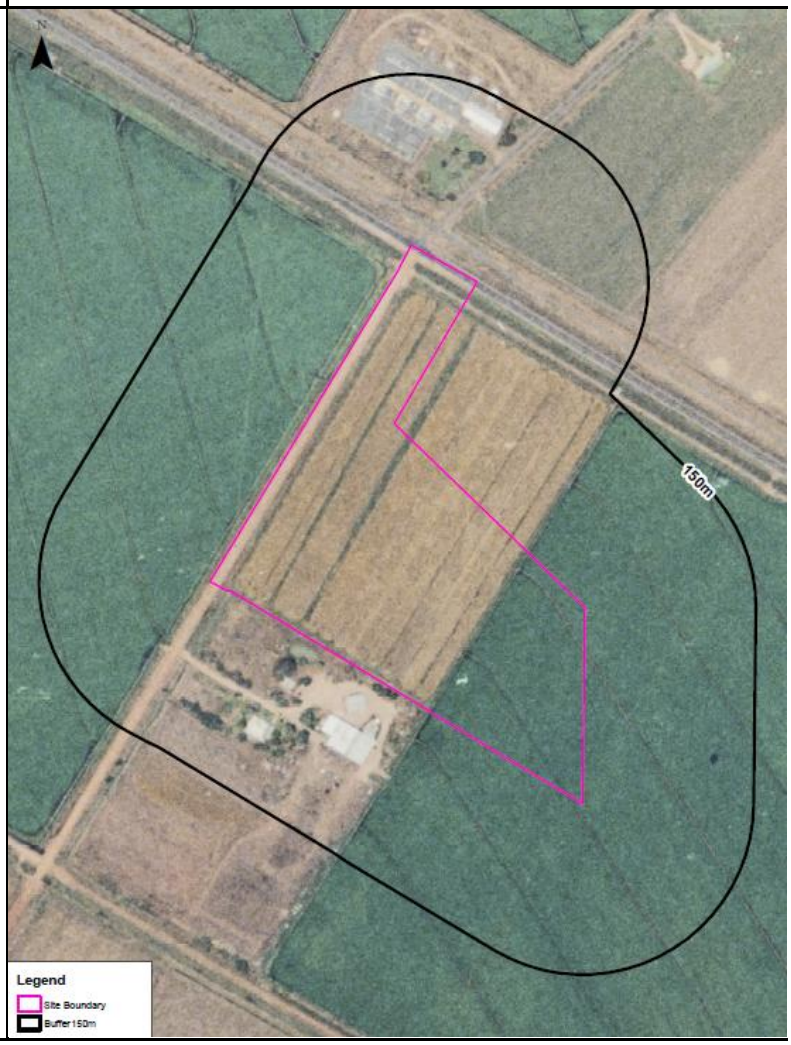
Table 2.5 Historical Aerial Photographs

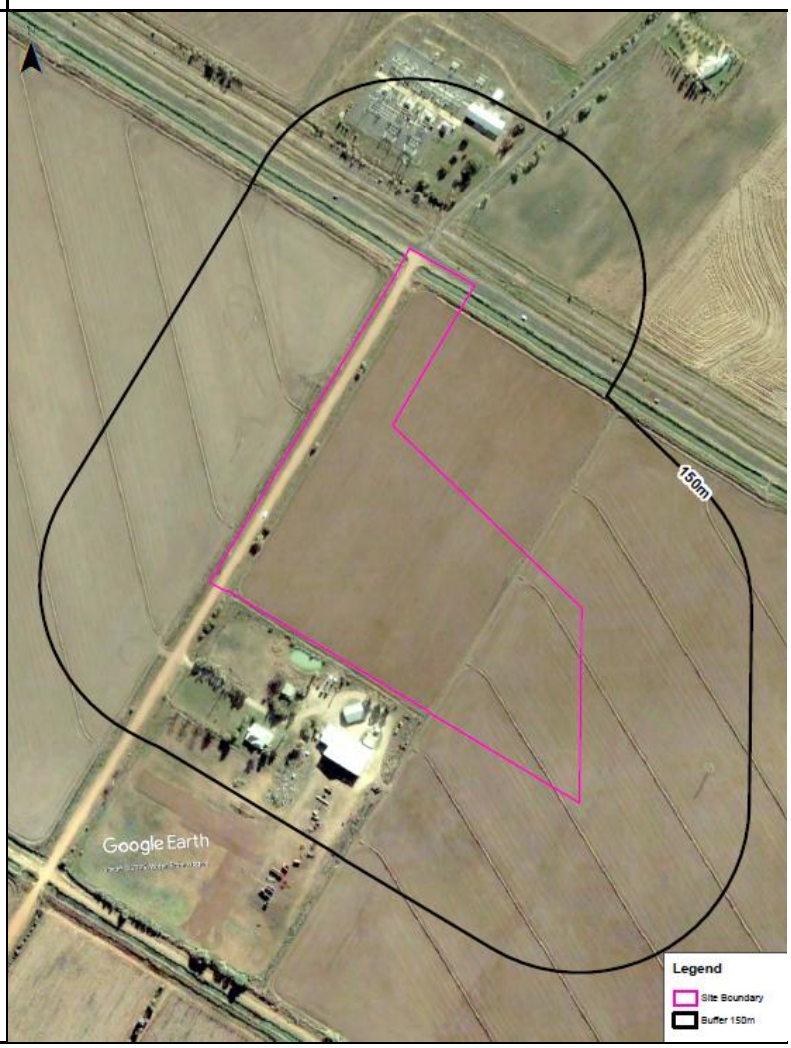
Year	Description	Image
1958	**On Site** The Site appears to fall within an agricultural property. There are no structures, or site features visible within the Site boundary. **Off Site** A road runs along the northeast boundary, along with what appears to be a railway. Another road intersects this road and railway, travelling along the Site's northwest boundary. To the Site's immediate southwest, there appears to be a stand of trees and a small structure. Further southwest lies a road, then agricultural land. To the Site's southeast is a continuation of the agricultural land on which the Site lies.	

Year	Description	Image
1965	**On Site** There appears to be evidence of land management practices associated with agriculture at the Site, with different forms of vegetation growing. The Site otherwise appears to remain similar to the previous aerial photograph. **Off Site** Immediately southwest of the Site, there appears to be four (4) smaller shed-like structures in addition to the existing building. There appears to be vegetation growing in this area that is similar to that of the subject Site. Directly north of the Site, the Griffith Electrical Substation appears to have been built between 1958 and 1965.	

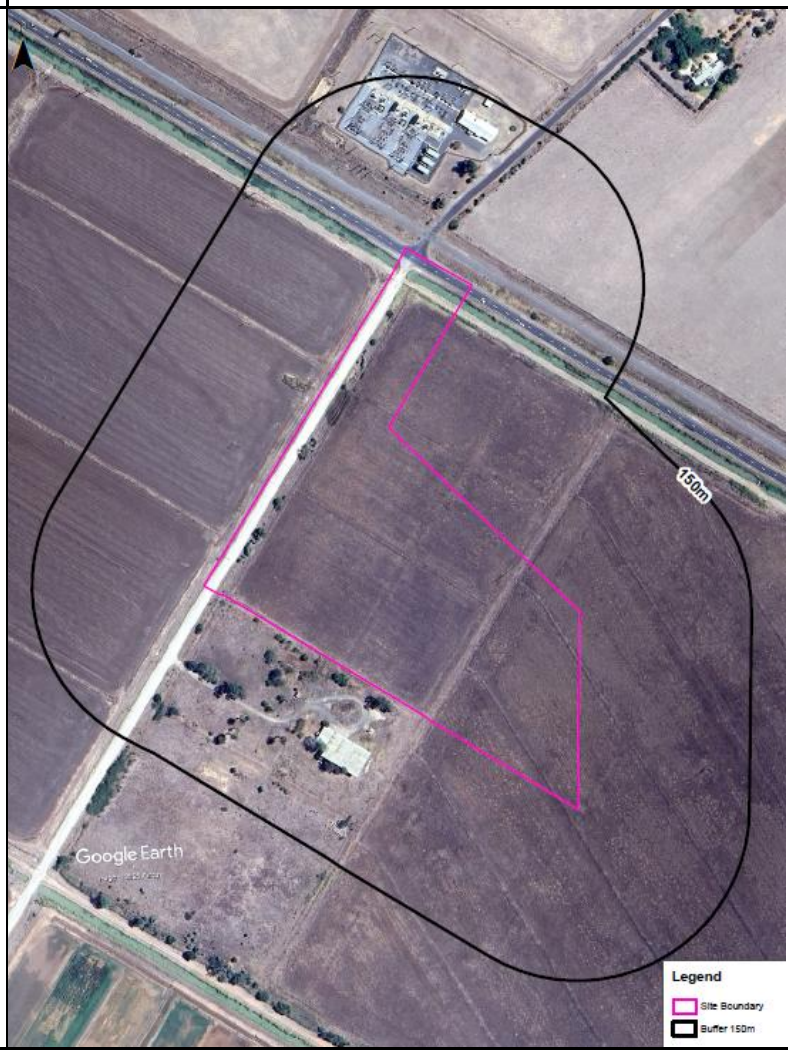
Year	Description	Image
1980	**On Site** It is apparent that the southern end of the Site is used for different agriculture than the remaining portion of the Site, which appears to connect to the farm property adjacent to the southwest. The Site otherwise appears to remain similar to the previous aerial photograph. **Off Site** There appears to be farm dam built adjacent to the southwestern border of the Site. The Site's surroundings otherwise appear to remain similar to the previous aerial photograph.	

Year	Description	Image
1988	**On Site** The Site appears to remain similar to the previous aerial photograph. **Off Site** The Site's surroundings appear to remain similar to the previous aerial photograph. The irrigation channel to the north of Site is clearly visible in the 1988 aerial.	

Year	Description	Image
1997	**On Site** The Site appears to remain similar to the previous aerial imagery, used for agricultural purposes. **Off site** Two (2) of the four (4) small shed-like structures in the property adjacent to the Site's southeast boundary appear to have been demolished and replaced by one (1) larger structure. The Site's surroundings otherwise appear to remain similar to the previous aerial photograph.	

Year	Description	Image
2003	**On Site** The Site appears to remain similar to the previous aerial imagery, used for agricultural purposes. **Off Site** The area further southwest of the structures bordering the Site, previously used for agriculture, now appears to be used as a laydown area, with some vehicles and miscellaneous items stored here. Adjacent to the large building in this area, there appears to be a structure resembling an above-ground storage tank (AST). Further, adjacent to the dam that borders the subject Site, there appears to be two (2) smaller potential ASTs. Northeast of the Site, a residential building appears to have been built on the property beyond the rail corridor.	

Year	Description	Image
2013	**On Site** The Site appears to remain similar to the previous aerial imagery, used for agricultural purposes. **Off Site** The two (2) smaller potential ASTs adjacent to the Site appear to have been removed. There appears to be stained soils in the area surrounding the remaining, larger AST. Further, there appears to be earthen disturbance in the area surrounding the electrical substation north of the Site.	

Year	Description	Image
2025	**On Site** The Site appears to remain similar to the previous aerial imagery, used for agricultural purposes. **Off Site** In the area to the immediate southwest of the Site, all but the largest on-site structure appears to have been demolished. The dam appears to have been infilled. The remaining AST appears to have been removed, however the concrete slab on which it was situated appears to remain. There appears to be a cluster of hay bales stored in this area as well.	

2.5.2 Historical Business Listings

The Lotsearch report indicates there are no historical business listings for the Site. There are a number of historical business listings attached to the Irrigation Way road corridor however these are not considered to be in close proximity to the Site.

2.5.3 Summary of Site History

The relevant historical use of the Site established from the review and collation of the historical information provided within the sections above is summarised in ***Table 2.6***.

Table 2.6 Summary of Relevant Site Historical Information

Year	Relevant Information	Information Source
1958	The Site is used for agricultural land, likely operated and maintained by the occupants of the residence / farm building adjacent to its southwestern border.	Historical Aerial Imagery
1965	Four (4) additional farm buildings are constructed at the adjacent site. The electrical substation due north of the Site is built.	Historical Aerial Imagery
1980	The southern end of the Site appears to be utilised for different agriculture than the remainder of the Site, indicating potential separate ownership and differing land management practices.	Historical Aerial Imagery
2000	The Site becomes part of the Murrumbidgee Irrigation Area.	NSW EPA Environment Protection Licence Registers (EPL 4651) Client supplied information
2000	Three (3) environmental protection licences are issued to the irrigation channels in the vicinity of the Site, including directly adjacent to the east, citing application of herbicides to NSW waterways.	NSW EPA Environment Protection Licence Registers (EPLs 4653, 3838, 6630)
2003	There is evidence of three (3) potential above-ground storage tanks (ASTs) at the adjacent Site, two (2) of which stand very close to the subject Site border.	Historical Aerial Imagery
2013	The two (2) potential ASTs close to the Site boundary are removed.	Historical Aerial Imagery
2025	All but one (1) site structure are removed at the adjacent property, including the remaining potential AST.	Historical Aerial Imagery

2.6 Site Inspection

On 30 July 2025, ARC Environmental performed a Site inspection prior to intrusive works. The findings of the Site inspection are detailed below:

- The Site investigation area was observed to be vacant farmland. There was no stockpiled material, or evidence of disturbed ground on-Site.
- Overhead power lines were present running in a north-westerly direction. Evidence of a high pressure gas main running parallel to Irrigation Way was noted to intersect the northern-most area of the investigation area.
- Various vegetation was present on the western boundary, with hues of yellow and green, indicating dry conditions.
- An asbestos pipe was also exposed on the western boundary, possibly running the entire length of the western boundary.
- To the south of Site there was remnants of a historical farm. A large shed was still in use, presumably for the storage of farm equipment. Various drums were found in and within close proximity to the shed, with one (1) drum noted to have contained oil (due to noted adjacent spillage). A smaller shed with asbestos-containing walls was also apparent.
- Notably, a discontinued fuel AST was present in the eastern part of southern farmstead (approximately 40 m south of the Site). No visible staining on the ground within the fuelling area or odours were noted in close proximity to the AST.
- Bob Irvin Road bordered the site to the west, with additional vacant farmland to the east, the remnants of a historical farm to the south, and an irrigation channel (with Irrigation Way beyond) to

the north. The irrigation channel was noted to be full of stagnant water, with no indication that it was used in conjunction with the Site (either current or historical).

The layout of the Site is presented in ***Figure 2*** and the property features are included in the Site Photographs presented in ***Appendix F***.

2.7 Contaminants of Potential Concern

Based on the findings of the desk study and preliminary Site inspection, evidence of past activities that may have led to potential contaminants at the Site are summarised in ***Table 2.7***.

Table 2.7 Summary of Contaminants of Potential Concern

On-site / Off-site	Site Activity / Potential Source	Potential Contaminants	Comments
On-site	Agricultural use	TPH, TRH, metals, OC/OP	Pesticides such as organochlorine and organophosphorous compounds may have been applied for pest control throughout the Site's agricultural use. While routine spraying in broad-acre farming is not likely to cause significant contamination, historical use of older, persistent pesticides could have resulted in trace residues in the soil. Further, metals from use of fertilisers may be present in soils. Additionally, TPH/TRH associated with the potential storage of fuels for the use of agricultural machinery also presents a potential risk of contamination.
On-site	Irrigation	Herbicides	The EPLs issued to the irrigation channels bordering the Site indicate historical application of herbicides to waterways in NSW. This may potentially have affected these channels, which are understood to have supplied the Site with irrigation.
Off-site	Off-site potential ASTs	TPH, TRH, BTEXN, Lead	Three (3) potential ASTs, which may have stored and dispensed diesel or fuel, were present on the adjacent Site. One (1) of these ASTs appeared to have stained soil surrounding it. The Site's flat elevation and situation in a floodplain presents the potential for the dispersal of these contaminants to the subject Site.

TPH: Total Petroleum Hydrocarbons
TRH: Total Recoverable Hydrocarbons
BTEXN: Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene
PAH: Polycyclic Aromatic Hydrocarbons
OC/OP: Organochlorine / Organophosphorous Pesticides

3. Field Activities

3.1 Fieldworks Methodology

Field activities that were undertaken as part of the scope of works are summarised in ***Table 3.1***. The sample locations are shown in ***Figure 2.***

Table 3.1 Summary of Field Activities

Activity	Description
Dates of Field Activity	**30 July 2025:** Site inspection walkover and advancement of eight (8) hand auger soil bore locations (SB01-SB08), which varied in investigation depths. Investigation locations are presented on ***Figure 2***.
Soil Boring	ARC manually advanced eight (8) soil bores (SB01-SB08) to provide spatial coverage of the Site area. Two (2) soil bores (SB05-SB06) were targeted on-Site adjacent to the southern property to assess the potential of any soil impacts from the identified former fuel infrastructure. Soil bore locations were not able to be located further north from the investigation area presented on ***Figure 2*** during this assessment (within the off-Site transmission areas adjacent to the Griffith Substation), due to presence of uncleared services (high-pressure gas main and electrical) presenting a safety concern. It was considered that soil samples collected from within the investigation area would be representative of the immediately adjacent off-Site areas presented in the development plans in ***Appendix C***. Bores were advanced via hand auger to a depth between 0.6 -1.2 mbgl and terminated either due to practical refusal (stiff clays) or target depth (~1.0 mbgl). All observations and readings, including visual and olfactory observations and Photo-Ionisation Detector (PID) readings, were recorded in the field on soil bore logs and in line with USCS (Unified Soil Classification System). Soil bore logs are included in ***Appendix G***. Photos of soil profiles are presented in ***Appendix F***.
Soil Sampling	Soil samples were generally collected at near surface, 0.5 mbgl and at the end depth of the soil bore to provide general coverage of the Site. Duplicate soil samples were collected in snap-lock bags for screening with a calibrated PID. The PID calibration certificate is included within ***Appendix F***. Clean disposable gloves were used for soil sampling collection. Samples were placed in laboratory prepared glass jar sample containers with individual and unique identification including project number, sampling date and sample number, and then placed into a cooled, insulated and sealed container for transport to the laboratory under Chain of Custody (COC) procedures. Copies of the COC documentation are presented in ***Appendix I***.
Sampling Location Reinstatement	Following completion of logging and sampling, the soil bores were reinstated with soil cuttings in the order they were removed.
Equipment Decontamination	Decontamination of re-useable equipment including the hand auger, drilling rods and interface probe comprised rinsing in a mixture of industrial grade phosphate free detergent (Decon 90) and tap water, followed by a rinse in Decon 90 and de-ionised water and a final rinse in de-ionised water. Any excess soil was removed from the hand auger with a scrubbing brush. In addition, a new pair of Nitrile gloves was used between each sample collection location.

3.2 Laboratory Analysis

The soil samples and Quality Assurance / Quality Control (QAQC) samples were transported to ALS Laboratories (ALS) in Melbourne for chemical analysis. ALS are accredited by the National Association of Testing Authorities (NATA) for the analyses undertaken. Laboratory documentation is included within ***Appendix G***. A summary of the selected laboratory analysis based on potential contaminants in ***Table 2.7*** is detailed in ***Table 3.2***.

Table 3.2 Summary of Laboratory Analysis

Matrix	Number of Sample Locations	Total Number of Samples	*Analyte Suites*
Soil	8	8	Soil Salinity, SAR, Emerson Aggregate Testing, 8 metals, EC and pH
		4	OC/OP Pesticides
		2	Herbicides
		2	TRH / TPH / BTEXN
		1	NEPM Soil Characterisation Screen

Notes:
SAR: Sodium Absorption Ratio
EC: Electrical Conductivity
TRH: Total Recoverable Hydrocarbons
TPH: Total Petroleum Hydrocarbons
BTEXN: Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene
OCP / OPP: Organochlorine Pesticides / Organophosphorus Pesticides
8 Metals: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg

In addition, two (2) quality control samples during soil sampling were analysed as follows:

- One (1) intra-laboratory duplicate: (8 metals / OC/OP Pesticides);
- One (1) rinsate blank: (8 metals / OC/OP Pesticides) and
- One (1) trip blank: (TRH C_6-C_{10} / BTEXN).

4. Regulatory Framework and Assessment Criteria

The environmental assessment was undertaken in accordance with regulatory framework and assessment criteria outlined below.

4.1 Regulatory Framework for Soil

The following regulatory guidance documents have been referenced in conducting the soil assessment:

- NSW EPA Contaminated Land Guidelines - Sampling Design Part 1 – Application, 2022.
- NSW EPA Contaminated Land Guidelines - Sampling Design Part 2 – Interpretation, 2022.
- NSW Government Office of Environment & Heritage, Guidelines for Consultants Reporting on Contaminated Sites, 2011.
- NSW Government, State Environmental Planning Policy (Resilience and Hazards) 2021, as amended 4 August 2023.
- National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013.
- National Environment Protection Council, and including ERRATA update 6 February 2014.

State Environmental Planning Policy (Resilience and Hazards) 2021 (SEPP, 2021) sets out the regulatory framework for the management of contaminated land within the State of NSW. The intent of this policy is to provide for a state-wide planning approach to the remediation of contaminated land and to reduce the risk of harm to human health or any other aspect of the environment. The SEPP, 2021 supersedes the previous SEPP 55 Managing Land Contamination (1998) under the Environmental Planning and Assessment Act 1979.

SEPP, 2021 specifies when contamination and remediation is to be considered in determining development applications. Consideration of risk must include risks during construction and operation of the development. The former includes work safety issues as well as the potential for works to disturb contamination and cause off-site movement of chemicals.

4.2 Soil Quality Assessment Criteria

Assessment criteria has been selected to provide an appropriate indication of the environmental status of the proposed BESS area with consideration given to the current and future proposed industrial land use, and intrusive workers during works. ARC refers to the National Environment Protection Council (NEPC) (2013) - National Environment Protection (Assessment of Site Contamination) Amendment Measure, 1999 (ASC NEPM, 2013) for site assessment criteria as approved by the NSW EPA.

The applicable Health-based Investigation Levels (HILs) and Health Screening Levels (HSL's) for this investigation will include the following:

- NEPM 2013 Health Investigation Levels and Health Screening Levels (HIL/HSL D – Commercial/Industrial);
- CRC Care Soil Health Screening Levels for Vapour Intrusion (D – Commercial/Industrial); and
- CRC Care Soil Health Screening Levels for Direct Contact –Intrusive Maintenance Workers.

The applicable Ecological-based Investigation Levels (EILs) and Ecological Screening Levels (ESL's) for this investigation will include the following:

- Maintenance of Ecosystems – Modified and Highly Modified Ecosystems: NEPM 2013 Ecological Investigation Levels (Industrial) and Site Specific EILs (see ***Appendix J*** for calculations) and Ecological Screening Levels (industrial).

In addition to the contamination assessment criteria adopted for this assessment, soil physical parameters have been assessed against adopted best practice criteria from the following guidance sources:

- Department of Sustainable Natural Resources: Soil Survey Standard Test Method – Emerson Aggregate Test – NSW Government
- Dispersive Soils and Their Management" (Technical Manual & Guidelines) – Tasmania DPIW
- Department of Environment and Resource Management – Salinity management handbook: Queensland Government
- Hazelton, P and Murphy, B: Interpreting Soil Test Results – What do all the numbers mean? 4th Ed. CSIRO Publishing, 2025.

The ecological and human health "investigation levels" are not intended to be interpreted as "maximum permissible levels", "clean up levels" or "safe levels", rather, they are levels at which further investigation or assessment should be undertaken to provide assurance that unacceptable contamination does not occur. Subsequent assessment on a site-specific basis often results in higher levels being acceptable. However, since the "investigation levels" are generally set at conservatively low levels, they are often taken to be the acceptable levels.

5. Field and Laboratory Results

5.1 Soil Results

5.1.1 Site Soil Profiles

Based on a review of soil logs from the site investigation, the Site is predominantly underlain by natural soil of varying composition. Soil logs are presented in ***Appendix G,*** with Photolog presented in ***Appendix F*** and the subsurface geology is summarised in ***Table 5.1***.

Table 5.1 Summary of Site Soil Profile

Approximate Depth (mbgl)	Soil Horizon	Geological Description
0.0 – 0.3	A - Topsoil	Natural (reworked) Silty CLAY, Dark brown, high plasticity, frequent rootlets, moist, soft.
0.3 – 1.2	B – Subsoil*	Silty, sandy CLAY: Brown/red, low plasticity, frequent lenses of sand, dry, stiff.

* Soil horizon assessment via soil boring could not adequately determine structures (vertical fissures, slickensides etc.) within the profile to provide proper soil horizon classification.

5.1.2 Soil Investigation Observations – Contamination

Observations of the soil profile on Site during sampling was noted as follows:

- No odours or staining were noted throughout the assessed soil profile (surface to 1.2 mbgl) during sampling;
- No elevated PID readings (>0.1 parts per million [ppm]) were observed across the Site; and
- No Asbestos Containing Materials (ACM) was identified in the soil profile during the investigation.

Field screening results, including visual and olfactory observations of the soil matrix and the PID head space field measurements, are included in the soil logs presented in ***Appendix G***.

5.1.3 Soil Characterisation Analytical Results

The soil salinity, soil sodicity and stability physical characteristics of soil assessed at the Site have been compared to relevant soil physical parameters specified in ***Section 4.2***. The analytical results are presented in ***Attached Table 1***. The NATA certified laboratory reports and accompanying COC documentation are included with the laboratory reports included within ***Appendix I***.

Soil Salinity

The salinity of soil at Site was assessed by analysing electrical conductivity (EC) and total soluble salts. The EC of soil in comparison to adopted thresholds (DERM, 2011) is presented in ***Table 5.2*** below.

Table 5.2 Summary of EC Assessment

Electrical Conductivity EC 1:5 (dS/m) for 40-60% Clay Content *	General Assessment	Soil Survey Results Location ID and Depth (m)
<0.12	Very low salinity	**7 locations:** SB01_0.1, SB02_0.1, SB04_0.1, SB05_0.1, SB06_0.1, SB07_0.1 and SB08_0.1
0.12 – 0.24	Low salinity	**1 location:** SB03_0.4
0.24 – 0.56	Moderate salinity	**7 locations:** SB01_0.75, SB03_0.1, SB04_0.85, SB05_0.5, SB06_1.0, SB07_0.5 and SB08_0.6
0.56– 0.96	High salinity	No locations
0.96 – 1.53	Very high salinity	**1 location:** SB02_1.1

*Based on 50% clay content from laboratory analysis within the upper soil profile at Site.

The salinity measured in the soil based on EC results generally increased with soil depth, with very low salinity reported only within the shallower samples (0.1 mbgl) and moderate to very high salinity generally reported within the deeper, B horizon soil (0.5 – 1.1 mbgl), with the exception of moderate salinity at SB03_0.1.

Soil Sodicity Assessment

The sodicity of soil at Site was assessed, in the first instance, by analysing Sodium Absorption Ratio (SAR). The SAR is commonly used as a measure of the activity of sodium ions relative to calcium and magnesium ions in a soil. Soils with a high activity of sodium relative to other cations have a high exchangeable sodium percentage (ESP) and will likely be sodic. On this basis, the SAR values were converted to ESP using the approximate correlation recommended by Rengasamy et al. (1984):

$$ESP = 2 \times SAR_{1:5}$$

The conversion of laboratory-derived SAR values to ESP is presented in ***Table 5.3*** below.

Table 5.3 SAR to ESP Conversion

Field ID	Sodium Absorption Ratio SAR (%)	Exchangeable Sodium Percentage ESP (%)
SB01_0.1	1.3	2.6
SB02_1.1	32.6	65.2
SB03_0.1	1.31	2.62

Field ID	Sodium Absorption Ratio SAR (%)	Exchangeable Sodium Percentage ESP (%)
SB04_0.85	3.74	7.48
SB05_0.1	1.05	2.10
SB06_0.5	2.85	5.70
SB07_1.0	6.78	13.56
SB08_0.1	1.09	2.18

The derived ESP values were subsequently used to assign sodicity ratings as recommended by Northcote and Skene (1972), as presented in ***Table 5.4*** below.

Table 5.4 Summary of ESP Assessment

ESP (%)	Sodicity Rating	Soil Survey Results Location ID and Depth (m)
0 – 6	Non-sodic	**5 locations:** SB01_0.1, SB03_0.1, SB05_0.1, SB06_0.5 and SB08_0.1
6 – 15	Sodic	**2 locations:** SB04_0.85 and SB07_1.0
>15	Strongly Sodic	**1 location:** SB02_1.1

The sodicity measured in the soil based on ESP results generally increased with soil depth, with non-sodic soils reported only within the shallower samples (0.1 – 0.5 mbgl) and three locations reporting sodicity (ranging from sodic to strongly sodic) from within the deeper, B horizon soils (0.85 – 1.1 mbgl).

Stability Testing

The stability of soil at Site was assessed by analysing Emerson Aggregate Test (EAT) Classification. The EAT Class of soil in comparison to adopted thresholds is presented in ***Table 5.5*** below.

Table 5.5 Summary of EAT Assessment

Emerson Aggregate Testing EAT Class	Stability	Soil Survey Results Location ID and Depth (m)
1–2	Dispersive / unstable	**7 locations:** SB01_0.1, SB02_1.1, SB04_0.85, SB05_0.1, SB06_0.5, SB07_1.0 and SB08_0.1
3–4	Partially stable	**1 location:** SB03_0.1
5–6	Stable aggregates	**No locations**
7–8	Very stable aggregates	**No locations**

The soil stability measured using the EAT Class generally showed lower stability (dispersive / unstable) across all samples and soil horizons (EAT Class 1 – 2). Only one location at a shallow depth (SB03_0.1)

exhibited partially stable soil (EAT Class 3–4), while no stable or very stable aggregates were identified at any depth on-Site.

5.1.4 Soil Contamination Analytical Results

Soil analytical results and adopted human health and ecological assessment criteria are presented in ***Attached Table 1.*** The NATA certified laboratory reports and accompanying COC documentation are included with the laboratory reports included within ***Appendix G***. There were no exceedances of the adopted human health and ecological assessment criteria, with laboratory results also indicating that:

- TPH, TRH, BTEXN, Organochlorine Pesticides, Organophosphorus Pesticides, Pesticides, Herbicides, and Phenol results were below laboratory limits of reporting (LORs) for all samples; and
- Metals results were generally above LORs and below the adopted human health and ecological criteria across all sample.

5.2 Quality Assurance/Quality Control

To ensure that representative soil samples are collected, and the analytical results are representative of the actual field conditions, rigorous field and laboratory Quality Assurance and Quality Control (QA/QC) procedures were adopted during sampling and laboratory analysis.

A summary of field quality assessment/quality control (QA/QC) samples collected during the course of the soil survey for this assessment is presented in ***Table 5.6***.

Table 5.6 Data Quality Objectives

Parameter	Data Quality Objective	Data Quality Assessment
Field QA/QC		
COC Documentation	Documentation completed	Samples were provided to the laboratories with completed chain of custody documentation (attached in ***Appendix G***).
Blank Samples (Rinsate, Trip Blank, Trip Spike)	Concentrations at or near the Limit of Reporting (LOR)	Analytical results for the blank samples analysed are attached in ***Attached Table 3.*** Concentrations reported for the trip blank sample QC02 were all less than the LOR, therefore no cross contamination during transit to the laboratory has occurred.
Intra-Laboratory Samples (1 in 20 samples)	Relative Percentage Difference (RPD) < 30%	Intra-laboratory samples were collected at a rate of at least 1 in 20 samples. All RPDs between the primary sample and inter-laboratory duplicate samples were within the acceptable range according to AS4482.1 – 2005 (refer to ***Attached Table 2***). Inter-laboratory samples were not collected for this PSI.
Handling and Preservation	Samples received intact and cold (near 4°C)	The soil samples were received by the laboratory cooled to a measured ambient temperature of 5.8ºC with ice present.

Parameter	Data Quality Objective	Data Quality Assessment
Laboratory QA/QC		
Holding Time	Samples analysed within specified holding times	Samples were analysed within recommended holding times for the analysis requested, with the exception of: • **EM2513727:** pH (2 days) and conductivity (2 days)
Method Blank Samples (1 in 20 samples)	Concentrations at or below the LOR	The laboratory analysis of method blank samples showed all blank results below the laboratory reporting limits.
Laboratory Duplicate Samples (1 in 20 samples)	RPD < 50% or as per laboratory requirement	The laboratory analysis of duplicate samples showed all samples within acceptable limits.
Laboratory Control Samples (1 in 20 samples)	Recovery 75–125% or as per laboratory requirement	Laboratory control spike recoveries showed all results within the acceptable range and with adequate frequency.
Matrix Spikes (1 in 20 Samples)	Recovery 75–125% or as per laboratory requirement	Matrix spike recoveries were all within the laboratory requirements. The frequency of matrix spikes analysed was adequate with the exception: • **EM2513727: Organic Matter**
Surrogate (Every Sample)	Recovery with statistically derived QC limits or 70–130%	The laboratory analysis of surrogate recovery samples showed all results within the range 70 – 130% for all regular sample matrices.
Laboratory LORs	LORs lower than adopted guidelines	Limits of reporting for soil samples were deemed to be sufficiently low to enable comparison of contaminant concentrations with adopted assessment criteria.

Overall, the data quality information provides confidence that the soil data is of sufficient quality (in terms of completeness, comparability, representativeness, precision and accuracy) and that the analytical data is suitable for the purposes of this assessment.

6. Discussion

6.1 Discussion

The review of historical land uses and activities in the PSI desktop study indicated that the Site has generally been used for agricultural purposes since at least 1958. It is considered that based on the historical agricultural use including potential pesticide/herbicide application and machinery usage/maintenance at the Site, the potential for contamination within the Site soils is low.

The findings of the soil assessment for potential contaminants of concern identified in the PSI desktop study determined that there are no elevations of chemical analytes nor Tier 1 criteria exceedances that warrant further assessment prior to redevelopment of the land for the proposed BESS area.

The physicochemical parameters assessed during the soil survey for the preliminary soil quality assessment presented the following indications:

The majority of sampled locations exhibit very low salinity (EC <0.12 dS/m), which is deemed suitable for all vegetation with no anticipated infrastructure impacts. One location, SB03_0.4, shows low salinity (EC 0.12–0.24 dS/m), which is still appropriate for most plants and landscaping. Several locations, including SB01_0.75, SB03_0.1, SB04_0.85, SB05_0.5, SB06_1.0, SB07_0.5, and SB08_0.6, display moderate salinity levels (EC 0.24–0.56 dS/m). In these areas, some salt-sensitive species may be affected, so salt-tolerant landscaping should be considered. Very high salinity (EC 0.96–1.53 dS/m) is present only at SB02_1.1, where landscaping would generally be unsuitable without soil amendment or importation, and there may be an increased risk of concrete corrosion. Overall, most areas on-Site have salinity levels suitable for a wide range of redevelopment activities, but specific locations with higher salinity may require additional management measures to be implemented during the site's development.

All shallow soil samples assessed for ESP between 0.1 – 0.5 mbgl classified as non- to slightly sodic (ESP < 6%), which is generally favourable for the proposed redevelopment. These soils are typically considered to be potentially dispersive as opposed to truly dispersive in nature, making them unlikely to present significant challenges associated with aggregate breakdown or reduced water movement assuming they are maintained with a continuous surface cover. The deeper samples generally increased in ESP % and classify between sodic (ESP 6 – 15% at 0.85 – 1.0 mbgl) and strongly sodic (>15% at 1.1 mbgl). Sodic soils are known to be susceptible to structural problems, specifically dispersion and loss of soil aggregation, which can lead to high erosion risk, including rill, gully, and tunnel erosion, as well as decreased permeability and poor drainage. As sodicity increases, soils may demonstrate reduced infiltration and water movement, complicating landscaping, stormwater management, and foundation stability for structures, especially where deep piling or sub-surface construction is proposed.

Most soil samples on site are classified as dispersive or unstable according to the Emerson Aggregate Test (EAT Class 1–2), indicating a very high risk of erosion, sealing, and tunnel erosion (predominantly a concern on slopes and areas without surface cover). This means the affected soils are unlikely to be suitable for reuse in landscaping surface works without treatment, such as gypsum application. One location (SB03_0.1) is partially stable (EAT Class 3–4), so it may be at risk of breakdown over time and could require stabilisation if exposed. No samples on site were identified as having stable or very stable aggregates, which would otherwise provide good structural stability and minimal erosion risk.

7. Conclusions & Recommendations

7.1 Conclusions

The review of historical land uses and activities in the PSI desktop study indicated that the Site has generally been used for agricultural purposes since at least 1958. It is considered that based on the historical agricultural use including potential pesticide/herbicide application and machinery usage/maintenance at the Site, the potential for contamination within the Site soils is low and acceptable.

The findings of the soil survey assessing for potential contaminants of concern identified in the PSI desktop study determined that there are no elevations of chemical analytes nor Tier 1 criteria exceedances. No further assessment for soil contamination is considered warranted prior to redevelopment of the land for the proposed BESS area.

Salinity is very low across most sampled locations, posing no constraint to vegetation or infrastructure; with a few locations showing low to moderate salinity, where salt-tolerant landscaping may be advisable, and only one location (SB02_1.1) exhibiting very high salinity, potentially necessitating the requirement for management and raising minor infrastructure concerns relating to potential for concrete degradation as a result.

Sodicity is minimal in shallow soils, indicating lateral stability and suitability for reuse without treatment, but increases at depth, to sodic and strongly sodic levels, which introduces potential risk of dispersion, poor infiltration, and erosion within and around deeper installation or structures.

Stability assessed via the Emerson Aggregate Test revealed most samples are dispersive / unstable across the Site, indicating a potential for erosion, with only one location (SB03_0.1) showing partial stability, still requiring caution in reuse or exposure via lack of surface cover during and post site development.

The soil characteristics assessed at Site are considered unlikely to significantly impact upon the proposed BESS project, given the redevelopment design is proposed to be a flat and shallow establishment with an absence of significant slopes, which minimizes risks related to erosion, dispersion, or drainage constraints and the likely maintenance of surface cover over soils around site structures. However, the soil properties indicate that any amendment to the proposed design (such as establishment of slopes or deeper settlement) would require further assessment and management due to elevated sodicity, salinity, and potential structural limitations of shallow site soils (instability).

7.2 Recommendations

Based on the results of the soil survey, ARC recommend the following:

- Further geotechnical soil assessment with consideration of proposed Site development to be undertaken by a suitably qualified soil geotechnical professional, and to provide sufficient information for the development of a Site Soil Management Plan (SMP), if required.

- Avoid development designs that increase the potential for dispersion and erosion of the in situ soil assessed (e.g., avoid inundation of BESS area with floodwater or creating uncovered slope batters with reworked Site soils which would promote runoff).

- Consider implementing management practices for the reuse of soil at Site, including chemical amelioration (i.e. gypsum) for managing sodicity and restricting soil use for landscaping due to elevated salinity.

8. Limitations

This report was prepared in accordance with the scope of work outlined and/or referenced within this report and subject to the applicable cost, time and other constraints. ARC Environmental performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental profession. No warranties, expressed or implied, are made.

ARC Environmental 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. Use of the site for any purpose may require planning and other approvals and, in some cases, EPA and accredited site auditor approvals.

ARC Environmental offers no opinion as to the likelihood of obtaining any such approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for additional environment works.

Except as otherwise stated, ARC Environmental's assessment is limited strictly to identifying specified environmental conditions associated with the subject site and does not evaluate structural or geotechnical conditions of any part of the site (including any buildings, equipment or infrastructure).

This assessment is based on site conditions observed by ARC Environmental personnel in the course of performing their work, sampling and analyses described in the report, and information provided by Eku Energy on behalf of Griffith BESS Co Pty Ltd (the Proponent) ("the Client"). Conclusions and recommendations made in the report are the professional opinions of the ARC Environmental personnel involved with the project and, while normal checking of the accuracy of data has been conducted, ARC Environmental assumes no responsibility or liability for errors in data obtained from such sources, regulatory agencies and/or any other external sources, nor from occurrences outside the scope of this project.

The information relating to the soil and groundwater conditions in this document is considered to be accurate at the date of site issue. Subsurface conditions can vary across a particular site, which cannot be wholly defined by investigation. As a result, it is unlikely that the results and estimations presented in this report will represent the extremes of conditions within the site. Subsurface conditions including impact concentrations can change in a limited period of time.

Only the chemicals specifically referred to in this report have been considered. ARC Environmental makes no statement or representation as to the existence (or otherwise) of any chemicals other than those specifically referred to herein. Except as otherwise specifically stated in this report, ARC Environmental makes no warranty or representation as to the presence or otherwise of asbestos and/or asbestos containing materials (“ACM”) on the site.

ARC Environmental is not engaged in environmental consulting and reporting for the purpose of advertising, sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity or investment purposes.

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9. References

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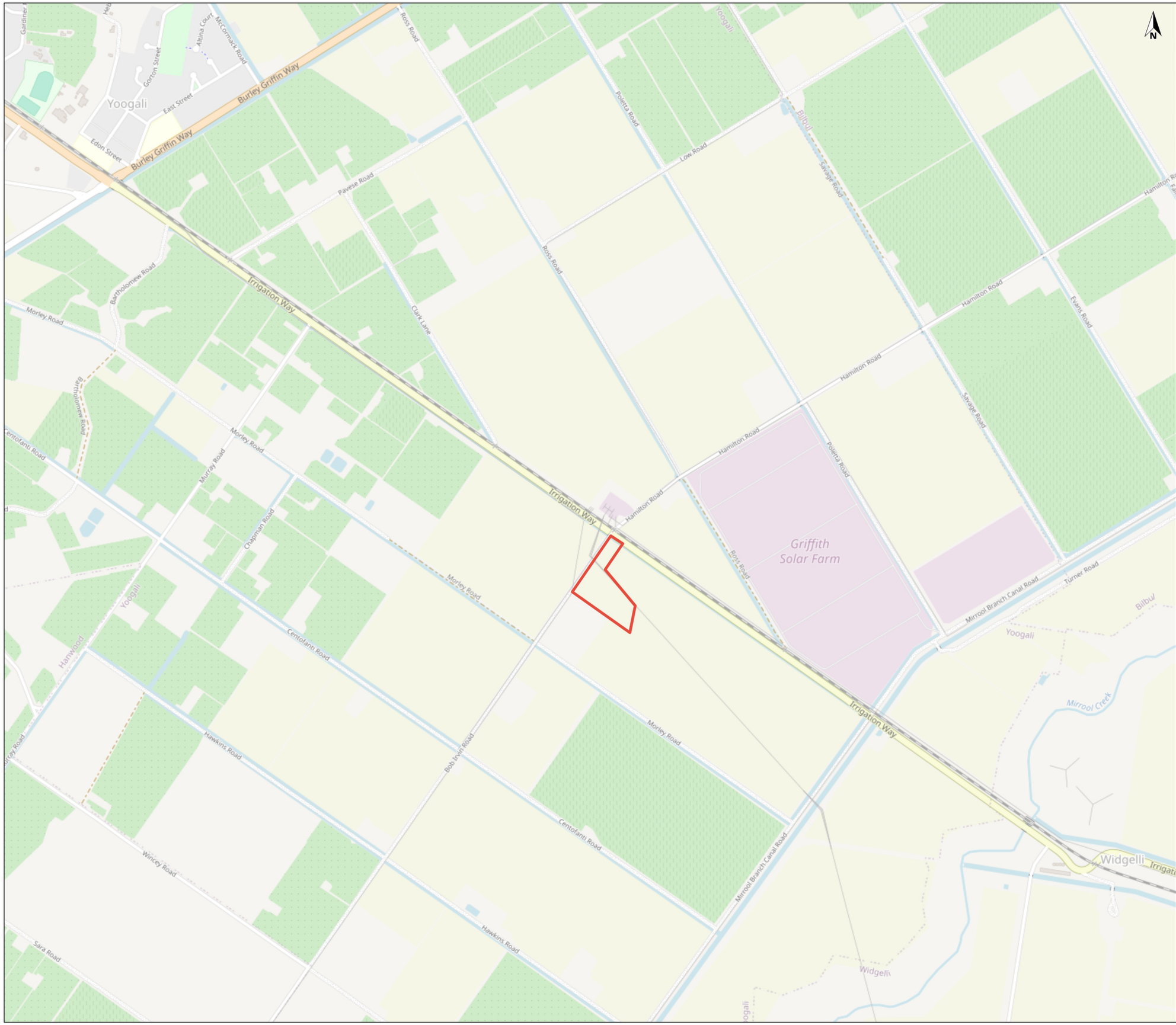
- Zenith Town Planning, 2018: Statement of Environmental Effects – Lots 140 and 141 DP 751709, No. 41 Bob Irvin Road, Yoogali. Dated December 2018.

Figures



Legend

- Site Boundary

0 250 m 500 m

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ARC ENVIRONMENTAL

Produced by **Datanest.earth**

Title: Site Location		
Client: Cogency Australia		Size: A3
Project: Cogency Griffith BESS PSI and Soil Survey	Drawn: EN	Figure No.: 1
Date: 19-08-2025	Checked: JM	
Proj No: 2507426	Scale: 1:17178	Version: Final

Legend

- Soil Bore Locations
- Former Fuel AST and Bowser
- APA High Pressure Gas Main
- Site Boundary

0 25 m 50 m

© Mapbox

ARC ENVIRONMENTAL

Produced by **Datanest.earth**

Title: Site Layout		
Client: Cogency Australia		Size: A3
Project: Cogency Griffith BESS PSI and Soil Survey	Drawn: EN	Figure No.: 2
Date: 20-08-2025	Checked: JM	
Proj No: 2507426	Scale: 1:1889	Version: Final

Tables

Table 1
Soil Analytical Results
Cogency Griffith BESS PSI and Soil Survey
15 Bob Irvin Road, Yoogali NSW 2680
2507426

			TPH					TRH							BTEX								Metals							
			C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	C6-C10 Fraction	C6-C10 minus BTEX (F1)	>C10-C16 Fraction	>C10-C16 Fraction minus Naphthalene (F2)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Naphthalene (VOC)	Total BTEX	Arsenic	Cadmium	Chromium (III+VI)	Copper	Nickel	Lead	Mercury	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	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
			10	50	100	100	50	10	10	50	50	100	100	50	0.2	0.5	0.5	0.5	0.5	0.5	1	0.2	5	1	2	5	2	5	0.1	5
NEPM 2013 HIL D (Commercial / Industrial)																							3,000	900	3,600	240,000	6,000	1,500	730	400,000
NEPM 2013 HSL D (Commercial / Industrial) Sand <1m Vapour Intrusion									260		NL				3	NL	NL			230										
NEPM 2013 HSL D (Commercial / Industrial) Sand 1m 2m Vapour Intrusion									370		NL				3	NL	NL			NL										
NEPM 2013 ESL (Industrial) - Coarse									215		170	1,700	3,300		75	135	165			180										
NEPM 2013 EIL (Industrial)																					370		160		1,100	300	400	1,800		700
CRC CARE HSLD (Commercial/Industrial) Sand <1m Vapour Intrusion								260		NL		27,000	38,000		3	NL	NL			230										
CRC CARE HSLD (Commercial/Industrial) Sand 1m 2m Vapour Intrusion								370		NL		27,000	38,000		3	NL	NL			NL										
CRC CARE Intrusive Maintenance Worker (Shallow Trench) Sand <2m Vapour Intrusion								NL		NL					77	NL	NL			NL										
Field ID	**Depth**	**Sampled Date**																												
SB01_0.1	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	< 1	23	16	15	122	< 0.1	40
SB01_0.75	**0.75m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02_0.1	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02_1.1	**1.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 5	< 1	23	13	14	10	< 0.1	25
SB03_0.1	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 5	< 1	24	16	14	13	< 0.1	32
SB03_0.4	**0.4m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04_0.1	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	< 1	24	16	17	25	< 0.1	31
SB04_0.85	**0.85m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB05_0.1	**0.1m**	**30-07-2025**	< 10	< 50	< 100	< 100	< 50	< 10	< 10	< 50	< 50	< 100	< 100	< 50	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 0.2	19	< 1	24	18	17	86	< 0.1	45
SB05_0.5	**0.5m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB06_0.1	**0.1m**	**30-07-2025**	< 10	< 50	< 100	< 100	< 50	< 10	< 10	< 50	< 50	< 100	< 100	< 50	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 0.2	-	-	-	-	-	-	-	-
SB06_0.5	**0.5m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 5	< 1	27	17	20	10	< 0.1	28
SB06_1.0	**1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB07_0.1	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 5	< 1	20	14	15	10	< 0.1	22
QC01	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 5	< 1	24	15	16	9	< 0.1	27
SB07_0.5	**0.5m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB07_1.0	**1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB08_0.1	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB08_0.6	**0.6m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 5	< 1	27	18	20	9	< 0.1	28

Table 1
Soil Analytical Results
Cogency Griffith BESS PSI and Soil Survey
15 Bob Irvin Road, Yoogali NSW 2680
2507426

			Organochlorine Pesticides																									
			4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Hexachlorobenzene
			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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.05
NEPM 2013 HIL D (Commercial / Industrial)						45		530						3,600		2,000	2,000	2,000	2,000	100				50		2,500	80
NEPM 2013 HSL D (Commercial / Industrial) Sand <1m Vapour Intrusion																												
NEPM 2013 HSL D (Commercial / Industrial) Sand 1m 2m Vapour Intrusion																												
NEPM 2013 ESL (Industrial) - Coarse																												
NEPM 2013 EIL (Industrial)													640															
CRC CARE HSLD (Commercial/Industrial) Sand <1m Vapour Intrusion																												
CRC CARE HSLD (Commercial/Industrial) Sand 1m 2m Vapour Intrusion																												
CRC CARE Intrusive Maintenance Worker (Shallow Trench) Sand <2m Vapour Intrusion																												
Field ID	**Depth**	**Sampled Date**																										
SB01_0.1	**0.1m**	**30-07-2025**	0.27	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	0.27	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05
SB01_0.75	**0.75m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02_0.1	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02_1.1	**1.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB03_0.1	**0.1m**	**30-07-2025**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05
SB03_0.4	**0.4m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04_0.1	**0.1m**	**30-07-2025**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05
SB04_0.85	**0.85m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB05_0.1	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB05_0.5	**0.5m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB06_0.1	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB06_0.5	**0.5m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB06_1.0	**1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB07_0.1	**0.1m**	**30-07-2025**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05
QC01	**0.1m**	**30-07-2025**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05
SB07_0.5	**0.5m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB07_1.0	**1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB08_0.1	**0.1m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB08_0.6	**0.6m**	**30-07-2025**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 1
Soil Analytical Results
Cogency Griffith BESS PSI and Soil Survey
15 Bob Irvin Road, Yoogali NSW 2680
2507426

			Organophosphorus Pesticides															Pesticides				Herbicides													Phenols
			Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos	Demeton-S-methyl	Fenamiphos	Parathion	Pirimphos-ethyl	2,4,5-Trichlorophenoxy Acetic Acid	2,4,5-TP (Silvex)	2,4-Dichlorprop	4-(2,4-Dichlorophenoxy)butyric Acid (2,4-DB)	4-Chlorophenoxy acetic acid	Clopyralid	Dicamba	Fluroxypyr	2-Methyl-4-chlorophenoxyacetic acid	2-Methyl-4-Chlorophenoxy Butanoic Acid	Mecoprop	Triclopyr	2,4-Dichlorophenoxyacetic acid (2,4-D)	Picloram
			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	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	mg/kg	mg/kg	mg/kg
			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.2	0.05	0.05	0.05	0.2	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
NEPM 2013 HIL D (Commercial / Industrial)							2,000															5,000								5,000	5,000	5,000		9,000	35,000
NEPM 2013 HSL D (Commercial / Industrial) Sand <1m Vapour Intrusion																																			
NEPM 2013 HSL D (Commercial / Industrial) Sand 1m 2m Vapour Intrusion																																			
NEPM 2013 ESL (Industrial) - Coarse																																			
NEPM 2013 EIL (Industrial)																																			
CRC CARE HSLD (Commercial/Industrial) Sand <1m Vapour Intrusion																																			
CRC CARE HSLD (Commercial/Industrial) Sand 1m 2m Vapour Intrusion																																			
CRC CARE Intrusive Maintenance Worker (Shallow Trench) Sand <2m Vapour Intrusion																																			
Field ID	**Depth**	**Sampled Date**																																	
SB01_0.1	0.1m	30-07-2025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.2	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB01_0.75	0.75m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02_0.1	0.1m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02_1.1	1.1m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB03_0.1	0.1m	30-07-2025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.2	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
SB03_0.4	0.4m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04_0.1	0.1m	30-07-2025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.2	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04_0.85	0.85m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB05_0.1	0.1m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB05_0.5	0.5m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB06_0.1	0.1m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB06_0.5	0.5m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB06_1.0	1m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB07_0.1	0.1m	30-07-2025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.2	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
QC01	0.1m	30-07-2025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.2	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB07_0.5	0.5m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB07_1.0	1m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB08_0.1	0.1m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB08_0.6	0.6m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 1
Soil Analytical Results
Cogency Griffith BESS PSI and Soil Survey
15 Bob Irvin Road, Yoogali NSW 2680
2507426

			Soil Physical Parameters																				
			Sodium Absorption Ratio	Color (Munsell)	Texture	Emerson Class Number	Iron	Moisture Content	Clay (<2 m)	Organic Matter	Total Organic Carbon	Density	Exchangeable Calcium	Exchangeable Magnesium	Exchangeable Potassium	Exchangeable Sodium	Cation Exchange Capacity	Total Soluble Salts	pH (CaCl2)	pH (Lab)	Electrical Conductivity (Lab)	Electrical Conductivity (Lab)
			-	-	-	-	%	%	%	%	%	g/cm3	meq/100g	meq/100g	meq/100g	meq/100g	meq/100g	mg/kg	ph	ph	us/cm	us/cm
			0.01				0.005	0.1	1	0.5	0.5	0.01	0.1	0.1	0.1	0.1	0.1	5	0.1	0.1	1	1
NEPM 2013 HIL D (Commercial / Industrial)																							
NEPM 2013 HSL D (Commercial / Industrial) Sand <1m Vapour Intrusion																							
NEPM 2013 HSL D (Commercial / Industrial) Sand 1m 2m Vapour Intrusion																							
NEPM 2013 ESL (Industrial) - Coarse																							
NEPM 2013 EIL (Industrial)																							
CRC CARE HSLD (Commercial/Industrial) Sand <1m Vapour Intrusion																							
CRC CARE HSLD (Commercial/Industrial) Sand 1m 2m Vapour Intrusion																							
CRC CARE Intrusive Maintenance Worker (Shallow Trench) Sand <2m Vapour Intrusion																							
Field ID	**Depth**	**Sampled Date**																					
SB01_0.1	0.1m	30-07-2025	1.3	1	1	1	2.19	15	50	3.1	1.8	2.51	8.4	5.5	1.6	0.6	16.1	271	5.4	6	112	80
SB01_0.75	0.75m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8	-	-	474
SB02_0.1	0.1m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	-	-	101
SB02_1.1	1.1m	30-07-2025	32.6	1	1	1	-	24.3	-	-	-	-	-	-	-	-	-	3,730	8	-	-	1,100
SB03_0.1	0.1m	30-07-2025	1.31	1	1	4	-	17.8	-	-	-	-	-	-	-	-	-	974	6.8	-	-	286
SB03_0.4	0.4m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9	-	-	188
SB04_0.1	0.1m	30-07-2025	-	-	-	-	-	26.5	-	-	-	-	-	-	-	-	-	-	6.1	-	-	72
SB04_0.85	0.85m	30-07-2025	3.74	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1,280	8	-	-	376
SB05_0.1	0.1m	30-07-2025	1.05	1	1	1	-	20.4	-	-	-	-	-	-	-	-	-	315	6.4	-	-	93
SB05_0.5	0.5m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	-	-	264
SB06_0.1	0.1m	30-07-2025	-	-	-	-	-	17.2	-	-	-	-	-	-	-	-	-	-	6.5	-	-	113
SB06_0.5	0.5m	30-07-2025	2.85	1	1	2	-	13.6	-	-	-	-	-	-	-	-	-	965	-	-	-	-
SB06_1.0	1m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	457
SB07_0.1	0.1m	30-07-2025	-	-	-	-	-	19	-	-	-	-	-	-	-	-	-	-	5.4	-	-	116
QC01	0.1m	30-07-2025	-	-	-	-	-	19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB07_0.5	0.5m	30-07-2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9	-	-	377
SB07_1.0	1m	30-07-2025	6.78	1	1	1	-	-	-	-	-	-	-	-	-	-	-	2,220	-	-	-	-
SB08_0.1	0.1m	30-07-2025	1.09	1	1	2	-	-	-	-	-	-	-	-	-	-	-	172	5.7	-	-	51
SB08_0.6	0.6m	30-07-2025	-	-	-	-	-	14.6	-	-	-	-	-	-	-	-	-	-	7.9	-	-	281

Table 2
QAQC Results Soil RPDs
Cogency Griffith BESS PSI and Soil Survey
15 Bob Irvin Road, Yoogali NSW 2680
2507426

			Field ID	SB07	QC01	RPD
			Lab Report No.	EM2513727	EM2513727	
			Date	30-07-2025	30-07-2025	
			Sample Type	Normal	Duplicate	
			Matrix	Soil	Soil	
	Units	EQL				
Metals (mg/kg)						
Arsenic	mg/kg	5		< 5	< 5	0%
Chromium (III+VI)	mg/kg	2		20	24	18.18%
Cadmium	mg/kg	1		< 1	< 1	0%
Copper	mg/kg	5		14	15	6.9%
Mercury	mg/kg	0.1		< 0.1	< 0.1	0%
Nickel	mg/kg	2		15	16	6.45%
Lead	mg/kg	5		10	9	10.53%
Zinc	mg/kg	5		22	27	20.41%
SVOCs (mg/kg)						
DDD	mg/kg	0.05		< 0.05	< 0.05	0%
4,4-DDE	mg/kg	0.05		< 0.05	< 0.05	0%
DDT	mg/kg	0.2		< 0.2	< 0.2	0%
Aldrin	mg/kg	0.05		< 0.05	< 0.05	0%
Dieldrin	mg/kg	0.05		< 0.05	< 0.05	0%
Aldrin + Dieldrin	mg/kg	0.05		< 0.05	< 0.05	0%
Endosulfan I	mg/kg	0.05		< 0.05	< 0.05	0%
Endosulfan II	mg/kg	0.05		< 0.05	< 0.05	0%
Endosulfan sulphate	mg/kg	0.05		< 0.05	< 0.05	0%
Endrin	mg/kg	0.05		< 0.05	< 0.05	0%
Endrin ketone	mg/kg	0.05		< 0.05	< 0.05	0%
g-BHC (Lindane)	mg/kg	0.05		< 0.05	< 0.05	0%
Heptachlor	mg/kg	0.05		< 0.05	< 0.05	0%
Heptachlor epoxide	mg/kg	0.05		< 0.05	< 0.05	0%
Hexachlorobenzene	mg/kg	0.05		< 0.05	< 0.05	0%
OCP/OPP (mg/kg)						
Chlordane	mg/kg	0.05		< 0.05	< 0.05	0%
Endosulfan	mg/kg	0.05		< 0.05	< 0.05	0%
Endrin aldehyde	mg/kg	0.05		< 0.05	< 0.05	0%
Methoxychlor	mg/kg	0.2		< 0.2	< 0.2	0%
Chlorfenvinphos	mg/kg	0.05		< 0.05	< 0.05	0%
Chlorpyrifos	mg/kg	0.05		< 0.05	< 0.05	0%
Chlorpyrifos-methyl	mg/kg	0.05		< 0.05	< 0.05	0%
Diazinon	mg/kg	0.05		< 0.05	< 0.05	0%
Dichlorvos	mg/kg	0.05		< 0.05	< 0.05	0%
Dimethoate	mg/kg	0.05		< 0.05	< 0.05	0%
Ethion	mg/kg	0.05		< 0.05	< 0.05	0%
Fenthion	mg/kg	0.05		< 0.05	< 0.05	0%
Malathion	mg/kg	0.05		< 0.05	< 0.05	0%
Monocrotophos	mg/kg	0.2		< 0.2	< 0.2	0%

Notes:
This table does not represent the full analytical results, please refer to the laboratory results for full details.

Table 3
QAQC Results Soil Field Blanks
Cogency Griffith BESS PSI and Soil Survey
15 Bob Irvin Road, Yoogali NSW 2680
2507426

		Field ID	**QC03**	**QC04**
		Lab Report No.	**EM2513727**	**EM2513727**
		Date	**30-07-2025**	**30-07-2025**
		Sample Type	**Rinste**	**Trip Blank**
		Matrix	**Water**	**Water**
	Units	**EQL**		
TRH/TPH				
C6-C10 Fraction (F1)	µg/L	20	-	< 20
C6-C10 (F1 minus BTEX)	µg/L	20	-	< 20
C6-C9 Fraction	µg/L	20	-	< 20
BTEX				
Benzene	µg/L	1	-	< 1
Toluene	µg/L	2	-	< 2
Ethylbenzene	µg/L	2	-	< 2
Xylene (m & p)	µg/L	2	-	< 2
Xylene (o)	µg/L	2	-	< 2
Total BTEX	µg/L	1	-	< 1
Metals				
Arsenic	mg/L	0.001	< 0.001	-
Chromium (III+VI)	mg/L	0.001	< 0.001	-
Cadmium	mg/L	0.0001	< 0.0001	-
Copper	mg/L	0.001	< 0.001	-
Mercury	mg/L	0.0001	< 0.0001	-
Nickel	mg/L	0.001	< 0.001	-
Lead	mg/L	0.001	< 0.001	-
Zinc	mg/L	0.005	< 0.005	-
SVOCs				
DDD	µg/L	0.5	< 0.5	-
4,4-DDE	µg/L	0.5	< 0.5	-
DDT	µg/L	2	< 2	-
Aldrin	µg/L	0.5	< 0.5	-
Dieldrin	µg/L	0.5	< 0.5	-
Aldrin + Dieldrin	µg/L	0.5	< 0.5	-
Endosulfan I	µg/L	0.5	< 0.5	-
Endosulfan II	µg/L	0.5	< 0.5	-
Endosulfan sulphate	µg/L	0.5	< 0.5	-
Endrin	µg/L	0.5	< 0.5	-
Endrin ketone	µg/L	0.5	< 0.5	-
g-BHC (Lindane)	µg/L	0.5	< 0.5	-
Heptachlor	µg/L	0.5	< 0.5	-
Heptachlor epoxide	µg/L	0.5	< 0.5	-
Hexachlorobenzene	µg/L	0.5	< 0.5	-

Table 3
QAQC Results Soil Field Blanks
Cogency Griffith BESS PSI and Soil Survey
15 Bob Irvin Road, Yoogali NSW 2680
2507426

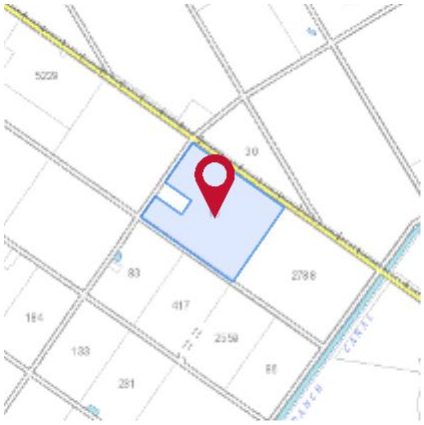
		Field ID	**QC03**	**QC04**
		Lab Report No.	**EM2513727**	**EM2513727**
		Date	**30-07-2025**	**30-07-2025**
		Sample Type	**Rinste**	**Trip Blank**
		Matrix	**Water**	**Water**
OCP/OPP				
Chlordane	**µg/L**	**0.5**	< 0.5	-
Endrin aldehyde	**µg/L**	**0.5**	< 0.5	-
Methoxychlor	**µg/L**	**2**	< 2	-
Chlorfenvinphos	**µg/L**	**0.5**	< 0.5	-
Chlorpyrifos	**µg/L**	**0.5**	< 0.5	-
Chlorpyrifos-methyl	**µg/L**	**0.5**	< 0.5	-
Diazinon	**µg/L**	**0.5**	< 0.5	-
Dichlorvos	**µg/L**	**0.5**	< 0.5	-
Dimethoate	**µg/L**	**0.5**	< 0.5	-
Ethion	**µg/L**	**0.5**	< 0.5	-
Fenthion	**µg/L**	**0.5**	< 0.5	-
Malathion	**µg/L**	**0.5**	< 0.5	-
Monocrotophos	**µg/L**	**2**	< 2	-

Shaded **Indicates a non-detect exceedance**
Shaded **Indicates a above non-detect**
Notes:
This table does not represent the full analytical results, please refer to the laboratory results for full details.

Appendix A: Property Planning Report

Property Report

15 BOB IRVIN ROAD YOOGALI 2680



Property Details

Address:	15 BOB IRVIN ROAD YOOGALI 2680
Lot/Section /Plan No:	2/-/DP1252779
Council:	GRIFFITH CITY COUNCIL

Summary of planning controls

Planning controls held within the Planning Database are summarised below. The property may be affected by additional planning controls not outlined in this report. Please contact your council for more information.

Local Environmental Plans	Griffith Local Environmental Plan 2014 (pub. 21-3-2014)
Land Zoning	RU1 - Primary Production: (pub. 24-2-2023)
Height Of Building	NA
Floor Space Ratio	NA
Minimum Lot Size	20 ha
Heritage	NA
Land Reservation Acquisition	NA
Foreshore Building Line	NA
Terrestrial Biodiversity	Biodiversity

Detailed planning information

State Environmental Planning Policies which apply to this property

State Environmental Planning Policies can specify planning controls for certain areas and/or types of development. They can also identify the development assessment system that applies and the type of environmental assessment that is required.

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Excluded (pub. 21-10-2022)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application (pub. 12-12-2008)
- State Environmental Planning Policy (Housing) 2021: Land Application (pub. 26-11-2021)
- State Environmental Planning Policy (Industry and Employment) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Planning Systems) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Primary Production) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Resilience and Hazards) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Resources and Energy) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Sustainable Buildings) 2022: Land Application (pub. 29-8-2022)
- State Environmental Planning Policy (Transport and Infrastructure) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Transport and Infrastructure) 2021: Subject Land (pub. 2-12-2021)

Other matters affecting the property

Information held in the Planning Database about other matters affecting the property appears below. The property may also be affected by additional planning controls not outlined in this report. Please speak to your council for more information

Bushfire Prone Land	Vegetation Buffer
Local Aboriginal Land Council	GRIFFITH
Regional Plan Boundary	Riverina Murray

Appendix B: Historical Lot Titles

cogency

Project Site and Areas Plan

2449 - Griffith BESS

Legend

- Project Site
- Development Area
- Indicative Transmission Corridor
- Indicative BESS Area
- Outside Development Area

Irrigation Way, drainage reserve - 2500//DP1195971

Irrigation Way, MR8

11 Hamilton Road,
Griffith Substation
1//DP865611

Hamilton Road

2788 Centofanti Road
139//DP751709

Irrigation Way, Yanco-Griffith Railway - 11//DP1198376

15 Bob Irvin Road
2//DP1252779

Bob Irvin Road

41 Bob Irvin Road
1//DP1252779

NOTE
Lots 1//DP1252779 and 2//DP1252779 are subject to resubdivion approved by DA 291/2018. Project Site and Development Area reflect the approved lot layouts.

0 50 100 150 m

DRAWN RA
DATE 02/09/2025
SOURCE NSW Government, Google

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/865611

SEARCH DATE	TIME	EDITION NO	DATE
6/3/2025	2:55 PM	4	21/3/2017

LAND

LOT 1 IN DEPOSITED PLAN 865611
AT WIDGELLI
LOCAL GOVERNMENT AREA GRIFFITH
PARISH OF STANBRIDGE COUNTY OF COOPER
TITLE DIAGRAM DP865611

FIRST SCHEDULE

ELECTRICITY TRANSMISSION MINISTERIAL HOLDING CORPORATION
(CN AM199979)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AK74917 LEASE TO NSW ELECTRICITY NETWORKS ASSETS PTY LIMITED EXPIRES: 15/12/2114. OPTION OF RENEWAL: 99 YEARS.
AK74918 LEASE OF LEASE AK74917 TO NSW ELECTRICITY NETWORKS OPERATIONS PTY LIMITED EXPIRES: 15/12/2035. OPTION OF RENEWAL: 20 YEARS.
AK84802 MORTGAGE OF LEASE AK74917 TO CBA CORPORATE SERVICES (NSW) PTY LIMITED
AK84803 MORTGAGE OF LEASE AK74918 TO CBA CORPORATE SERVICES (NSW) PTY LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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Received: 06/03/2025 14:55:00

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/1252779

SEARCH DATE	TIME	EDITION NO	DATE
6/3/2025	2:54 PM	2	23/5/2023

LAND

LOT 1 IN DEPOSITED PLAN 1252779
AT YOOGALI
LOCAL GOVERNMENT AREA GRIFFITH
PARISH OF JONDARYAN COUNTY OF COOPER
TITLE DIAGRAM DP1252779

FIRST SCHEDULE

JODIE LOUISE EMERY

SECOND SCHEDULE (4 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS (S.171 CROWN LANDS ACT 1989)
2 NOTIFICATION IN GOVERNMENT GAZETTE DATED 30.6.1961 EASEMENT FOR TRANSMISSION LINE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
2220250 EASEMENT NOW VESTED IN NEW SOUTH WALES ELECTRICITY TRANSMISSION AUTHORITY
3 I219784 PIPELINE EASEMENT AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
O335765 PURSUANT TO SEC. 14(1) OF THE MOOMBA-SYDNEY PIPELINE SYSTEM SALES ACT, 1994 THE EASEMENT IS NOW OWNED BY THE COMMONWEALTH OF AUSTRALIA AND EAST-AUSTRALIAN PIPELINE LIMITED
4 DP1252779 EASEMENT FOR WATER SUPPLY 3 METRE(S) WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

2449... PRINTED ON 6/3/2025

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NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2/1252779

SEARCH DATE	TIME	EDITION NO	DATE
6/3/2025	2:55 PM	3	19/6/2024

LAND

LOT 2 IN DEPOSITED PLAN 1252779
AT YOOGALI
LOCAL GOVERNMENT AREA GRIFFITH
PARISH OF JONDARYAN COUNTY OF COOPER
TITLE DIAGRAM DP1252779

FIRST SCHEDULE

JODIE LOUISE EMERY

SECOND SCHEDULE (5 NOTIFICATIONS)

---

1 LAND EXCLUDES MINERALS (S.171 CROWN LANDS ACT 1989)
2 NOTIFICATION IN GOVERNMENT GAZETTE DATED 30.6.1961 EASEMENT FOR TRANSMISSION LINE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
2220250 EASEMENT NOW VESTED IN NEW SOUTH WALES ELECTRICITY TRANSMISSION AUTHORITY
3 I219784 PIPELINE EASEMENT AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
O335765 PURSUANT TO SEC. 14(1) OF THE MOOMBA-SYDNEY PIPELINE SYSTEM SALES ACT, 1994 THE EASEMENT IS NOW OWNED BY THE COMMONWEALTH OF AUSTRALIA AND EAST-AUSTRALIAN PIPELINE LIMITED
4 DP1252779 EASEMENT FOR WATER SUPPLY 3 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
5 AT888533 LEASE TO YOOGALI SOLAR FARM PTY LTD EXPIRES: 16/1/2060.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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Received: 06/03/2025 14:55:00

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 11/1198376

SEARCH DATE	TIME	EDITION NO	DATE
9/5/2025	4:05 PM	3	13/3/2025

LAND

LOT 11 IN DEPOSITED PLAN 1198376
AT GRIFFITH YOOGALI WIDGELLI
LOCAL GOVERNMENT AREA GRIFFITH
PARISH OF GORTON COUNTY OF COOPER
PARISH OF JONDARYAN COUNTY OF COOPER
PARISH OF STANBRIDGE COUNTY OF COOPER
TITLE DIAGRAM DP1198376

FIRST SCHEDULE

TRANSPORT ASSET MANAGER OF NEW SOUTH WALES (RP AU805205)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS (S.141 PUBLIC WORKS ACT, 1912)
2 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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Received: 09/05/2025 16:05:53

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2500/1195971

SEARCH DATE	TIME	EDITION NO	DATE
9/5/2025	4:05 PM	-	-

LAND

LOT 2500 IN DEPOSITED PLAN 1195971
AT YOOGALI
LOCAL GOVERNMENT AREA GRIFFITH
PARISH OF STANBRIDGE COUNTY OF COOPER
TITLE DIAGRAM DP1195971

FIRST SCHEDULE

MURRUMBIDGEE IRRIGATION LIMITED

SECOND SCHEDULE (1 NOTIFICATION)

* 1 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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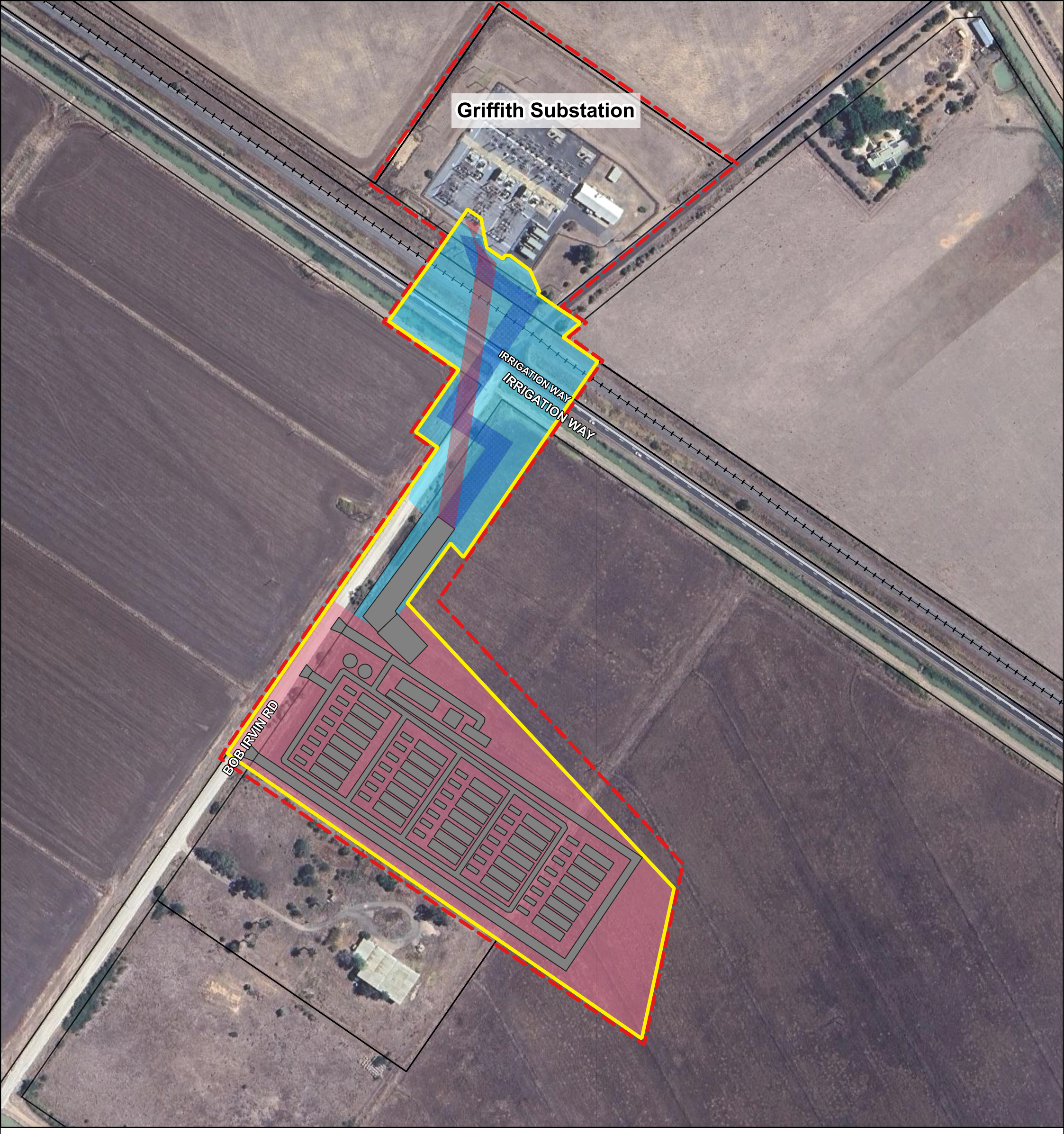
Received: 09/05/2025 16:05:52

Appendix C: Development Plans



Site Layout Plan

2449 - Griffith BESS

0 50 100 m

LEGEND

Proposed Infrastructure

- Project Site
- Development Area
- Indicative BESS Layout Confirmed
- Proposed Overhead Transmission
- Proposed Underground Transmission
- BESS Area
- Transmission Area

Existing Infrastructure

- Roads
- Railway
- Cadastre

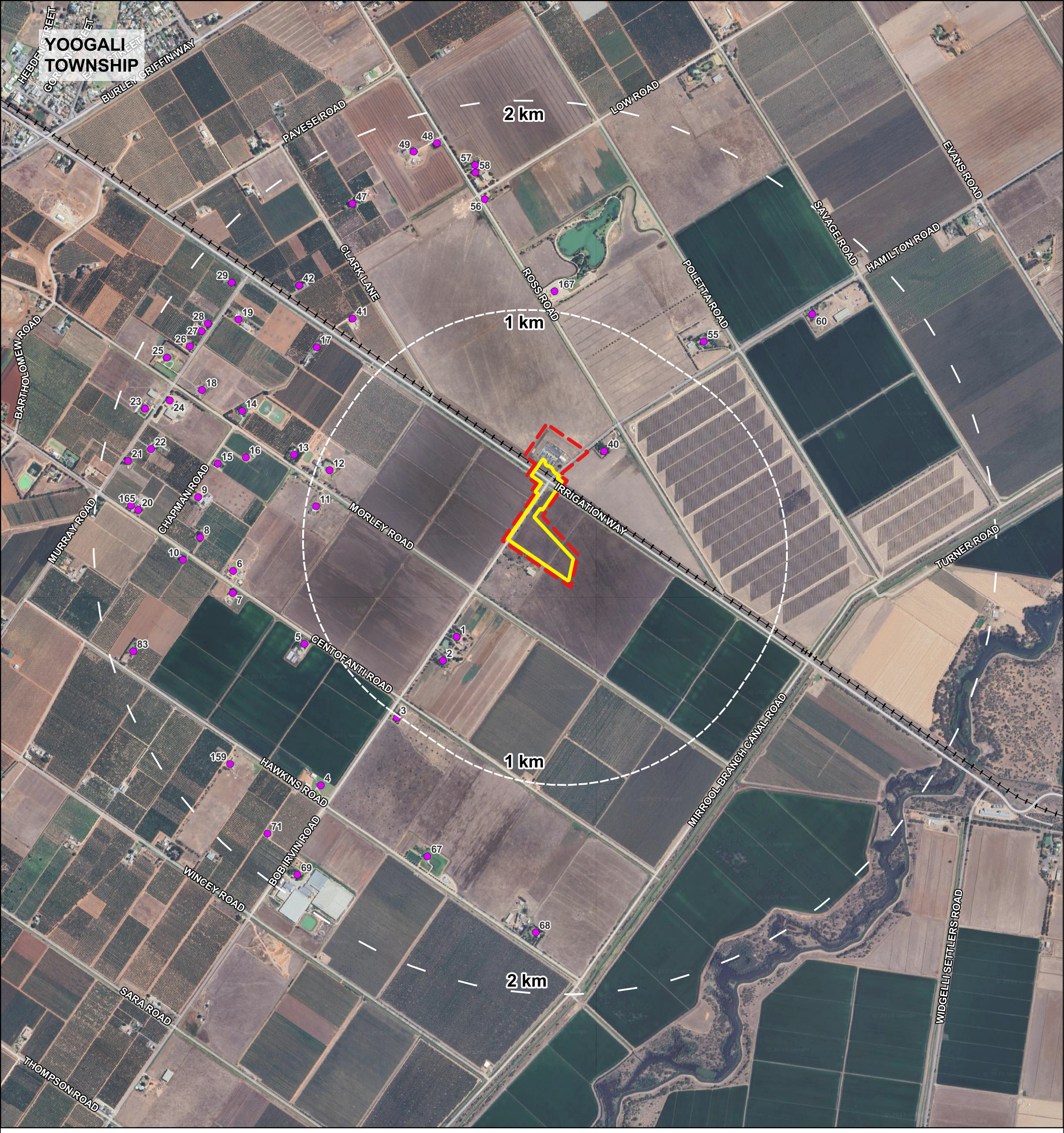
Version: 1.0

Date: 22/09/2025

Disclaimer: This plan is preliminary and subject to detailed studies and approval.

cogency

Appendix D: Sensitive Receivers Map



Sensitive Receivers Plan

0 0.5 1 km

2449 - Griffith BESS

LEGEND

Proposed Infrastructure

- Project Site
- Development Area

Existing Infrastructure

- Sensitive receiver
- Railway
- Roads

Version: 1.0

Date: 22/09/2025

Disclaimer: This plan is preliminary and subject to detailed studies and approval.

Note: Sensitive receivers, generally dwellings, have been identified within 1 km and 2 km of the approximate BESS area, being the location of expected noise sources during construction and operation

cogency

Appendix E: Lotsearch Report

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 18 Jul 2025 11:54:00

Reference: LS088361 EP

Address: 15 Bob Irvin Road, Yoogali, NSW 2680

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 On-site	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Customer Service - Spatial Services	24/06/2025	24/06/2025	Monthly	-	-	-	-
Topographic Data	NSW Department of Customer Service - Spatial Services	20/05/2025	20/05/2025	Annually	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority NSW	15/07/2025	08/07/2025	Monthly	1000m	0	0	0
Contaminated Land Records of Notice	Environment Protection Authority NSW	15/07/2025	15/07/2025	Monthly	1000m	0	0	0
Former Gasworks	Environment Protection Authority NSW	20/05/2025	15/05/2025	Quarterly	1000m	0	0	0
Notices under the POEO Act 1997	Environment Protection Authority NSW	30/06/2025	30/06/2025	Monthly	1000m	0	0	0
National Waste Management Facilities Database	Geoscience Australia	30/05/2025	19/01/2023	Annually	1000m	0	0	0
National Liquid Fuel Facilities	Geoscience Australia	16/10/2024	19/01/2023	Annually	1000m	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority NSW	30/06/2025	05/02/2025	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Australian Department of Defence	15/07/2025	15/07/2025	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Australian Department of Defence	15/07/2025	15/07/2025	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	15/07/2025	21/05/2025	Monthly	2000m	0	0	0
Defence Controlled Areas	Australian Department of Defence	15/07/2025	15/07/2025	Quarterly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Australian Department of Defence	11/06/2025	02/09/2022	Quarterly	2000m	0	0	0
National Unexploded Ordnance (UXO)	Australian Department of Defence	15/07/2025	15/07/2025	Quarterly	2000m	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority NSW	28/11/2024	15/12/2022	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority NSW	16/06/2025	16/06/2025	Monthly	1000m	1	2	2
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority NSW	16/06/2025	16/06/2025	Monthly	1000m	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority NSW	16/06/2025	16/06/2025	Monthly	1000m	3	3	3
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150m	0	0	0
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150m	-	160	160
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500m	0	0	0
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500m	-	12	12
Points of Interest	NSW Department of Customer Service - Spatial Services	19/05/2025	19/05/2025	Quarterly	1000m	0	0	0
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	19/05/2025	19/05/2025	Quarterly	1000m	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	19/05/2025	19/05/2025	Quarterly	1000m	0	0	0
Major Easements	NSW Department of Customer Service - Spatial Services	20/05/2025	20/05/2025	Quarterly	1000m	1	2	2
State Forest	Forestry Corporation of NSW	18/12/2024	11/11/2024	Annually	1000m	0	0	0
Hydrogeology Map of Australia	Geoscience Australia	22/04/2025	19/08/2019	Annually	1000m	1	1	1

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2024	NSW Department of Climate Change, Energy, the Environment and Water	13/05/2025	28/06/2024	Quarterly	1000m	0	0	0
National Groundwater Information System (NGIS) Boreholes	Bureau of Meteorology; Water NSW	30/05/2025	04/03/2025	Annually	2000m	0	0	5
NSW Seamless Geology Single Layer: Rock Units	NSW Department of Primary Industries and Regional Development	19/05/2025	16/04/2024	Annually	1000m	1	1	1
NSW Seamless Geology Single Layer: Geological Boundaries and Faults	NSW Department of Primary Industries and Regional Development	19/05/2025	16/04/2024	Annually	1000m	0	0	0
NSW Seamless Geology Single Layer: Trendlines	NSW Department of Primary Industries and Regional Development	19/05/2025	16/04/2024	Annually	1000m	0	0	0
NSW Seamless Geology Single Layer: Fold Axes	NSW Department of Primary Industries and Regional Development	19/05/2025	16/04/2024	Annually	1000m	0	0	0
Naturally Occurring Asbestos Potential	NSW Department of Primary Industries and Regional Development	05/05/2025	30/09/2015	Annually	1000m	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	15/01/2025	17/02/2011	Annually	1000m	1	1	3
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Housing and Infrastructure	26/06/2025	09/05/2025	Monthly	500m	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	15/01/2025	21/02/2013	Annually	1000m	1	1	2
Dryland Salinity - National Assessment	Australian Bureau of Agricultural and Resource Economics and Sciences	03/06/2025	15/04/2025	Annually	1000m	0	0	0
Mining Subsidence Districts	NSW Department of Customer Service	20/05/2025	20/05/2025	Quarterly	1000m	0	0	0
Current Mining Titles	NSW Department of Primary Industries and Regional Development	09/07/2025	09/07/2025	Monthly	1000m	0	0	0
Mining Title Applications	NSW Department of Primary Industries and Regional Development	09/07/2025	09/07/2025	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Primary Industries and Regional Development	09/07/2025	09/07/2025	Monthly	1000m	9	9	9
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Housing and Infrastructure	26/06/2025	08/09/2023	Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Housing and Infrastructure	26/06/2025	13/06/2025	Monthly	1000m	1	1	1
Commonwealth Heritage List	Australian Department of Climate Change, Energy, the Environment and Water	23/10/2024	13/04/2022	Annually	1000m	0	0	0
National Heritage List	Australian Department of Climate Change, Energy, the Environment and Water	23/10/2024	13/04/2022	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	20/05/2025	21/03/2025	Quarterly	1000m	0	0	0
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Housing and Infrastructure	26/06/2025	13/06/2025	Monthly	1000m	0	0	0
Bush Fire Prone Land	NSW Rural Fire Service	24/06/2025	23/06/2025	Monthly	1000m	2	2	2
NSW Native Vegetation Type Map	NSW Department of Climate Change, Energy, the Environment and Water	28/05/2025	04/10/2024	Quarterly	1000m	2	5	14
Ramsar Wetlands of Australia	Australian Department of Climate Change, Energy, the Environment and Water	19/05/2025	05/03/2025	Annually	1000m	0	0	0
Collaborative Australian Protected Areas Database (CAPAD) 2022 - Terrestrial	Australian Department of Climate Change, Energy, The Environment and Water	20/03/2025	19/06/2024	Annually	1000m	0	0	0
Collaborative Australian Protected Areas Database (CAPAD) 2022 - Marine	Australian Department of Climate Change, Energy, The Environment and Water	20/03/2025	30/06/2022	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	30/05/2025	07/05/2020	Annually	1000m	0	1	1

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	30/05/2025	07/05/2020	Annually	1000m	0	1	2
NSW BioNet Species Sightings	NSW Department of Climate Change, Energy, the Environment and Water	10/07/2025	10/07/2025	Monthly	10000m	-	-	-

Site Diagram

15 Bob Irvin Road, Yoogali, NSW 2680

Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 68618m²

Total Perimeter: 1.34km

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.

Scale: 0 25 50 100 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2025

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 July 2025

Contaminated Land

15 Bob Irvin Road, Yoogali, NSW 2680

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
N/A	No records in buffer								

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: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
N/A	No records in buffer							

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

EPA Notices

Penalty Notices, s.91 & s.92 Clean up Notices and s.96 Prevention Notices within the dataset buffer:

Map ID	Number	Type	Name	Address	Status	Issued Date	Act	Offence	Offence Date	Loc Conf	Dist	Dir
N/A	No records in buffer											

NSW EPA Notice Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Waste Management & Liquid Fuel Facilities

15 Bob Irvin Road, Yoogali, NSW 2680

National Waste Management Facilities Database

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

Map ID	Owner	Name	Address	Management Type	Facility Type	Status	Loc Conf	Dist	Dir
N/A	No records in buffer								

Source: Waste Management Facilities Database
Creative Commons 4.0 © Commonwealth of Australia (Geoscience Australia) 2022

National Liquid Fuel Facilities

National Liquid Fuel Facilties within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist	Direction
N/A	No records in buffer										

National Liquid Fuel Facilities Data Source: Geoscience Australia
Creative Commons 4.0 © Commonwealth of Australia

PFAS Investigation & Management Programs

15 Bob Irvin Road, Yoogali, NSW 2680

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 and Unexploded Ordnance

15 Bob Irvin Road, Yoogali, NSW 2680

Defence Controlled Areas (DCA)

Defence Controlled Areas provided by the Department of Defence within the dataset buffer:

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

Defence Controlled Areas, Data Custodian: Department of Defence, Australian Government

Defence 3 Year Regional Contamination Investigation Program (RCIP)

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

National Unexploded Ordnance (UXO)

Sites which have been assessed by the Department of Defence for the potential presence of unexploded ordnance within the dataset buffer:

Site ID	Location Name	Category	Area Description	Additional Information	Commonwealth	Loc Conf	Dist	Dir
N/A	No records in buffer							

National Unexploded Ordnance (UXO), Data Custodian: Department of Defence, Australian Government

EPA Other Sites with Contamination Issues

15 Bob Irvin Road, Yoogali, NSW 2680

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:

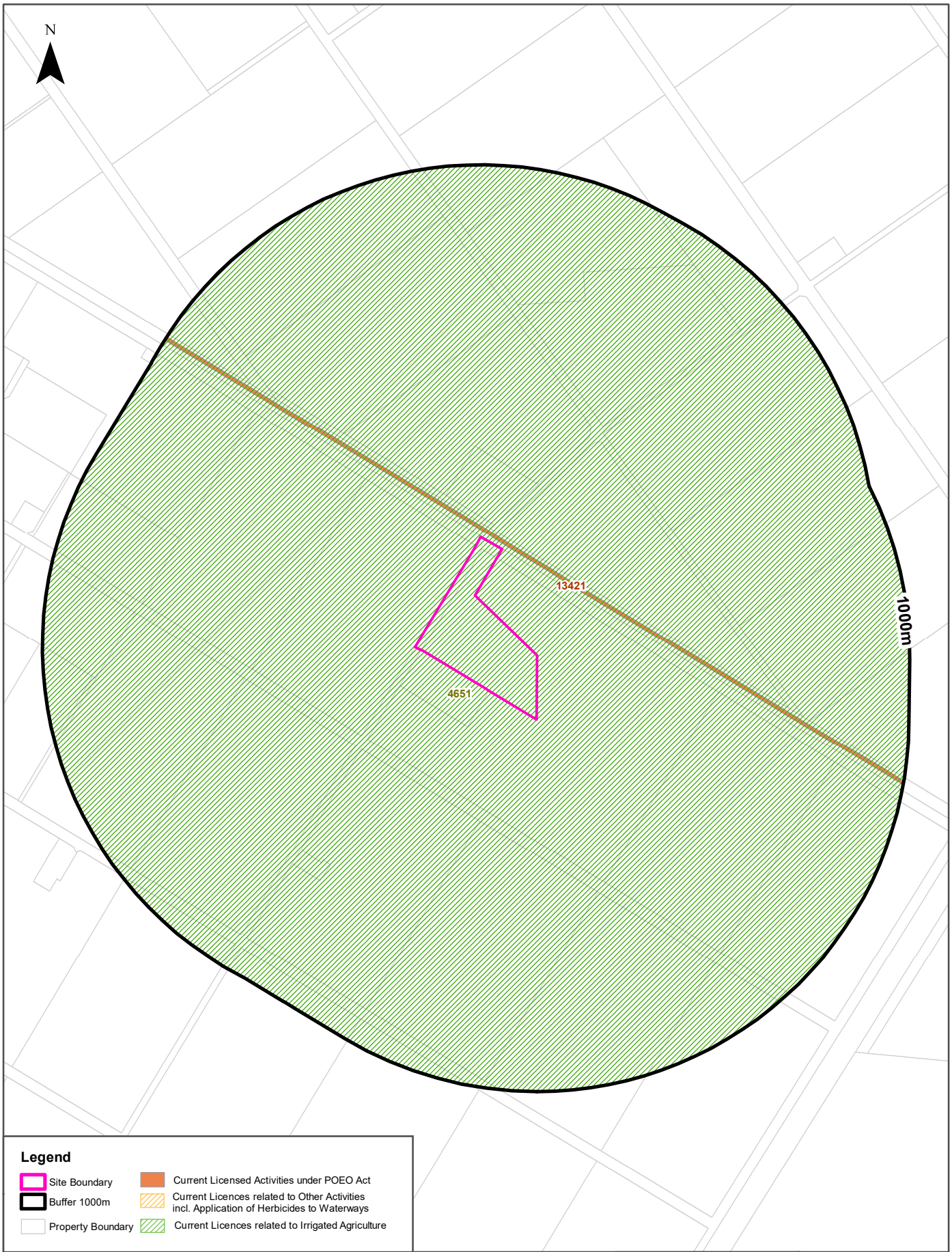
Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
N/A	No records in buffer						

EPA Other Sites with Contamination Issues: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Current EPA Licensed Activities

15 Bob Irvin Road, Yoogali, NSW 2680



EPA Activities

15 Bob Irvin Road, Yoogali, NSW 2680

Licensed Activities under the POEO Act 1997

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

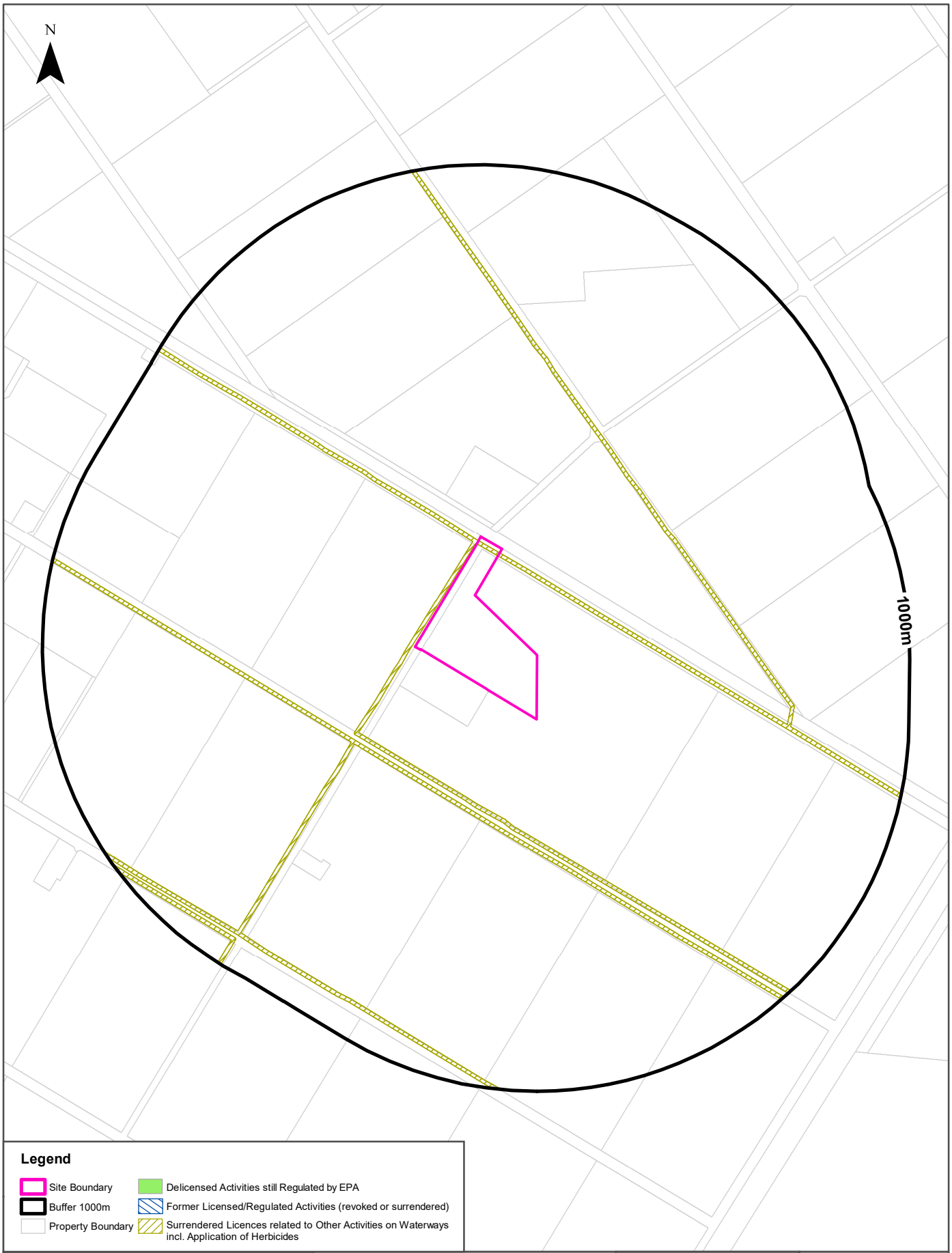
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
4651	MURRUMBIDGEE IRRIGATION LIMITED	MURRUMBIDGEE IRRIGATION AREA & DISTRICTS		HANWOOD	Irrigated agriculture	Area Match	0m	On-site
13421	UGL REGIONAL LINX PTY LTD		COUNTRY REGIONAL NETWORK, ORANGE, NSW 2800		Railway systems activities	Network of Features	12m	North East

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

15 Bob Irvin Road, Yoogali, NSW 2680



EPA Activities

15 Bob Irvin Road, Yoogali, NSW 2680

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:

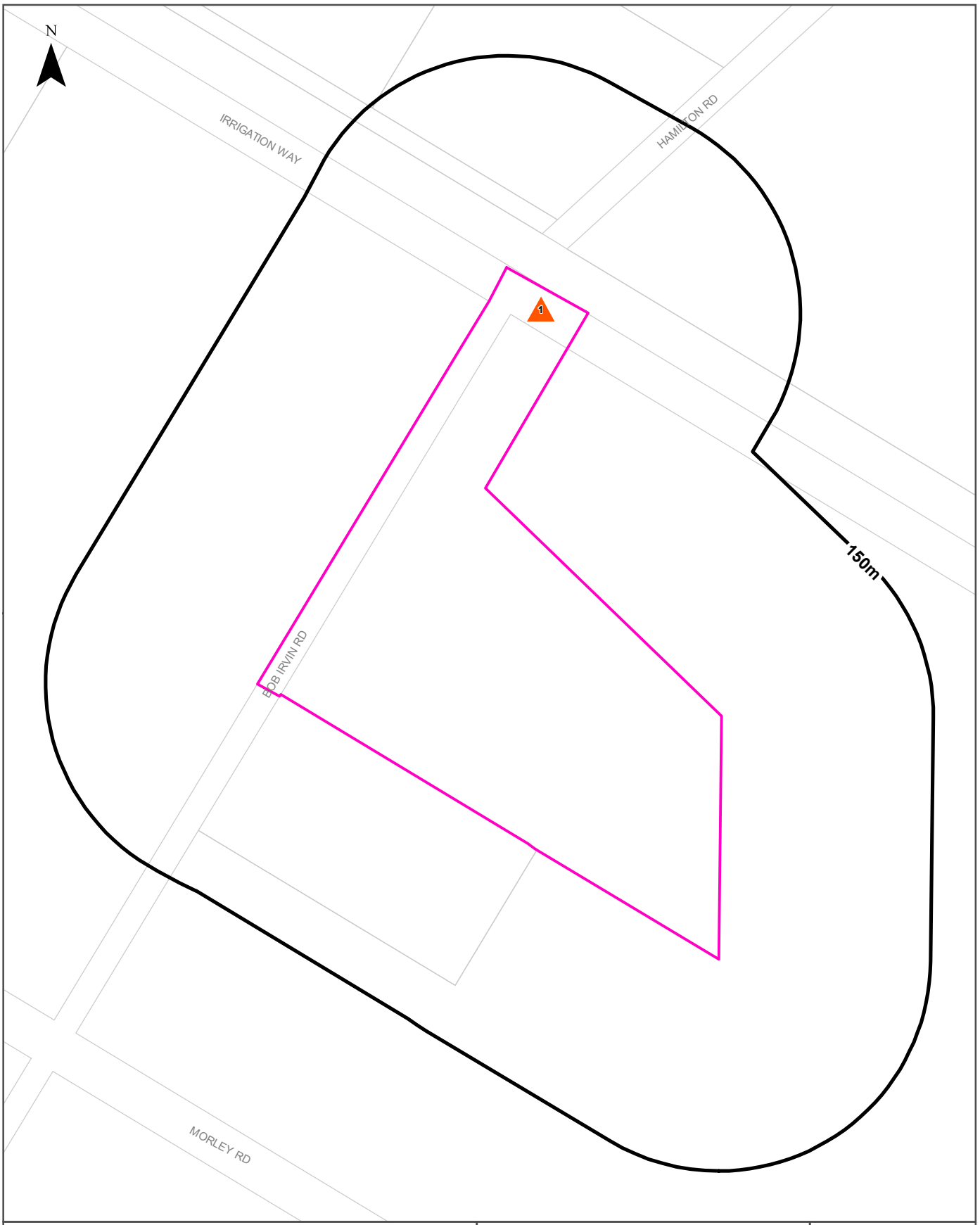
Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
4838	Robert Orchard	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

15 Bob Irvin Road, Yoogali, NSW 2680



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: 0 50 100 150 200 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 July 2025

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018
Property Boundaries © NSW Department Finance, Services & Innovation 2025

Historical Business Directories

15 Bob Irvin Road, Yoogali, NSW 2680

Business Directory Records 1950-1991
Premise or Road Intersection Matches

Potentially contaminative business activities extracted from Universal Business Directories 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
N/A	No records in buffer						

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Business Directory Records 1950-1991
Road or Area Matches

Potentially contaminative business activities extracted from Universal Business Directories 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
1	ICE MFRS. &/OR MERCHANTS	Area Ice Works., 924 Irrigation Way., Griffith. 2680	218470	1991	Road Match	0m
	REFRIGERATOR DEALERS &/OR SERVICEMEN	Area Refrigeration & Air Conditioning Co., Irrigation Way., Griffith. 2680	218834	1991	Road Match	0m
	AUTO ELECTRICIANS.	B.N. Stapleton Pty. Ltd., Irrigation Way, Griffith. 2680	217752	1991	Road Match	0m
	MOTOR BRAKE SPECIALISTS.	Barries Auto Clinic., Irrigation Way., Griffith. 2680	218599	1991	Road Match	0m
	MOTOR CARBURETTOR SPECIALISTS	Barries Auto Clinic., Irrigation Way., Griffith. 2680	218622	1991	Road Match	0m
	MOTOR CLUTCH SPECIALISTS.	Barries Auto Clinic., Irrigation Way., Griffith. 2680	218625	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Barries Auto Clinic., Irrigation Way., Griffith. 2680	218643	1991	Road Match	0m
	MOTOR SHOCK ABSORBER SPECIALISTS.	Barries Auto Clinic., Irrigation Way., Griffith. 2680	218686	1991	Road Match	0m
	MOTOR WHEEL ALIGNING & BALANCING SERVICES.	Barries Auto Clinic., Irrigation Way., Griffith. 2680	218706	1991	Road Match	0m
	WELDERS.	Barries Auto Clinic., Irrigation Way., Griffith. 2680	219023	1991	Road Match	0m
	ELECTRIC MOTOR WINDING &/OR REWINDING SPECIALISTS.	Barry N. Stapleton Pty. Ltd., Irrigation Way Griffith. 2680	217963	1991	Road Match	0m
	MOTOR BRAKE SPECIALISTS.	Bob's Clutch Brake & Muffler Centre., 880 Irrigation Way., Griffith. 2680	218601	1991	Road Match	0m
	MOTOR CLUTCH SPECIALISTS.	Bob's Clutch Brake & Muffler Centre., 880 Irrigation Way., Griffith. 2680	218626	1991	Road Match	0m
	MOTOR EXHAUST SYSTEMS &/OR MUFFLERS MFRS. &/OR DISTS. &/OR FITTERS.	Bob's Clutch Brake & Muffler Centre., 880 Irrigation Way., Griffith. 2680	218637	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Bob's Clutch Brake & Muffler Centre., 880 Irrigation Way., Griffith. 2680	218645	1991	Road Match	0m
	MOTOR ACCESSORIES - RETAIL	Bob's Clutch, Brake & Muffler Centre., 880 Irrigation Way., Griffith. 2680	218585	1991	Road Match	0m
	HYDRAULIC EQUIPMENT MFRS. &/OR IMPS. &/OR DISTS.	Collier & Miller Pty. Ltd., Irrigation Way ., Griffith. 2680	218469	1991	Road Match	0m
	ENGINEERS - FABRICATING.	Collier & Miller Pty. Ltd., Irrigation Way., Griffith. 2680	218009	1991	Road Match	0m
	ENGINEERS - GENERAL.	Collier & Miller Pty. Ltd., Irrigation Way., Griffith. 2680	218019	1991	Road Match	0m
	ENGINEERS SUPPLIES.	Collier & Miller Pty. Ltd., Irrigation Way., Griffith. 2680	218034	1991	Road Match	0m
	GAS - INDUSTRIAL &/OR MEDICAL - MFRS. &/OR DISTS.	Collier & Miller Pty. Ltd., Irrigation Way., Griffith. 2680	218121	1991	Road Match	0m
	STEEL FABRICATORS.	Collier & Miller Pty. Ltd., Irrigation Way., Griffith. 2680	218915	1991	Road Match	0m
	STEEL MERCHANTS - GENERAL	Collier & Miller Pty. Ltd., Irrigation Way., Griffith. 2680	218917	1991	Road Match	0m
	WELDERS.	Collier & Miller Pty. Ltd., Irrigation Way., Griffith. 2680	219027	1991	Road Match	0m
	WELDERS.	Comarin M. & A Irrigation Way., Hanwood. 2680	219028	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Dannys Store., 856 Irrigation Way., Griffith. 2680	218647	1991	Road Match	0m
	LAWN MOWER & ACCESSORY MFRS. &/OR DISTS.	Gras Mower Centre Pty. Ltd, 69 Irrigation Way., Griffith. 2680	218523	1991	Road Match	0m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	CHAIN SAW SALES &/OR SERVICE	Gras Mower Centre Pty. Ltd., 68 Irrigation Way., Griffith. 2680	217868	1991	Road Match	0m
	LAWN MOWER SALES &/OR SERVICE.	Gras Mower Centre Pty. Ltd., 69 Irrigation Way, Griffith. 2680	218526	1991	Road Match	0m
	AGRICULTURAL MACHINERY &/OR PARTS &/OR EQUIPMENT MFRS. &/OR IMPS. &/OR DISTS.	Gras Mower Centre Pty. Ltd., 69 Irrigation Way., Griffith. 2680	217204	1991	Road Match	0m
	AGRICULTURAL MACHINERY DEALERS & HIRERS.	Gras Mower Centre Pty. Ltd., 69 Irrigation Way., Griffith. 2680	217194	1991	Road Match	0m
	AGRICULTURAL MACHINERY REPAIRS.	Gras Mower Centre Pty. Ltd., 69 Irrigation Way., Griffith. 2680	217215	1991	Road Match	0m
	LAWN MOWER SALES &/OR SERVICE.	Gras Mower Centre Pty. Ltd., 69 Irrigation Way., Griffith. 2680	218529	1991	Road Match	0m
	PUMP & PUMPING EQUIPMENT MFRS. &/OR DISTS.	Gras Mower Centre Pty. Ltd., 69 Irrigation Way., Griffith. 2680	218808	1991	Road Match	0m
	AIR CONDITIONING-AUTOMOTIVE.	Griffith Auto Electrics., 924 Irrigation Way., Griffith. 2680	217227	1991	Road Match	0m
	AUTO ELECTRICIANS.	Griffith Auto Electrics., 924 Irrigation Way., Griffith. 2680	217754	1991	Road Match	0m
	MOTOR TRIMMERS	Griffith Canvas & Motor Trimmers., 41 Irrigation Way., Griffith. 2680	218703	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Hanwood Motors Irrigation Way., Hanwood. 2680	218652	1991	Road Match	0m
	MOTOR ENGINE RECONDITIONERS.	Hirst Heads., 880 Irrigation Way., Griffith. 2680	218633	1991	Road Match	0m
	CHAIN SAW SALES &/OR SERVICE	M.I.A Washer & Mower Services, Unit 1/924 Irrigation Way., Griffith. 2680	217869	1991	Road Match	0m
	LAWN MOWER SALES &/OR SERVICE.	M.I.A. Washar & Mower Services, Unit 1/924 Irrigation Way., Griffith. 2680	218530	1991	Road Match	0m
	WASHING MACHINE SALES &/OR SERVICE.	M.I.A. Washer & Mower Services Unit., 1/924 Irrigation Way., Griffith. 2680	219019	1991	Road Match	0m
	LAWN MOWER SALES &/OR SERVICE.	M.I.A. Washer & Mower Services., Unit 1, 924 Irrigation Way, Griffith. 2680	218527	1991	Road Match	0m
	TYRE DEALERS &/OR RETREADERS &/OR VULCANISERS.	McLeod M. S. Ltd. Tyres., Irrigation Way., Griffith. 2680	218998	1991	Road Match	0m
	BATTERY SALES &/OR SERVICE	McLeod M. S. Ltd. Tyres., Irrigation Way.,Griffith. 2680	217773	1991	Road Match	0m
	MOTOR CAR DEALERS - NEW &/OR USED	Reno Car Sales., Irrigation Way., Griffith. 2680	218616	1991	Road Match	0m
	ENGINEERS - DIESEL.	Renzos Motors., 1011 Irrigation Way, Hanwood. 2680	218006	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Renzos Motors., 1011 Irrigation Way, Hanwood. 2680	218660	1991	Road Match	0m
	MOTOR TRANSMISSION SPECIALISTS.	Riverina Automatic Transmissions., 56 Irrigation Way., Griffith. 2680	218700	1991	Road Match	0m
	AUTO ELECTRICIANS.	Stapleton B. N. Pty. Ltd., 924 Irrigation Way., Griffith. 2680	217757	1991	Road Match	0m
	ELECTRIC MOTOR MFRS. &/OR IMPS. &/OR DISTS.	Stapleton B. N. Pty. Ltd., 924 Irrigation Way., Griffith. 2680	217961	1991	Road Match	0m
	ELECTRICAL APPLIANCE REPAIR &/OR SERVICE AGENTS.	Stapleton B. N. Pty. Ltd., 924 Irrigation Way., Griffith. 2680	217973	1991	Road Match	0m
	ELECTRIC MOTOR WINDING &/OR REWINDING SPECIALISTS.	Stapleton, B. N. Pty. Ltd., 924 Irrigation Way., Griffith. 2680	217965	1991	Road Match	0m
	REFRIGERATOR SALES &/OR SERVICE	Area Refrigeration and Air Conditioning Co., Irrigation Way., Griffith 2680	160430	1982	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS	Barnes Auto Clinic, Irrigation Way., Griffith 2680	160287	1982	Road Match	0m
	CRANES - MOBILE & TRAVEL TOWER - PROPRIETORS &/OR HIRERS	Collier & Miller Pty. Ltd., Irrigation Way., Griffith 2680	159933	1982	Road Match	0m
	ENGINEERS - CONSTRUCTIONAL	Collier & Miller Pty. Ltd., Irrigation Way., Griffith 2680	159988	1982	Road Match	0m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	ENGINEERS - FABRICATING	Collier & Miller Pty. Ltd., Irrigation Way., Griffith 2680	159994	1982	Road Match	0m
	ENGINEERS - GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Collier & Miller Pty. Ltd., Irrigation Way., Griffith 2680	160000	1982	Road Match	0m
	ENGINEERS - STRUCTURAL	Collier & Miller Pty. Ltd., Irrigation Way., Griffith 2680	160007	1982	Road Match	0m
	ENGINEERS SUPPLIES	Collier & Miller Pty. Ltd., Irrigation Way., Griffith 2680	160009	1982	Road Match	0m
	HYDRAUUC EQUIPMENT MFRS. &/OR DISTS	Collier & Miller Pty. Ltd., Irrigation Way., Griffith 2680	160138	1982	Road Match	0m
	WELDERS - ELECTRIC &/OR OXY	Collier & Miller Pty. Ltd., Irrigation Way., Griffith 2680	160575	1982	Road Match	0m
	NOT LISTED	Cornale, A. & V., Grcr., Irrigation Way., Hanwood 2674	160811	1982	Road Match	0m
	NOT LISTED	Cornarin, M. & A., Elec. Wldr., Irrigation Way., Hanwood 2674	160810	1982	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS	Dannys Store, Irrigation Way., Griffith 2680	160292	1982	Road Match	0m
	HARDWARE &/OR BUILDERS SUPPLIES	Elders Metals Ltd., Irrigation Way., Griffith 2680	160116	1982	Road Match	0m
	NOT LISTED	Forlico, T. G. Bldr, Irrigation Way., Hanwood 2674	160812	1982	Road Match	0m
	NOT LISTED	Franco's Wines, 161 Irrigation Way., Hanwood 2674	160814	1982	Road Match	0m
	LAWNMOWER SALES &/OR SERVICE	Gras Mower Centre Irrigation Way, Griffith 2680	160179	1982	Road Match	0m
	LAWNMOWER SALES &/OR SERVICE	Gras Mower Centre, Irrigation Way., Griffith 2680	160180	1982	Road Match	0m
	MOTOR CAR AIR-CONDITIONING	Griffith Auto Electrical Air Conditioning Services Pty. Ltd, Irrigation Way., Griffith 2680	160252	1982	Road Match	0m
	MOTOR ELECTRICIANS	Griffith Auto Electrical Air Conditioning Services Pty. Ltd., Irrigation Way., Griffith 2680	160276	1982	Road Match	0m
	SECONDHAND DEALERS	Griffith Secondhand & Antique Centre, Irrigation Way., Griffith 2680	160465	1982	Road Match	0m
	SECONDHAND DEALERS	Griffith Secondhand & Antique Dealers Irrigation Way, Griffith 2680	160464	1982	Road Match	0m
	NOT LISTED	Hanwood Butchery, Irrigation Way., Hanwood 2674	160815	1982	Road Match	0m
	NOT LISTED	Hanwood Engineering, Irrigation Way., Hanwood 2674	160816	1982	Road Match	0m
	NOT LISTED	Hanwood Motors, Irrigation Way., Hanwood 2674	160817	1982	Road Match	0m
	NOT LISTED	Hanwood Post Office, Irrigation Way., Hanwood 2674	160818	1982	Road Match	0m
	MOTOR CYLINDER REBORES	Hirst Heads, Irrigation Way., Griffith 2680	160274	1982	Road Match	0m
	MOTOR ENGINE RECONDITIONERS	Hirst Heads, Irrigation Way., Griffith 2680	160281	1982	Road Match	0m
	MOTOR CAR &/OR TRUCK DEALERS - NEW &/OR USED	M.I.A. Smash Repairs. Irrigation Way., Griffith 2680	160263	1982	Road Match	0m
	MOTOR PAINTERS &/OR PANEL BEATERS	M.I.A. Smash Repairs. Irrigation Way., Griffith 2680	160331	1982	Road Match	0m
	MOTOR ENGINE RECONDITIONERS	MacKintosh Engineering. (Griffith), Irrigation Way., Griffith 2680	160282	1982	Road Match	0m
	WELDERS - ELECTRIC &/OR OXY	MacKintosh Engineering. (Griffith), Irrigation Way., Griffith 2680	160578	1982	Road Match	0m
	MOTOR CAR &/OR TRUCK DEALERS - NEW &/OR USED	MacKintosh Engineering. (Griffith). Irrigation Way., Griffith 2680	160264	1982	Road Match	0m
	MOTOR CAR &/OR TRUCK DEALERS - NEW &/OR USED	Reno Car Sales, Irrigation Way., Griffith 2680	160267	1982	Road Match	0m
	NOT LISTED	Renzos Motors, 1011 Irrigation Way., Hanwood 2674	160820	1982	Road Match	0m
	MOTOR AUTOMATIC TRANSMISSION SERVICE	Riverina Automatic Transmissions, Irrigation Way., Griffith 2680	160245	1982	Road Match	0m
	ABRASIVE DISTS. &/OR MERCHANTS	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	159661	1982	Road Match	0m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	AGRICULTURAL SPRAY EQUIPMENT MFRS. &/OR DISTS.	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	159699	1982	Road Match	0m
	AIR COMPRESSORS &/OR EQUIPMENT MFRS. &/OR DISTS	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	159702	1982	Road Match	0m
	BEARINGS &/OR BUSH MFRS. &/OR DISTS	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	159795	1982	Road Match	0m
	CONVEYOR &/OR CONVEYING EQUIP. MFRS. &/OR IMPS. &/OR DISTS.	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	159931	1982	Road Match	0m
	ELECTRIC MOTOR DEALERS &/OR W/SALERS	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	159963	1982	Road Match	0m
	ENGINEERS SUPPLIES	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	160010	1982	Road Match	0m
	HYDRAUUC EQUIPMENT MFRS. &/OR DISTS	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	160139	1982	Road Match	0m
	PULLEY MFRS. &/OR DISTS	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	160409	1982	Road Match	0m
	PUMP & PUMPING EQUIPMENT MFRS. &/OR DISTS	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	160414	1982	Road Match	0m
	PUMP DEALERS - SECONDHAND	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	160411	1982	Road Match	0m
	SPRAY PAINTERS EQUIPMENT &/OR SUPPLIES	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	160490	1982	Road Match	0m
	WELDING EQUIPMENT &/OR SUPPLIES MFRS. &/OR DISTS	Rorrisons Engineers Supplies, Irrigation Way., Griffith 2680	160582	1982	Road Match	0m
	MOTOR CAR DETAILERS	Shine-A-Mite Irrigation Way., Griffith 2680	160254	1982	Road Match	0m
	BATTERY SALES &/OR SERVICE	Shine-A-Mite, Irrigation Way., Griffith 2680	159793	1982	Road Match	0m
	CARRIERS &/OR CARTAGE CONTRACTORS	Sprys Riverina Transport, Irrigation Way., Griffith 2680	159877	1982	Road Match	0m
	HAULAGE CONTRACTORS .	Sprys Riverina Transport, Irrigation Way., Griffith 2680	160123	1982	Road Match	0m
	ROAD TRANSPORT SERVICES - INTERSTATE	Sprys Riverina Transport, Irrigation Way., Griffith 2680	160449	1982	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, Etc.	Batros, E., Irrigation Wy. Hanwood 2674	597608	1970	Road Match	0m
	ENGINEERS-CONSTRUCTIONAL	Collier & Miller Pty. Ltd. Irrigation Way, Griffith	596827	1970	Road Match	0m
	CRANES-MOBILE-PROPRIETORS &/OR HIRERS	Collier & Miller Pty. Ltd., Irrigation Way Griffith 2680	596790	1970	Road Match	0m
	ENGINEERS-CONSTRUCTIONAL	Collier & Miller Pty. Ltd., Irrigation Way Griffith 2680	596872	1970	Road Match	0m
	WELDERS-ELECTRIC & OXY	Collier & Miller Pty. Ltd., Irrigation Way Griffith 2680	597551	1970	Road Match	0m
	ENGINEERS-FABRICATING	Collier & Miller Pty. Ltd., Irrigation Way. Griffith 2680	596884	1970	Road Match	0m
	ENGINEERS-STRUCTURAL	Collier & Miller Pty. Ltd., Irrigation Wy. Griffith 2680	596903	1970	Road Match	0m
	ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Collier & Miller Pty. Ltd., Irrigation. Wy Griffith 2680	596892	1970	Road Match	0m
	HYDRAULIC EQUIPMENT-MFRS. &/OR DISTS.	Collier &. Miller Pty. Ltd., Irrigation Way Griffith 2680	597046	1970	Road Match	0m
	ENGINEERS-STRUCTURAL	Comarin, M. & A., Irrigation Wy. Hanwood 2674	597597	1970	Road Match	0m
	WELDERS-ELECTRIC & OXY	Comarin, M. & A., Irrigation Wy. Hanwood 2674	597615	1970	Road Match	0m
	AGRICULTURAL MACHINERY REPAIRS	Comarin, M. &. A., Irrigation Way. Hanwood 2674	597592	1970	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, Etc.	Danny's Store, Irrigation Wy. Griffith 2680	597282	1970	Road Match	0m
	BUILDERS &/OR BUILDING CONTRACTORS	Forlico T G Pty. Ltd., Portion 893, Irrigation Way, Griffith2680	596650	1970	Road Match	0m
	BUILDERS &/OR BUILDING CONTRACTORS	Forlico, T. G., Portion 893 Irrigation Way Griffith 2680	596659	1970	Road Match	0m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	BUILDERS &/OR BUILDING CONTRACTORS	Forlico, T. Pty. Ltd., Irrigation Way. Hanwood 2674	597594	1970	Road Match	0m
	TYRE DEALERS, RETREADERS & VULCANISERS	Fred's Tyre Service, Irrigation Wy. Griffith 2680	597529	1970	Road Match	0m
	BATTERY SALES &. SERVICE	Freds Tyre Service, Irrigation Way Griffith 2680	596609	1970	Road Match	0m
	AGRICULTURAL MACHINERY REPAIRS	Hanwood Engineering Irrigation Way,Hanwood 2674	597591	1970	Road Match	0m
	ENGINEERS-GENERAL, MFRG. &/OR MECHANICAL	Hanwood Motors, Irrigation Wy. Hanwood 2674	597596	1970	Road Match	0m
	MOTOR GARAGES & ENGINEERS	Hanwood Motors, Irrigation Wy. Hanwood 2674	597607	1970	Road Match	0m
	WELDERS-ELECTRIC & OXY	Hanwood Motors, Irrigation Wy. Hanwood 2674	597616	1970	Road Match	0m
	MOTOR PAINTERS & PANEL BEATERS	M. I. A. Smash Repairs Irrigation Highway Griffith, 2680	597269	1970	Road Match	0m
	MOTOR PAINTERS & PANEL BEATERS	M.I.A. Smash Repairs, Irrigation Way. Griffith 2680	597276	1970	Road Match	0m
	MOTOR CAR & TRUCK DEALERS-NEW & USED	Mackintosh & Wright Irrigation Way,Griffith 2680	597218	1970	Road Match	0m
	WELDERS-ELECTRIC & OXY	Mackintosh & Wright, Irrigation Way Griffith 2680	597555	1970	Road Match	0m
	MOTOR CAR & TRUCK DEALERS-NEW & USED	Mackintosh & Wright, Irrigation Way. Griffith 2680	597231	1970	Road Match	0m
	IRRIGATION SYSTEM EQUIPMENT MANUFACTURERS &/OR DISTRIBUTORS	Martin & Webb 2 Irrigation Way, Griffith, 2680	597127	1970	Road Match	0m
	CHEMICAL MFRS. &/OR DISTS. &/OR IMPS.	Martin & Webb, 2 Irrigation Way. Griffith 2680	596758	1970	Road Match	0m
	SWIMMING POOL CONSTRUCTION CONTRACTORS	Martin & Webb, 2 Irrigation Wy, Griffith 2680	597483	1970	Road Match	0m
	FILTER MFRS./DISTRIBUTORS	Martin & Webb, 2 Irrigation Wy. Griffith 2680	596920	1970	Road Match	0m
	IRRIGATION SYSTEM EQUIPMENT MANUFACTURERS &/OR DISTRIBUTORS	Martin & Webb, 2 Irrigation Wy. Griffith 2680	597094	1970	Road Match	0m
	MATERIAL HANDLING EQUIPMENT-IMPORTERS &/OR DISTS.	McHugh Jack Irrigation Way,Griffith 2680	597125	1970	Road Match	0m
	MATERIAL HANDLING EQUIPMENT-IMPORTERS &/OR DISTS.	McHugh, J., Irrigation Way Griffith 2680	597126	1970	Road Match	0m
	FORK LIFT TRUCK HIRING SERVICES	McHugh, J., Irrigation Wy. Griffith 2680	596932	1970	Road Match	0m
	MOTOR ACCESSORIES/SPARE PARTS DEALERS	McHugh, J., Irrigation Wy. Griffith 2680	597206	1970	Road Match	0m
	WINE & SPIRIT MERCHANTS-RETAIL	Miranda Wines Pty. Ltd., Irrigation Way Griffith 2680	597567	1970	Road Match	0m
	WINE & SPIRIT MERCHANTS-WHOLESALE	Miranda Wines Pty. Ltd., Irrigation Way Griffith 2680	597571	1970	Road Match	0m
	WINE GROWERS	Miranda Wines Pty. Ltd., Irrigation Way Griffith 2680	597577	1970	Road Match	0m
	ELECTRIC MOTORS-DEALERS &/OR WHOLESALERS	Rorrison Engineers' Supplies, Irrigation Wy. Griffith 2680	596840	1970	Road Match	0m
	ENGINEERS' SUPPLIES	Rorrison's Engineers' Supplies, Irrigation Wy. Griffith 2680	596907	1970	Road Match	0m
	WELDING EQUIPMENT & SUPPLIES MFRS. &/OR DISTRIBUTORS	Rorrison's Engineers' Supplies, Irrigation Wy. Griffith 2680	597560	1970	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, Etc.	Saliceto, A., Irrigation Way Hanwood 2674	597609	1970	Road Match	0m
	HAULAGE CONTRACTORS	Spray's Riverina Transport, Irrigation Wy. Griffith 2680	597036	1970	Road Match	0m
	CARRIERS & CARTAGE CONTRACTORS	Spry's Riverina Transport, Irrigation Wy. Griffith 2680	596746	1970	Road Match	0m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	ROAD TRANSPORT SERVICES-INTERSTATE	Spry's Riverina Transport, Irrigation Wy. Griffith 2680	597404	1970	Road Match	0m
	WELDERS-ELECTRIC & OXY	Welded Repairs Irrigation Way. Griffith 2680	596916	1970	Road Match	0m
	ENGINEERS-CONSTRUCTIONAL	Welded Repairs, Irrigation Way Griffith 2680	596875	1970	Road Match	0m
	WELDERS-ELECTRIC & OXY	Welded Repairs, Irrigation Way Griffith 2680	597558	1970	Road Match	0m
	ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Welded Repairs, Irrigation Wy. Griffith 2680	596897	1970	Road Match	0m
	MOTOR GARAGES & ENGINEERS	Lucantonio, I., Irrigation Highway., Hanwood	208042	1961	Road Match	0m
	MOTOR OIL & SPIRIT DEPOTS	McWilliams Winery, Irrigation Highway., Hanwood	208043	1961	Road Match	0m
	BLACKSMITHS & FARRIERS	Pianca, L., Irrigation Highway, Hanwood	208032	1961	Road Match	0m

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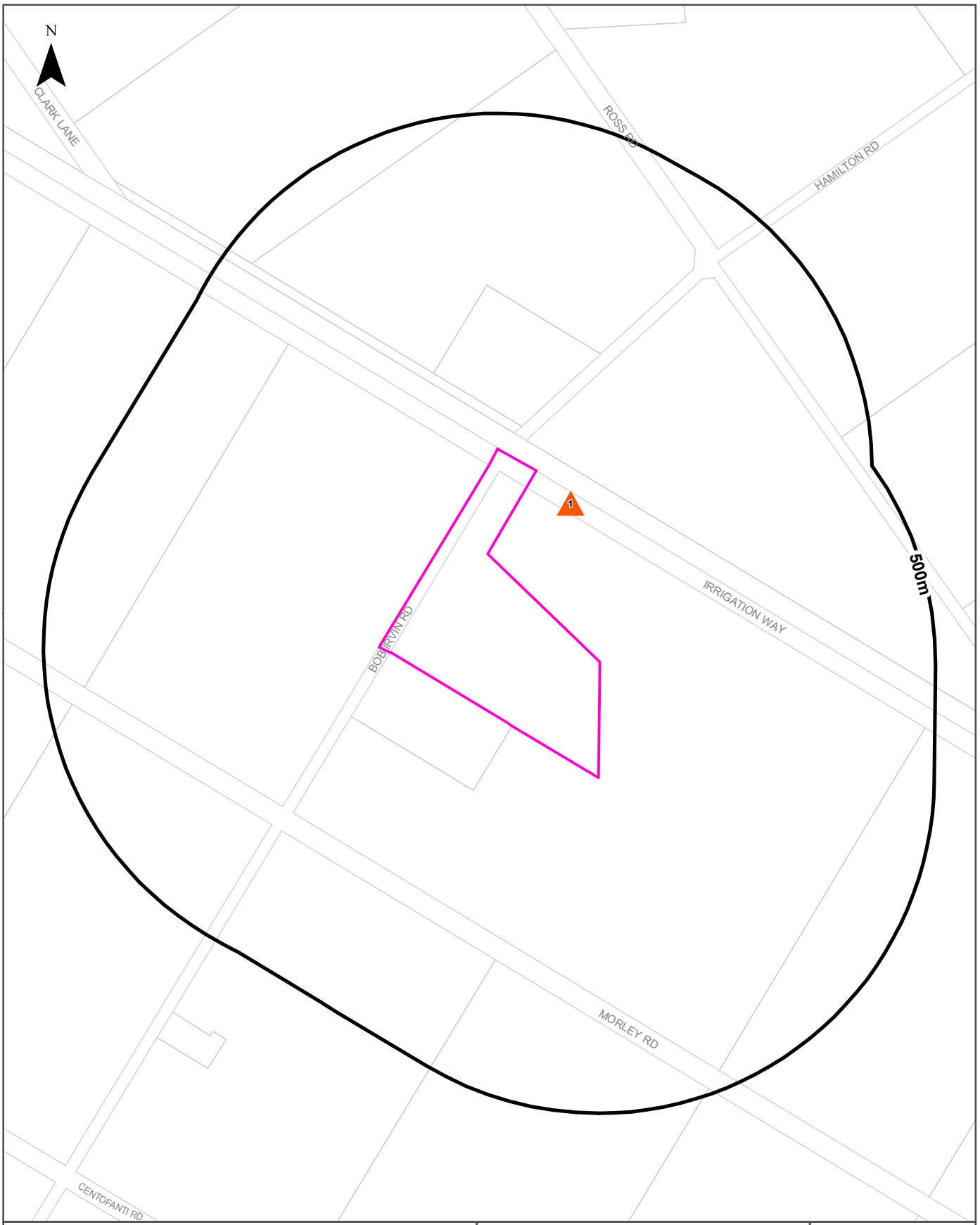
Dry Cleaners, Motor Garages & Service Stations

15 Bob Irvin Road, Yoogali, NSW 2680



Legend

- Site Boundary
- Buffer 500m
- 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: 0 110 220 330 440 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 July 2025

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018
Property Boundaries © NSW Department Finance, Services & Innovation 2025

Historical Business Directories

15 Bob Irvin Road, Yoogali, NSW 2680

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
N/A	No records in buffer						

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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
1	MOTOR GARAGES & SERVICE STATIONS.	Barries Auto Clinic., Irrigation Way., Griffith. 2680	218643	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Bob's Clutch Brake & Muffler Centre., 880 Irrigation Way., Griffith. 2680	218645	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Dannys Store., 856 Irrigation Way., Griffith. 2680	218647	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Hanwood Motors Irrigation Way., Hanwood. 2680	218652	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Renzos Motors., 1011 Irrigation Way, Hanwood. 2680	218660	1991	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS	Barnes Auto Clinic, Irrigation Way., Griffith 2680	160287	1982	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS	Dannys Store, Irrigation Way., Griffith 2680	160292	1982	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, Etc.	Batros, E., Irrigation Wy. Hanwood 2674	597608	1970	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, Etc.	Danny's Store, Irrigation Wy. Griffith 2680	597282	1970	Road Match	0m
	MOTOR GARAGES & ENGINEERS	Hanwood Motors, Irrigation Wy. Hanwood 2674	597607	1970	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, Etc.	Saliceto, A., Irrigation Way Hanwood 2674	597609	1970	Road Match	0m
	MOTOR GARAGES & ENGINEERS	Lucantonio, I., Irrigation Highway., Hanwood	208042	1961	Road Match	0m

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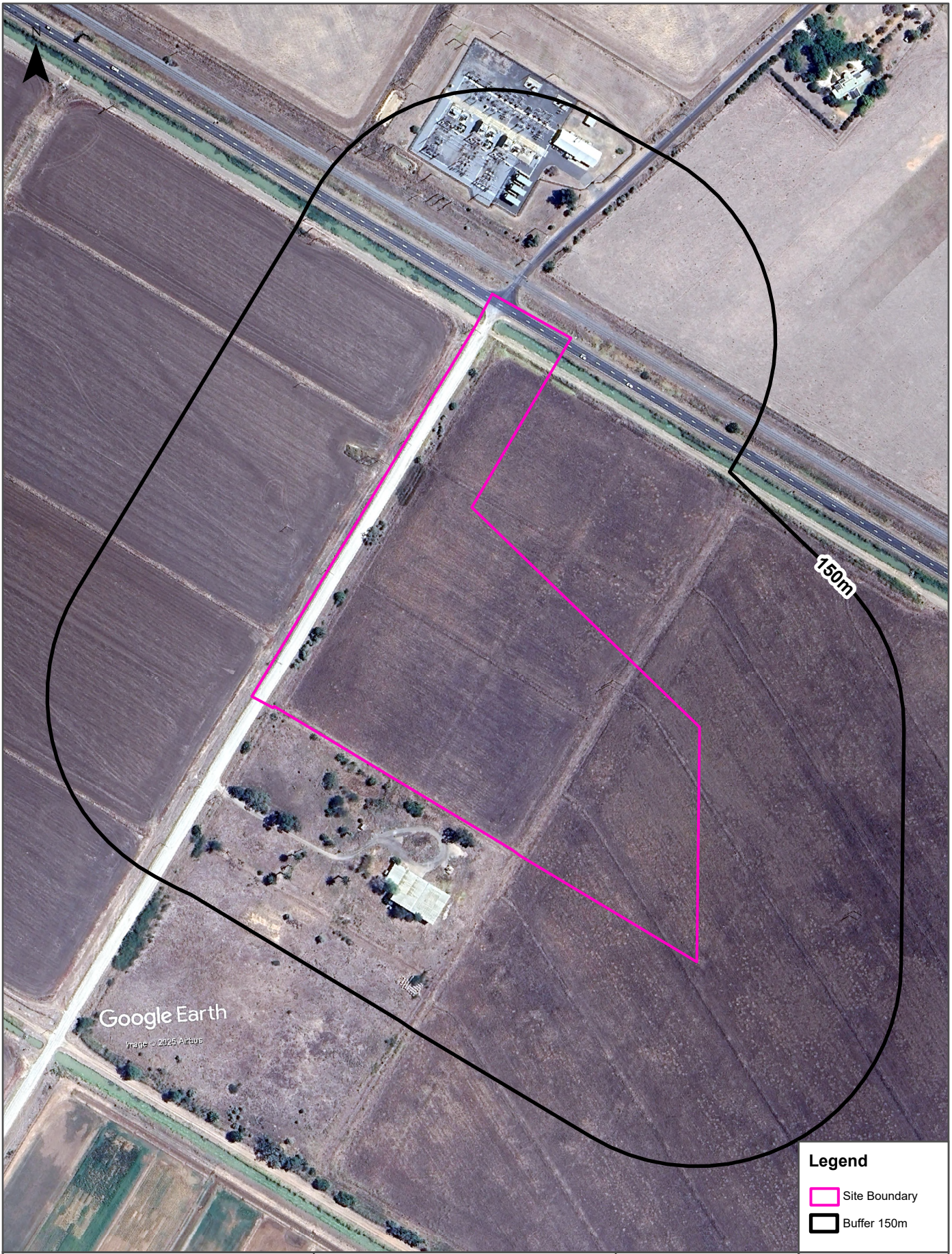
Aerial Imagery 2025

15 Bob Irvin Road, Yoogali, NSW 2680



Scale:
0 40 80 120 160
Meters

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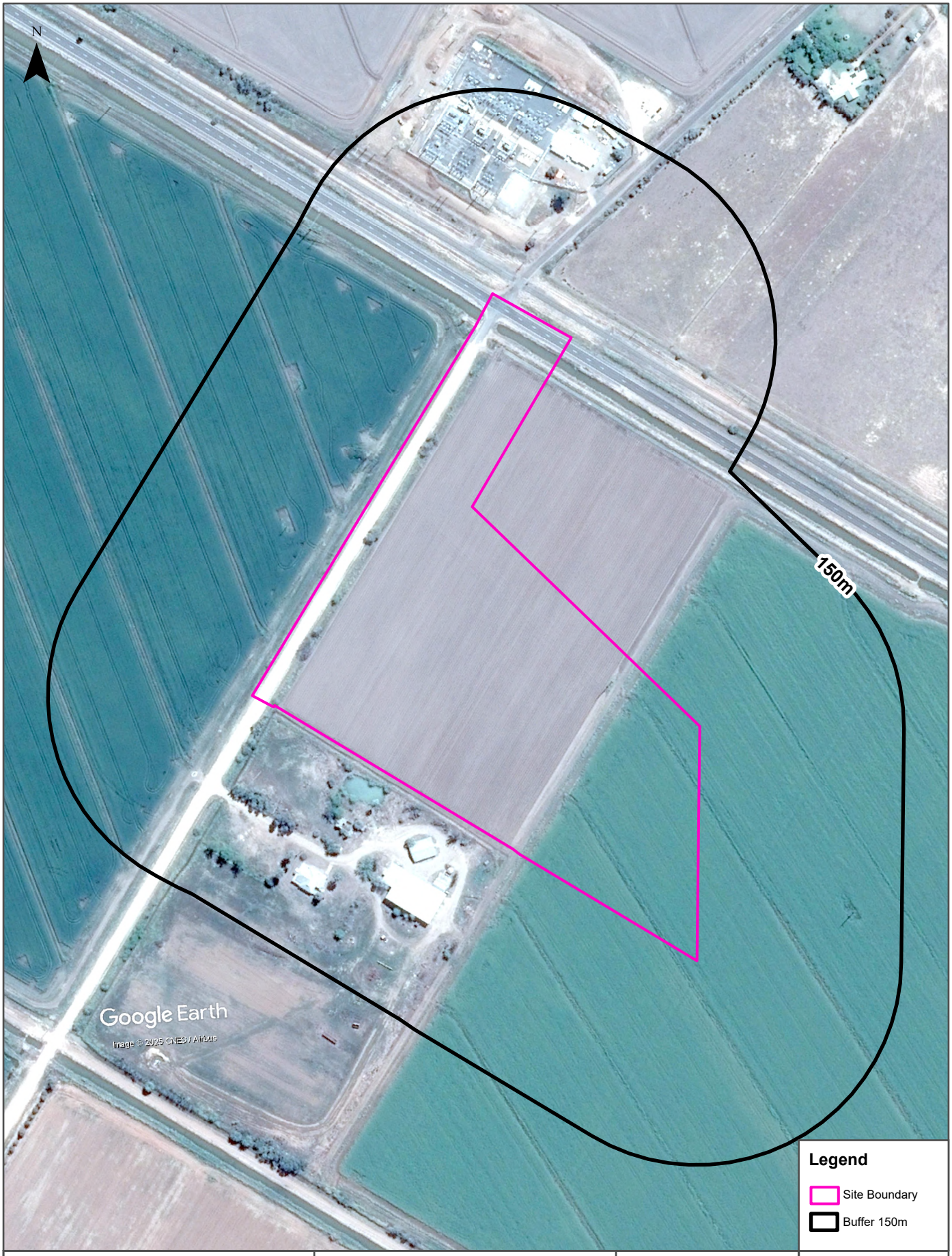
Date: 18 July 2025

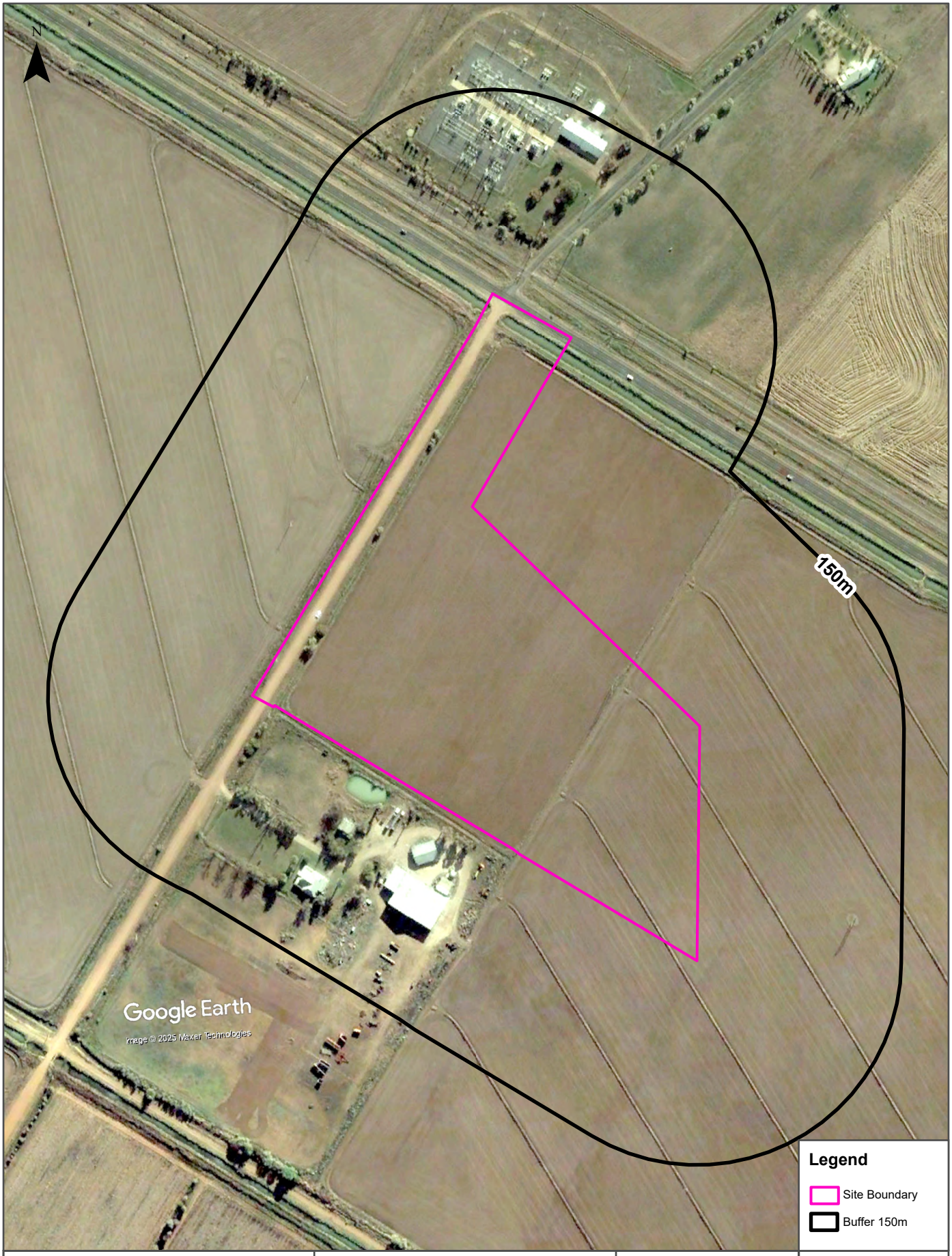
Aerial Imagery 2013

15 Bob Irvin Road, Yoogali, NSW 2680



Aerial Imagery 2003

15 Bob Irvin Road, Yoogali, NSW 2680



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Meters

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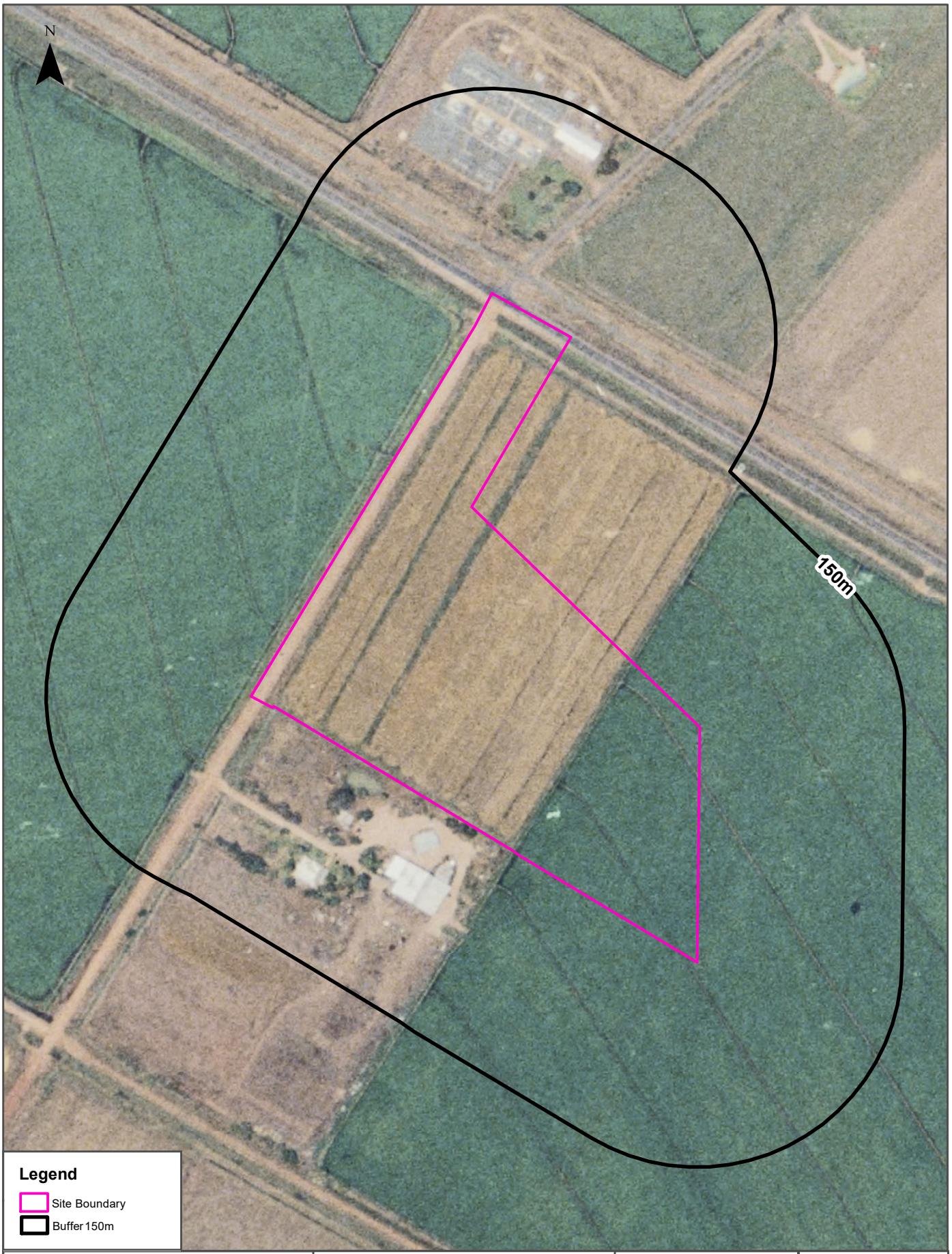
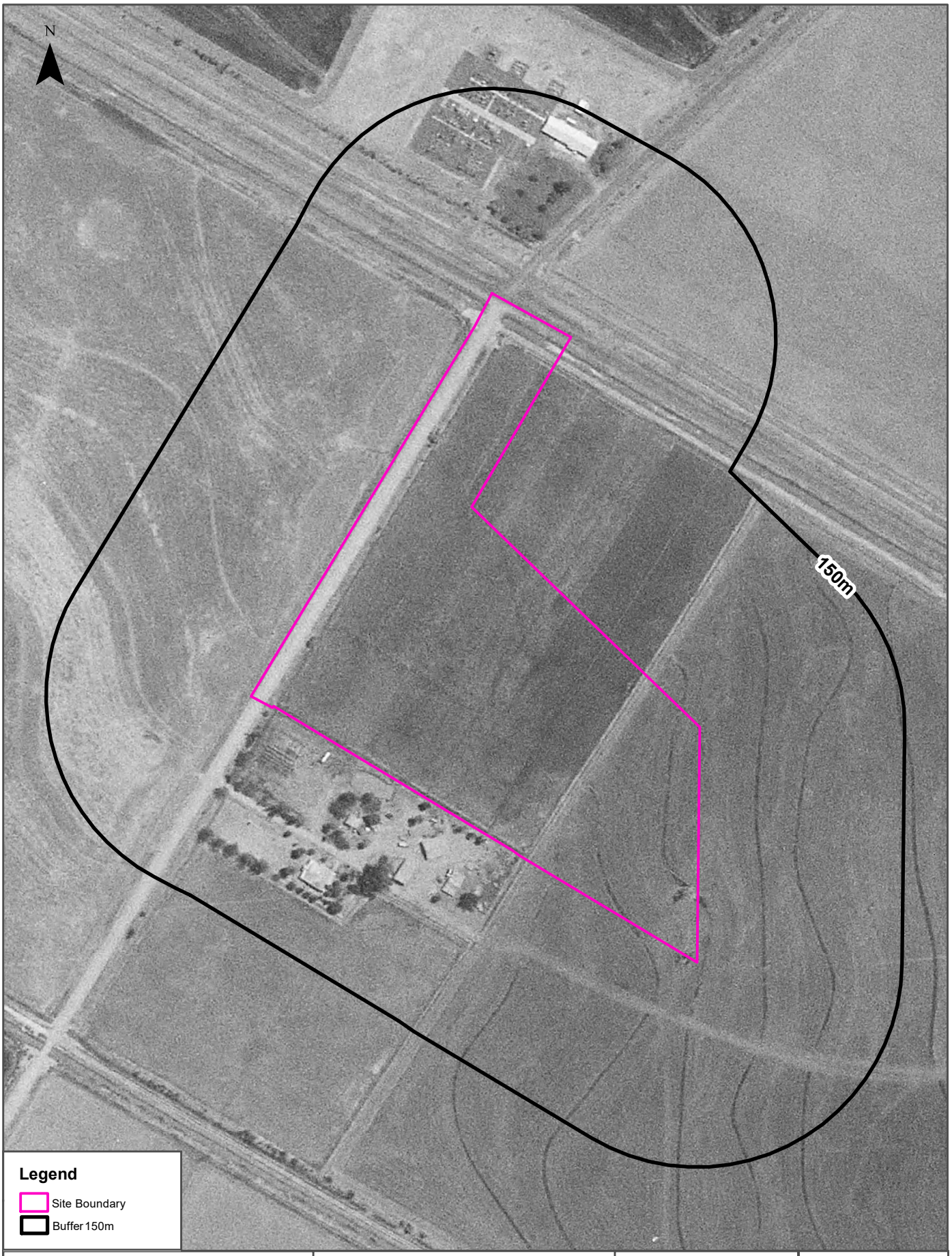
Aerial Imagery 1997

15 Bob Irvin Road, Yoogali, NSW 2680



Aerial Imagery 1988

15 Bob Irvin Road, Yoogali, NSW 2680

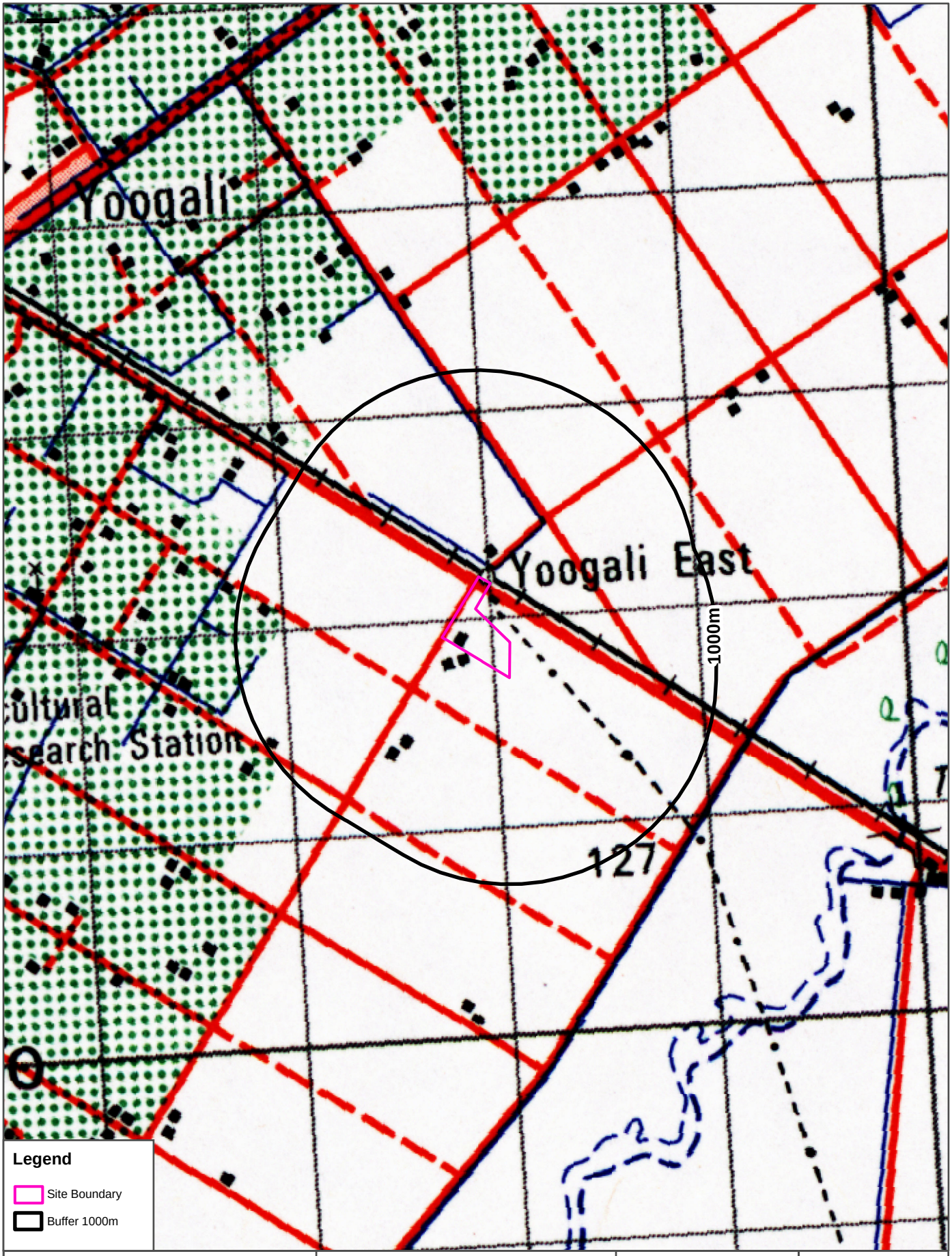


Aerial Imagery 1980

15 Bob Irvin Road, Yoogali, NSW 2680

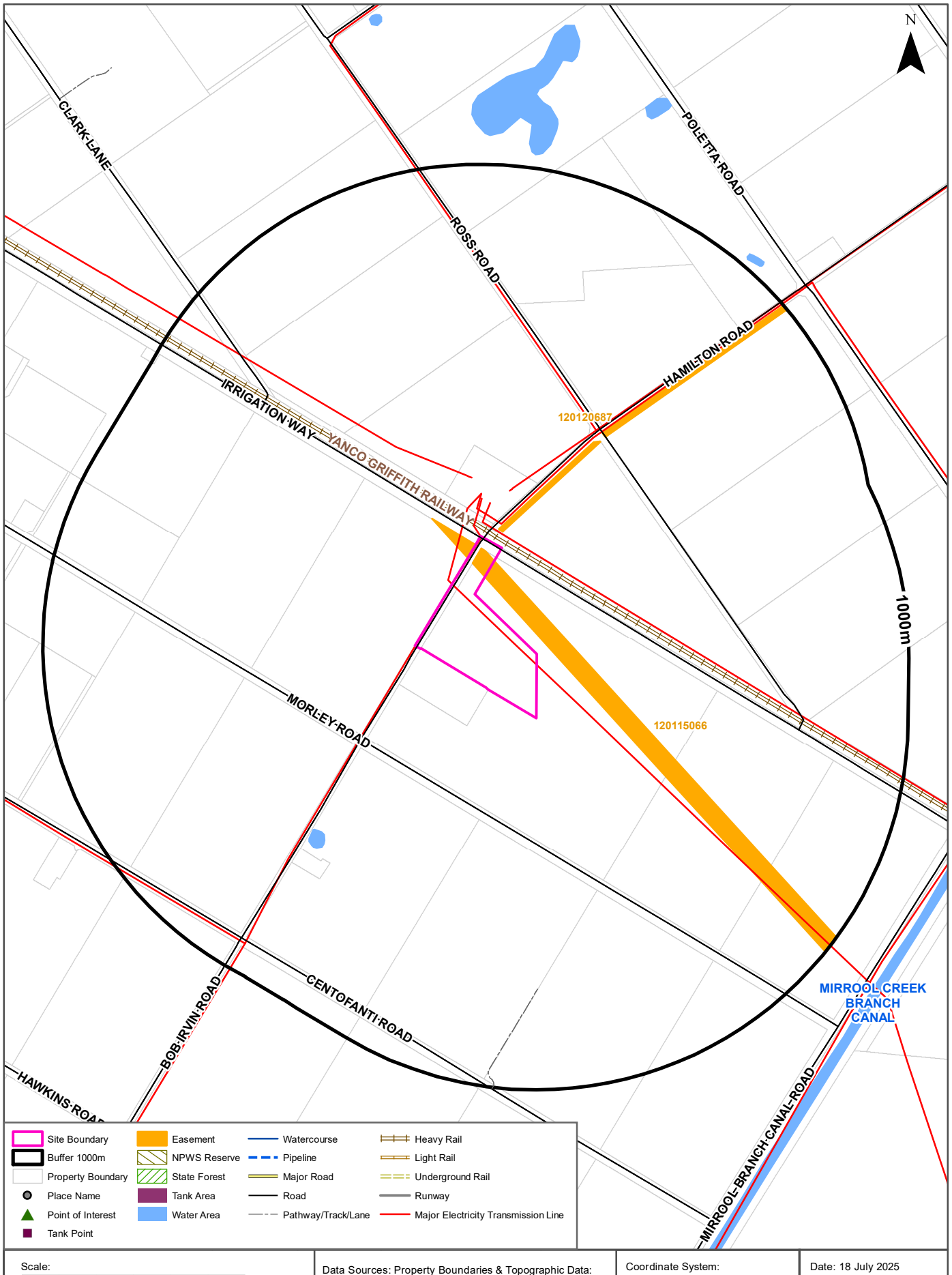
Historical Map 1967

15 Bob Irvin Road, Yoogali, NSW 2680



Topographic Features

15 Bob Irvin Road, Yoogali, NSW 2680



Topographic Features

15 Bob Irvin Road, Yoogali, NSW 2680

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
N/A	No records in buffer			

Topographic Data Source: © Land and Property Information (2015)
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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
N/A	No records in buffer					

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
120115066	Primary	Undefined		0m	On-site
120120687	Primary	Undefined		40m	North East

Easements Data Source: © Land and Property Information (2015)
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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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Elevation Contours (m AHD)

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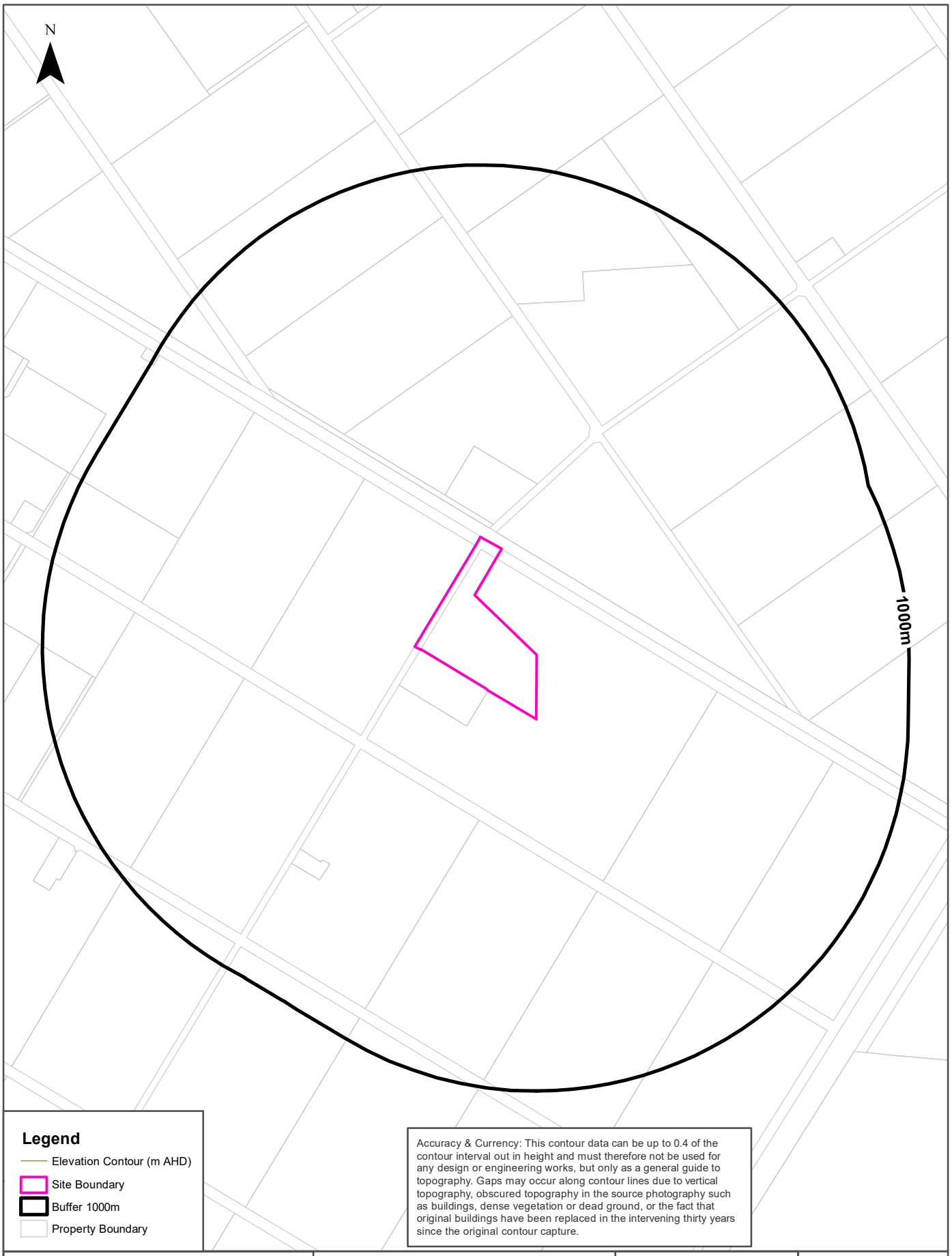

Hydrogeology & Groundwater

15 Bob Irvin Road, Yoogali, NSW 2680

Hydrogeology

Description of aquifers within the dataset buffer:

Description	Distance	Direction
Fractured or fissured, extensive aquifers of low to moderate productivity	0m	On-site

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)
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Temporary Water Restriction (Botany Sands Groundwater Source) Order 2024

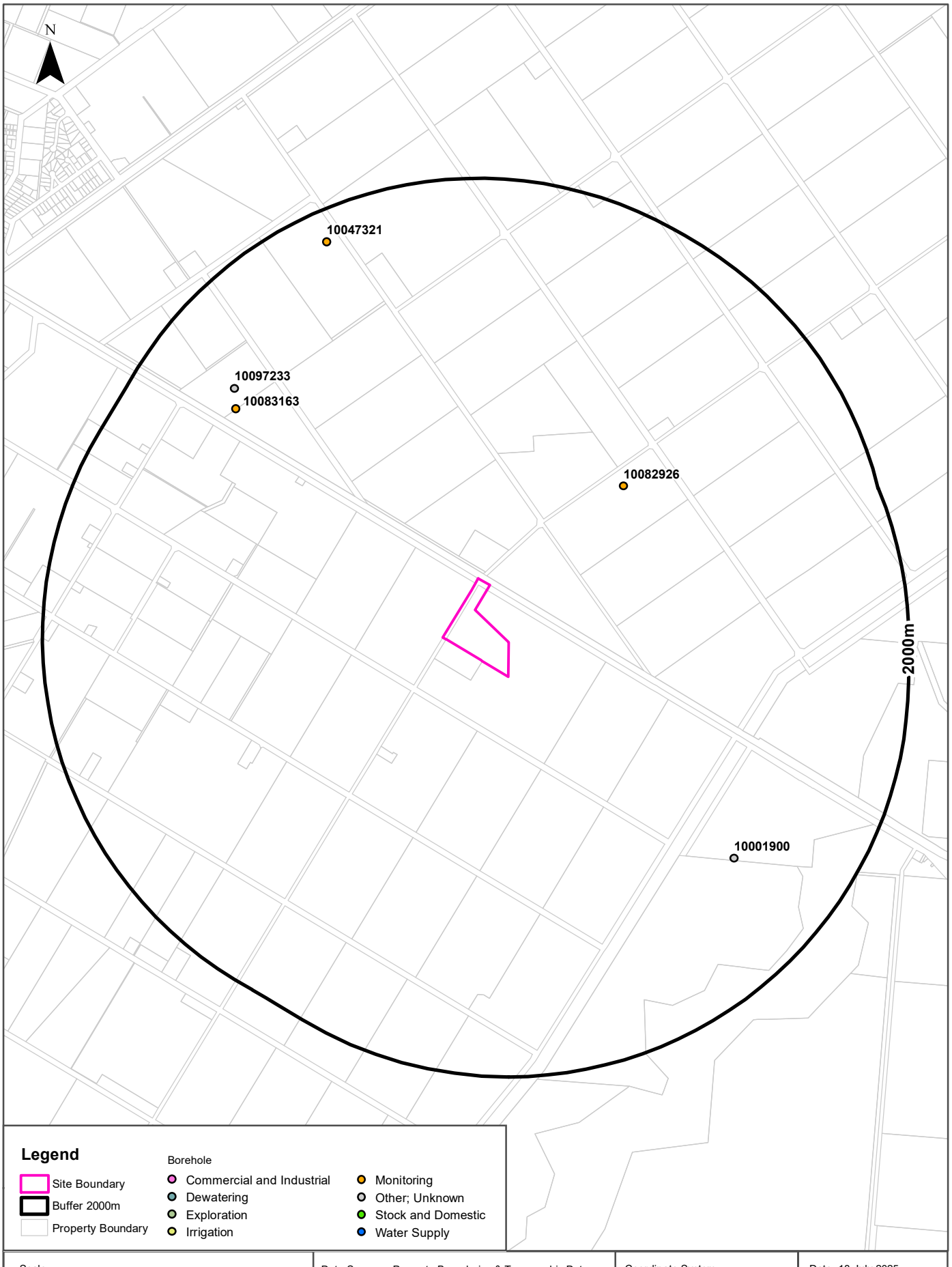
Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

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

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2024 Data Source : NSW Department of Primary Industries

Groundwater Boreholes

15 Bob Irvin Road, Yoogali, NSW 2680



Hydrogeology & Groundwater

15 Bob Irvin Road, Yoogali, NSW 2680

Groundwater Boreholes

Boreholes within the dataset buffer:

NGIS Bore ID	NSW Bore ID	Bore Type	Status	Drill Date	Bore Depth (m)	Reference Elevation	Height Datum	Salinity (mg/L)	Yield (L/s)	SWL (mbgl)	Distance	Direction
10082926	GW408499	Monitoring	Functional	01/06/1955	32.60		AHD				830m	North East
10001900	GW004328	Unknown	Unknown		52.10		AHD	Salty			1449m	South East
10083163	GW405897	Monitoring	Functional	01/02/1954	14.02		AHD				1478m	North West
10097233	GW405751	Unknown	Functional	01/12/1953	34.44		AHD				1542m	North West
10047321	GW405926	Monitoring	Functional	01/04/1954	31.39		AHD				1843m	North

Borehole Data Source: Bureau of Meteorology; Water NSW. Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Driller's Logs

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

NGIS Bore ID	Drillers Log	Distance	Direction
10082926	0.00m-0.31m Clay Loam 0.31m-0.61m Clay 0.61m-3.66m Clay 3.66m-4.27m Clay 4.27m-4.88m Clay 4.88m-7.32m Clay Loam 7.32m-8.54m Clay Loam 8.54m-9.46m Loam 9.46m-10.98m Loam 10.98m-11.59m Loam 11.59m-12.20m Sand 12.20m-13.12m Clay 13.12m-14.34m Clay 14.34m-16.47m Clay 16.47m-17.69m Clay 17.69m-18.00m Clay 18.00m-19.52m Clay Loam 19.52m-19.83m Clay 19.83m-20.13m Clay 20.13m-20.44m Clay 20.44m-21.66m Clay 21.66m-24.10m Clay 24.10m-24.71m Clay 24.71m-26.84m Clay 26.84m-27.76m Clay 27.76m-29.89m Clay 29.89m-30.20m Clay 30.20m-31.42m Clayey Sand 31.42m-32.03m Sand 32.03m-32.64m Sand 32.64m-33.25m Sand 33.25m-33.86m Clay	830m	North East
10001900	0.00m-0.15m Soil 0.15m-3.81m Clay 3.81m-17.68m Clay 17.68m-18.90m Clay 18.90m-27.28m Clay 27.28m-29.11m Clay 29.11m-31.24m Sand 31.24m-45.11m Clay 45.11m-45.42m Clay 45.42m-46.41m Limestone 46.41m-46.63m Clay 46.63m-47.40m Sandstone 47.40m-47.55m Clay 47.55m-50.29m Clay 50.29m-51.21m Clay 51.21m-52.12m Sand	1449m	South East

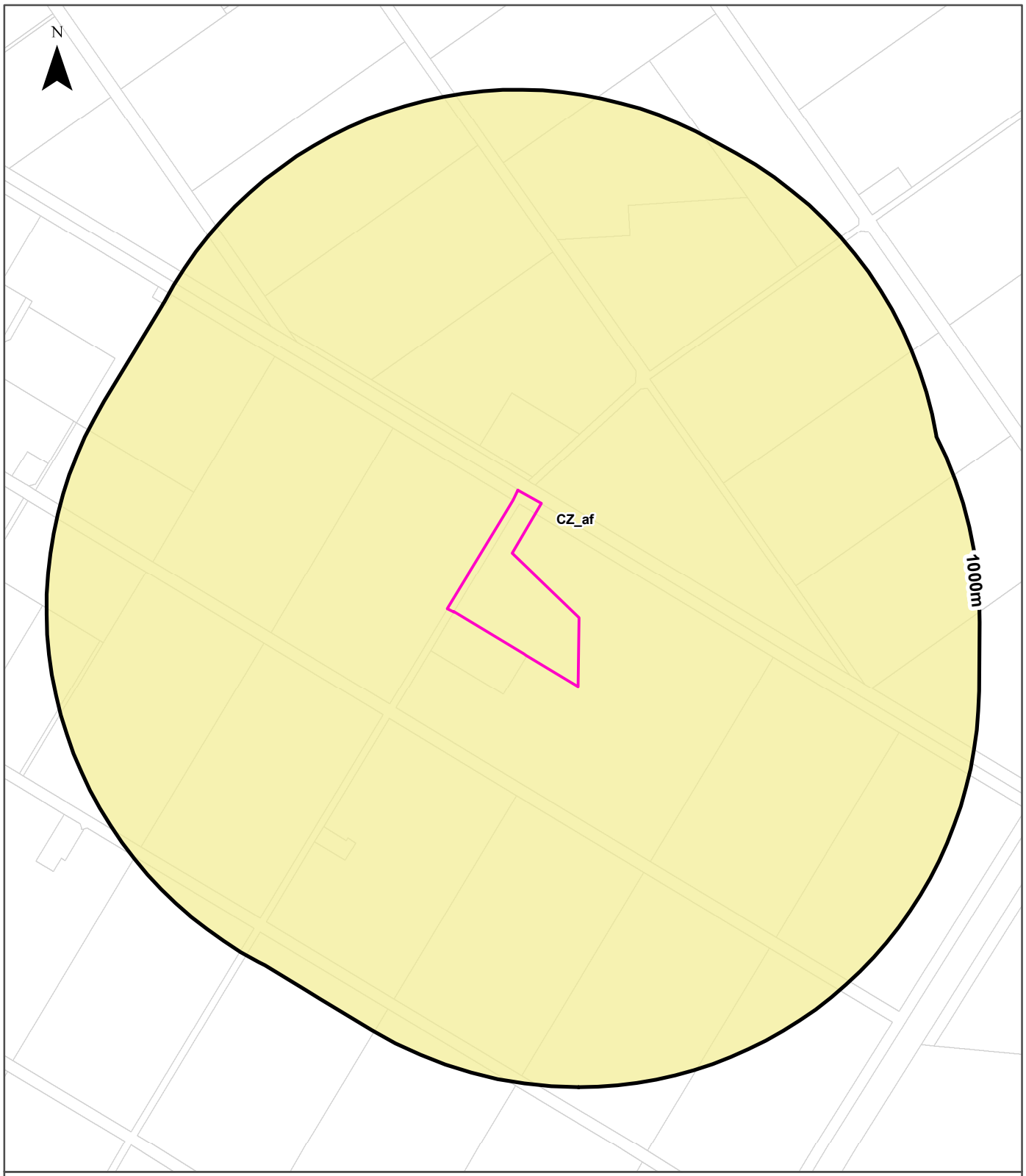
NGIS Bore ID	Drillers Log	Distance	Direction
10083163	0.00m-0.31m Clay Loam, dark brown 0.31m-0.92m Clay Loam, brown 0.92m-1.22m Light Clay, brown 1.22m-1.83m Medium Clay with carbonate concretions 3.18 mm, brown, grey-brown 1.83m-2.14m Sandy Loam, red-brown 2.14m-2.75m Clay Loam with moderate carbonate concretions, 6.35 mm, red-brown, grey-brown 2.75m-3.66m Light Clay with low carbonate concretions 3.18 mm, grey-brown, reddish-brown 3.66m-4.58m Clay Loam, grey-brown, reddish-brown 4.58m-4.88m Clay Loam with moderate carbonate fine, red-brown, brown, grey 4.88m-5.80m Clay Loam, red-brown, grey, black 5.80m-7.63m Loam, red-brown, grey 7.63m-8.85m Clay Loam with mica, red-brown, yellow-brown, grey 8.85m-9.76m Fine Sandy Clay Loam, with mica, yellow-brown, grey 9.76m-10.98m Fine Sandy Loam with mica, yellow-brown, grey 10.98m-11.59m Loamy Fine sand with mica, red-brown, grey 11.59m-12.81m Fine sand with gypsum, red- brown 12.81m-13.73m Fine sand and gypsum, red- brown	1478m	North West
10097233	0.00m-0.31m Loam 0.31m-1.53m Clay 1.53m-2.75m Sandy Clay Loam 2.75m-4.27m Clay 4.27m-5.49m Loam 5.49m-6.71m Clay Loam 6.71m-8.24m Sand 8.24m-8.85m Sand 8.85m-11.29m Loam 11.29m-11.59m Sand 11.59m-12.20m Sand 12.20m-12.51m Sand 12.51m-13.42m Sand 13.42m-14.03m Sandy Clay 14.03m-15.56m Clay 15.56m-18.00m Clay 18.00m-19.22m Clay 19.22m-19.83m Loam 19.83m-20.13m Clay Loam 20.13m-20.44m Sand 20.44m-20.74m Clay 20.74m-22.88m Clay 22.88m-25.01m Clay 25.01m-25.32m Sandy Clay Loam 25.32m-27.15m Clay 27.15m-27.45m Clayey Sand 27.45m-28.98m Clay Loam 28.98m-30.50m Clayey Sand 30.50m-30.81m Sandy Clay 30.81m-31.42m Sandy Clay 31.42m-32.33m Sand 32.33m-32.94m Sand 32.94m-33.55m Sand 33.55m-34.16m Sand 34.16m-34.47m Sand 34.47m-34.77m Sand 34.77m-35.38m Clay	1542m	North West

NGIS Bore ID	Drillers Log	Distance	Direction
10047321	0.00m-0.31m Clay 0.31m-0.61m Clay 0.61m-0.92m Clay Loam 0.92m-1.22m Clay 1.22m-1.83m Clay 1.83m-2.44m Clay 2.44m-3.05m Clay Loam 3.05m-3.66m Loam 3.66m-4.27m Clay 4.27m-5.19m Clay 5.19m-5.49m Clay 5.49m-5.80m Clay Loam 5.80m-6.41m Clay Loam 6.41m-6.71m Clay Loam 6.71m-7.32m Loam 7.32m-8.54m Loam 8.54m-10.37m Sand 10.37m-13.12m Clay 13.12m-14.03m Clay 14.03m-14.64m Clayey Sand 14.64m-15.25m Clay 15.25m-17.08m Clay 17.08m-18.00m Clay 18.00m-18.30m Clay 18.30m-19.83m Clay 19.83m-20.13m Clay Loam 20.13m-20.44m Clay 20.44m-21.66m Clay 21.66m-25.62m Clay 25.62m-26.23m Clay 26.23m-27.76m Clay 27.76m-28.37m Sandy Clay 28.37m-28.67m Loam 28.67m-29.28m Loam 29.28m-30.20m Loam 30.20m-30.50m Clayey Sand 30.50m-30.81m Sand 30.81m-31.42m Sand 31.42m-31.72m Gravel 31.72m-32.03m Sand 32.03m-33.55m Clay	1843m	North

Drill Log Data Source: Bureau of Meteorology; Water NSW. Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Geology

15 Bob Irvin Road, Yoogali, NSW 2680



Legend

Linear Geological Structures and Boundaries

Site Boundary	Trendline	Marker Bed	Miscellaneous Boundary
Report Buffer	Fold Axis	Faulted Boundary	Water/Coastline Boundary
Property Boundary	Geological Boundary	Shear Zone or Schist Zone Boundary	State/Territory Border

Scale: 0 100 200 400 600 Meters	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2025	Coordinate System: GDA 1994 MGA Zone 56	Date: 18 July 2025

Geology

15 Bob Irvin Road, Yoogali, NSW 2680

Geological Units

Geological units within the dataset buffer:

Code	Unit Name	Description	Stratigraphy	Age Range	Dominant Lithology	Dist	Dir
CZ_af	Alluvial floodplain deposits	Silt, very fine- to medium-grained lithic to quartz-rich sand, clay.	/Alluvium//Alluvial floodplain deposits//	Cenozoic (base) to Now (top)	Silt	0m	On-site

Linear Geological Structures

Fault and shear or schist zone boundaries within the dataset buffer:

Map ID	Boundary Type	Feature Description	Fault Dip Angle	Fault Dip Direction	Dist	Dir
NA	No records in buffer					

Trendlines within the dataset buffer:

Map ID	Feature Description	Observation Method	Structure Name	Dist	Dir
NA	No records in buffer				

Fold axes within the dataset buffer:

Map ID	Feature Description	Observation Method	Structure Name	Dist	Dir
NA	No records in buffer				

Marker beds within the dataset buffer:

Map ID	Feature Description	Rock Unit Description	Dist	Dir
NA	No records in buffer			

Geological Data Source: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development
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Naturally Occurring Asbestos Potential

15 Bob Irvin Road, Yoogali, NSW 2680

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: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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Atlas of Australian Soils

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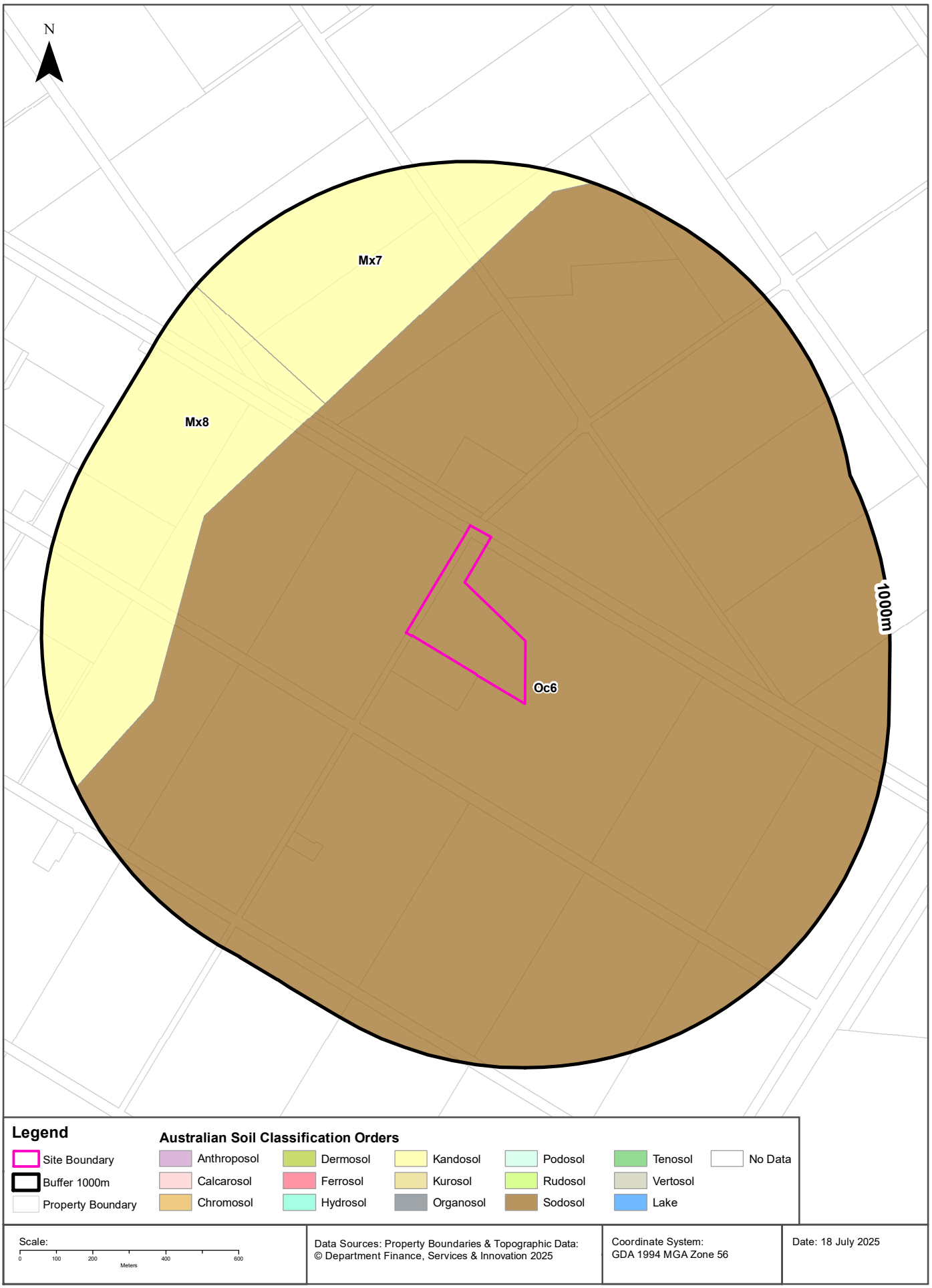

Soils

15 Bob Irvin Road, Yoogali, NSW 2680

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
Oc6	Sodosol	Very gently sloping plain; buried soil layers common: chief soils are hard aLkaline red soils (Dr2.33) possibly with some (Dr2.23) and (Gn2) soils. Minor areas of (Ug5.2 and/or Ug5.3) may occur along Mirrool Creek. This area may be a localized expression of unit Oc5.	0m	On-site
Mx7	Kandosol	Plain with broad shallow swampy areas; buried soil layers common at fairly shallow depths (2 ft or deeper): chief soils are red earths (Gn2.13) and other (Gn2) soils with hard alkaline red soils (Dr2.33). Not clear which of these two soil groups is dominant. Small areas of other soils occur.	517m	North
Mx8	Kandosol	Flat to irregularly undulating country with some low sandy dunes and sandy sheets; buried soil layers are usually found at shallow depths (2 ft or deeper): chief soils are alkaline red and grey-brown earths (Gn2.13), (Gn2.19), and (Gn2.46) and possibly other (Gn2) soils. Associated are hard alkaline red and brown soils (Dr2.33) and (Db1.33). The pattern of soil distribution is relatively complex.	521m	West

Atlas of Australian Soils Data Source: CSIRO
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Acid Sulfate Soils

15 Bob Irvin Road, Yoogali, NSW 2680

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

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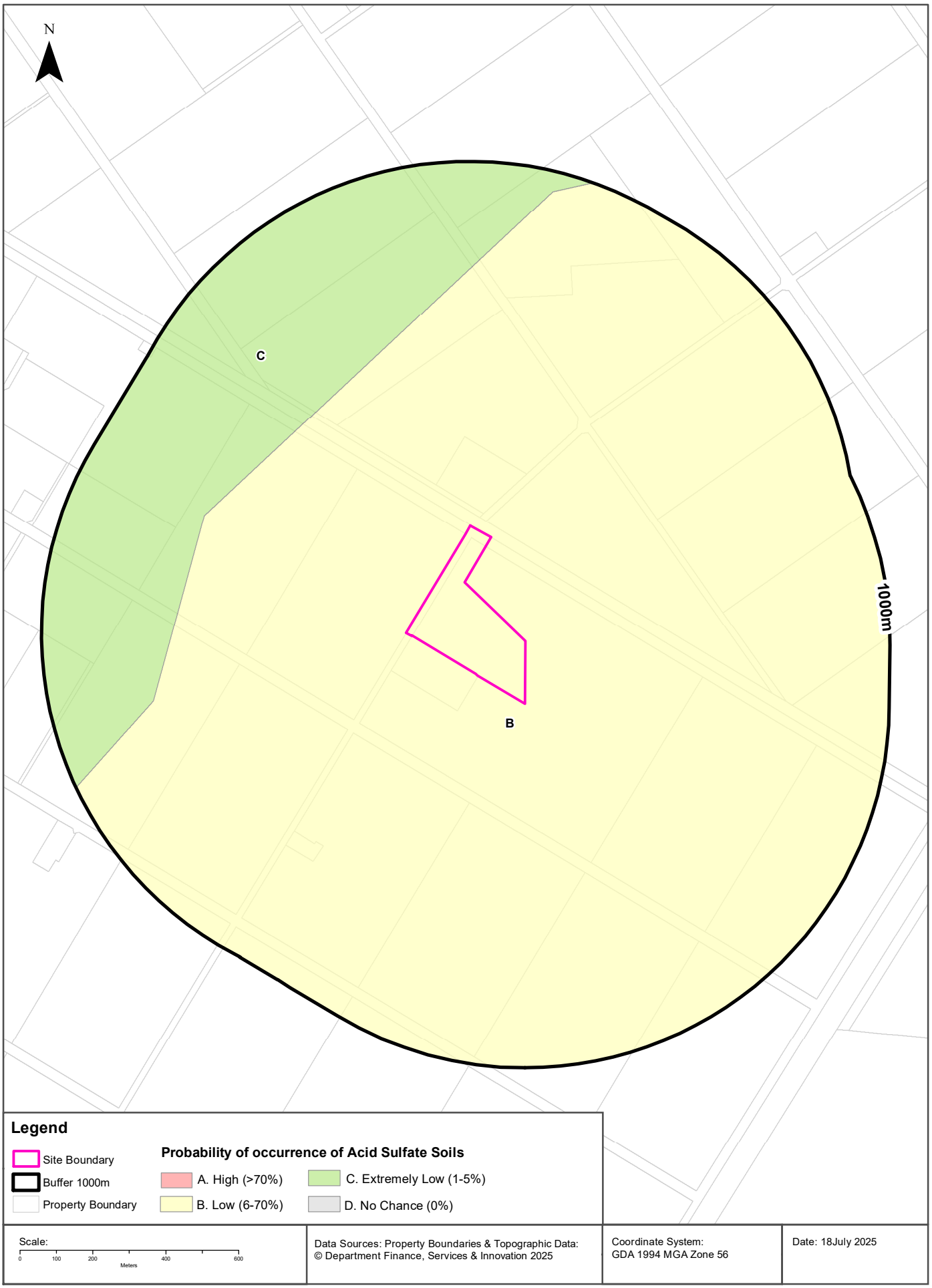

Acid Sulfate Soils

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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
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	518m	North West

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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Dryland Salinity

15 Bob Irvin Road, Yoogali, NSW 2680

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

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

No

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
N/A	N/A	N/A		

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

15 Bob Irvin Road, Yoogali, NSW 2680

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

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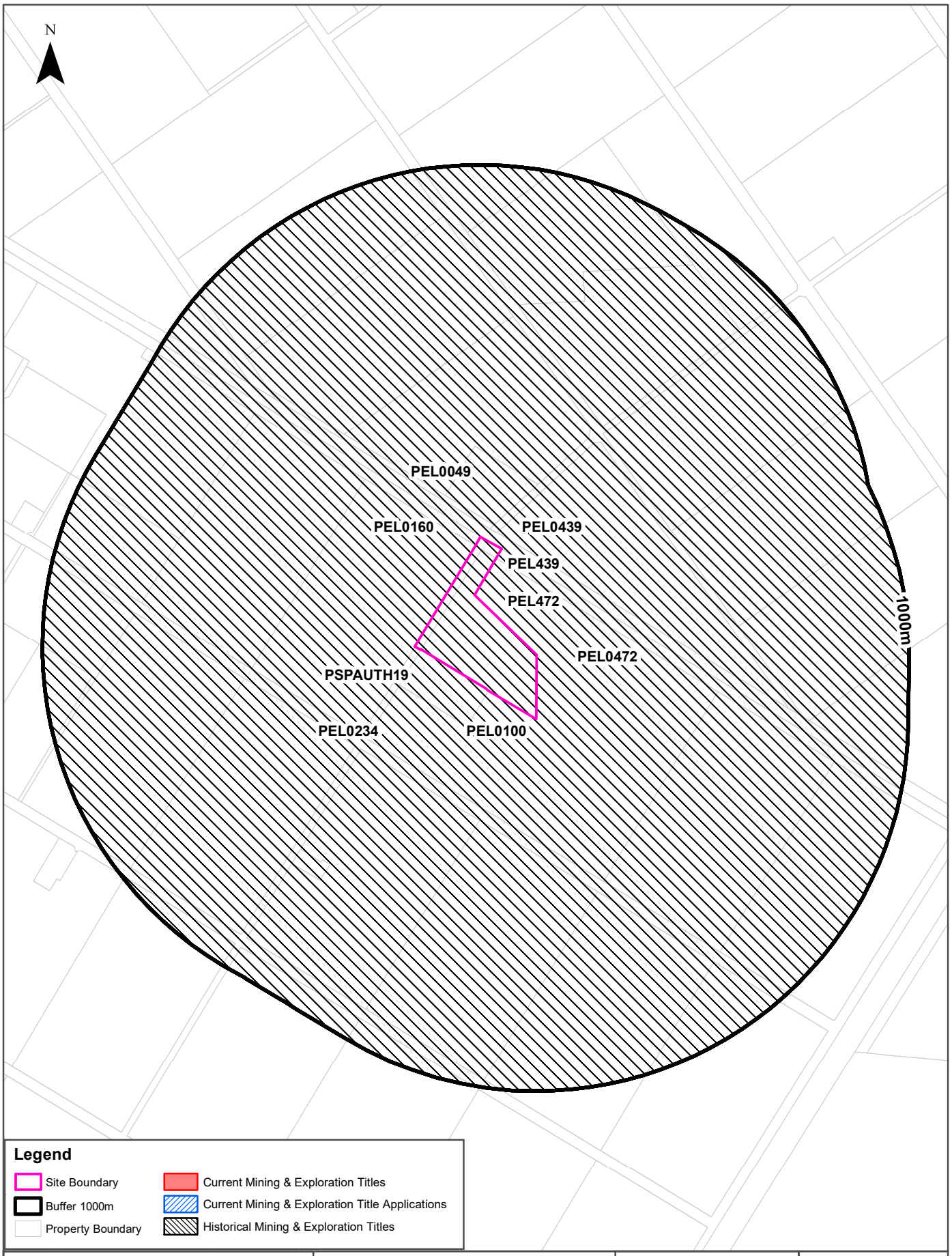

Mining

15 Bob Irvin Road, Yoogali, NSW 2680

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: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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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: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
PEL0049	PLANET EXPLORATION COMPANY PTY LTD, AMALGAMATED PETROLEUM EXPLORATION PTY LTD			PETROLEUM	Petroleum	0m	On-site
PEL0160	PLANET EXPLORATION COMPANY PTY LTD			PETROLEUM	Petroleum	0m	On-site
PEL0472	ENERGETICA RESOURCES PTY LTD	20090206	20130504	PETROLEUM	Petroleum	0m	On-site
PEL0100	AMALGAMATED PETROLEUM EXPLORATION PTY LTD			PETROLEUM	Petroleum	0m	On-site
PEL0439	MAGNUM GOLD NL, AUSTRALIAN COALBED METHANE PTY LTD	20021210	20051110	PETROLEUM	Petroleum	0m	On-site
PSPAUTH19	ENERGETICA RESOURCES PTY LIMITED	20080707	20090707	PETROLEUM	Petroleum	0m	On-site
PEL472	ENERGETICA RESOURCES PTY LIMITED	20090602	30000101	MINERALS		0m	On-site
PEL0234	COMSERV NO 779 PTY LTD			PETROLEUM	Petroleum	0m	On-site
PEL439	MAGNUM GOLD NL	20011024	30000101	MINERALS		0m	On-site

Historical Mining & Exploration Titles Data Source: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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State Environmental Planning Policy

15 Bob Irvin Road, Yoogali, NSW 2680

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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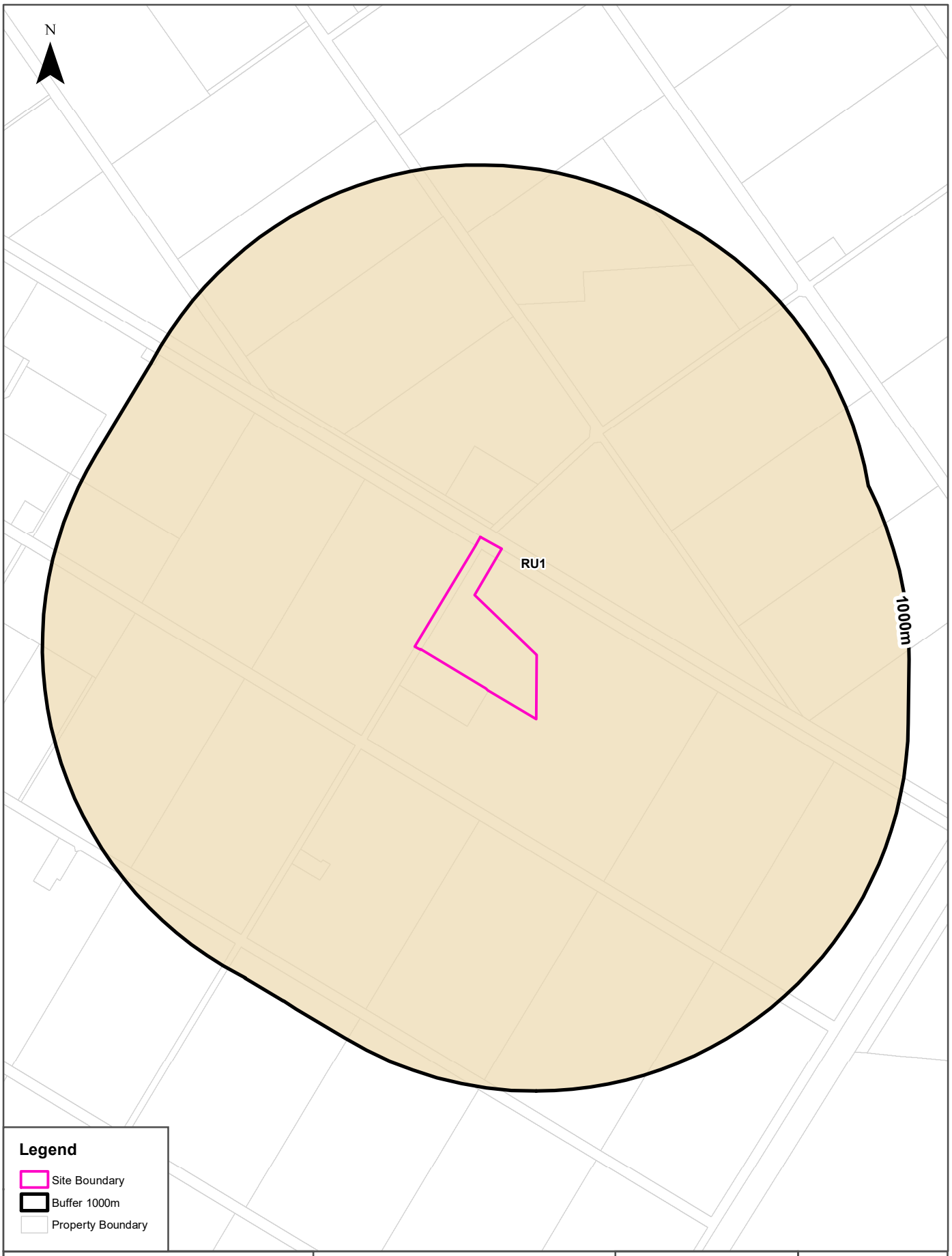
EPI Planning Zones

15 Bob Irvin Road, Yoogali, NSW 2680



Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2025
Planning: NSW Crown Copyright - Planning & Environment

Coordinate System:
GDA 1994 MGA Zone 56

Date: 18 July 2025

Environmental Planning Instrument

15 Bob Irvin Road, Yoogali, NSW 2680

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
RU1	Primary Production		Griffith Local Environmental Plan 2014	24/02/2023	26/04/2023	20/10/2023	State Environmental Planning Policy Amendment (Land Use Zones) 2023	0m	On-site

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

15 Bob Irvin Road, Yoogali, NSW 2680

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
N/A	No records in buffer							

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
N/A	No records in buffer								

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Natural Hazards - Bush Fire Prone Land

15 Bob Irvin Road, Yoogali, NSW 2680

Data Sources: Bush Fire Prone Land: © NSW Rural Fire Service 2025. Property Boundaries: © Department Finance, Services & Innovation 2025

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 July 2025

Natural Hazards

15 Bob Irvin Road, Yoogali, NSW 2680

Bush Fire Prone Land

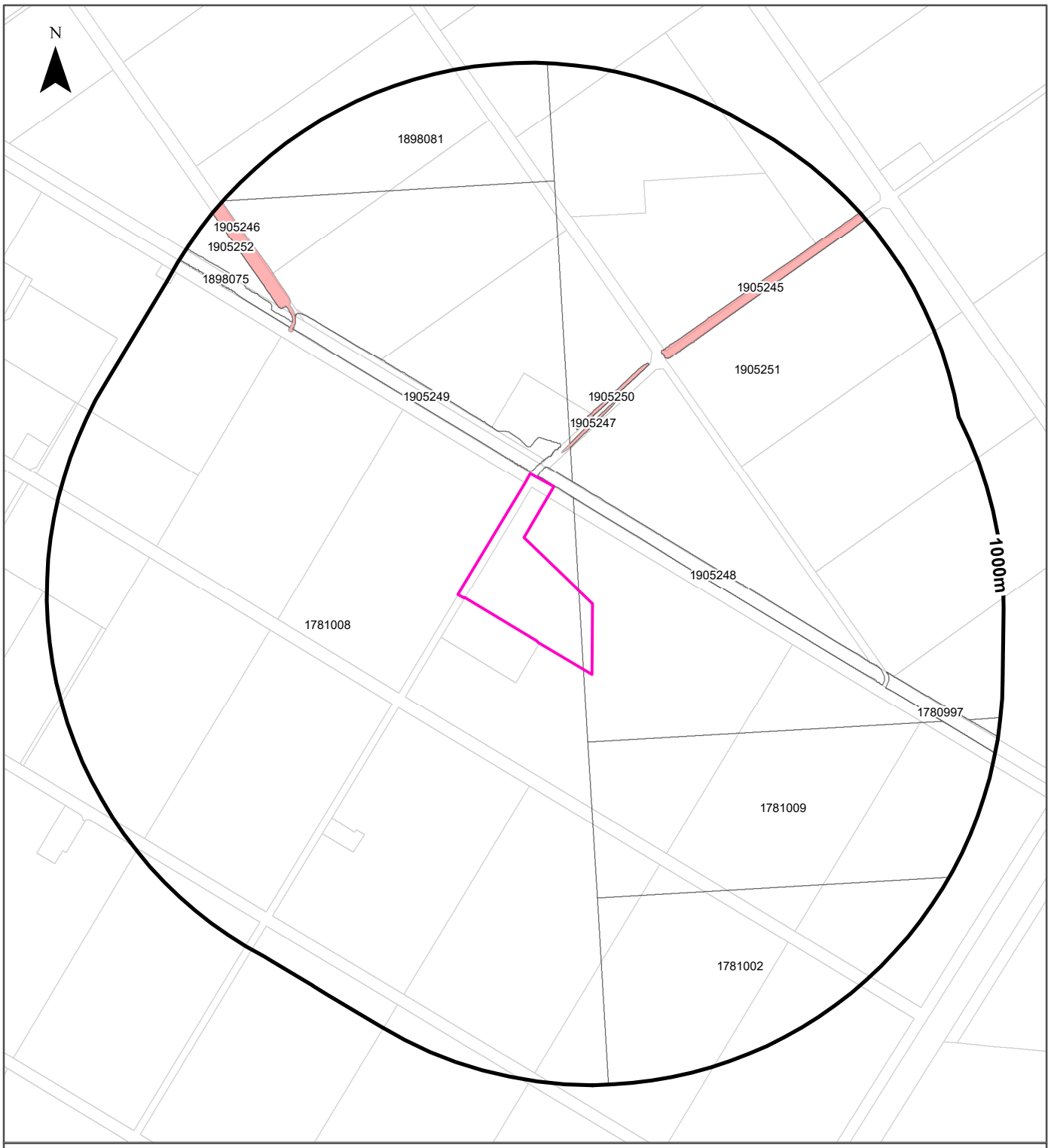
What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
Vegetation Category 3	0m	On-site
Vegetation Buffer	0m	On-site

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

Ecological Constraints - Vegetation & Ramsar Wetlands

15 Bob Irvin Road, Yoogali, NSW 2680



Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2025

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 July 2025

Ecological Constraints

15 Bob Irvin Road, Yoogali, NSW 2680

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
1781008	Not classified	(Not classified) Not classified	Not classified	0m	On-site
1905251	Not classified	(Not classified) Not classified	Not classified	0m	On-site
1905248	Not classified	(Not classified) Not classified	Not classified	1m	East
1905249	Not classified	(Not classified) Not classified	Not classified	5m	North West
1905247	Semi-arid Woodlands (Grassy sub-formation)	(Semi-arid Woodlands (Grassy sub-formation)) Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Riverine Plain Woodlands	81m	North
1905250	Semi-arid Woodlands (Grassy sub-formation)	(Semi-arid Woodlands (Grassy sub-formation)) Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Riverine Plain Woodlands	149m	North East
1781009	Not classified	(Not classified) Not classified	Not classified	164m	South East
1905245	Semi-arid Woodlands (Grassy sub-formation)	(Semi-arid Woodlands (Grassy sub-formation)) Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Riverine Plain Woodlands	413m	North East
1781002	Not classified	(Not classified) Not classified	Not classified	544m	South East
1905246	Semi-arid Woodlands (Grassy sub-formation)	(Semi-arid Woodlands (Grassy sub-formation)) Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Riverine Plain Woodlands	674m	North West
1898075	Not classified	(Not classified) Not classified	Not classified	685m	North West
1905252	Not classified	(Not classified) Not classified	Not classified	687m	North West
1898081	Not classified	(Not classified) Not classified	Not classified	708m	North
1780997	Not classified	(Not classified) Not classified	Not classified	713m	East

Native Vegetation Type Map : NSW Department of Planning and Environment 2022
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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

15 Bob Irvin Road, Yoogali, NSW 2680

Collaborative Australian Protected Areas Database - Terrestrial

Protected areas in terrestrial environments identified by the CAPAD within the dataset buffer:

Map ID	Area Name	Area Details	Management Category	Authority	Jurisdiction	Dist	Dir
N/A	No records in buffer						

Collaborative Australian Protected Areas Database - Marine

Protected areas in marine environments identified by the CAPAD within the dataset buffer:

Map ID	Area Name	Area Details	Management Category	Authority	Jurisdiction	Dist	Dir
N/A	No records in buffer						

Source: Collaborative Australian Protected Areas Database (CAPAD) 2022
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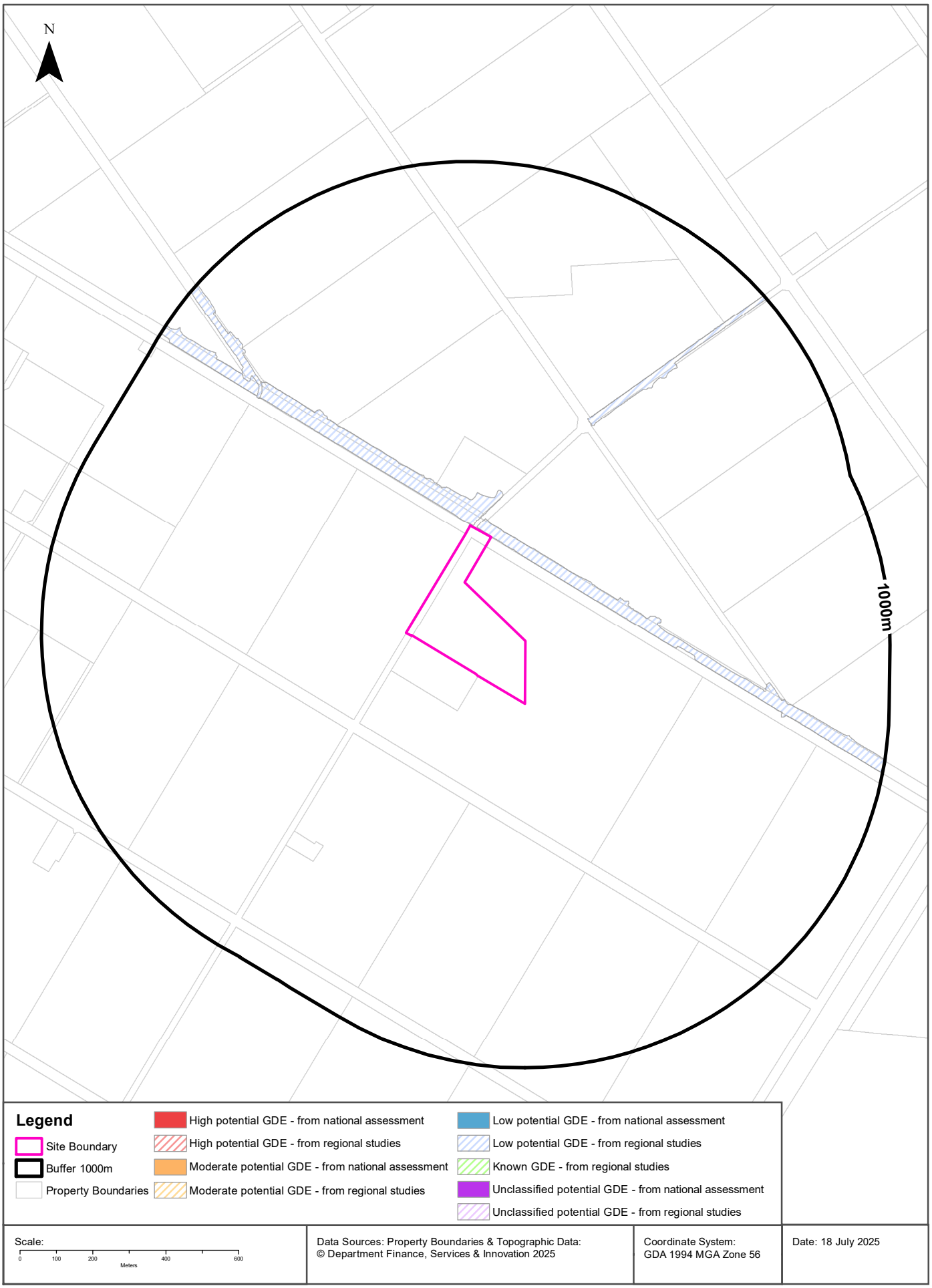
Ecological Constraints - Groundwater Dependent Ecosystems Atlas

15 Bob Irvin Road, Yoogali, NSW 2680



Ecological Constraints

15 Bob Irvin Road, Yoogali, NSW 2680

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	Low potential GDE - from regional studies	Alluvial plain.	Vegetation		1m	East

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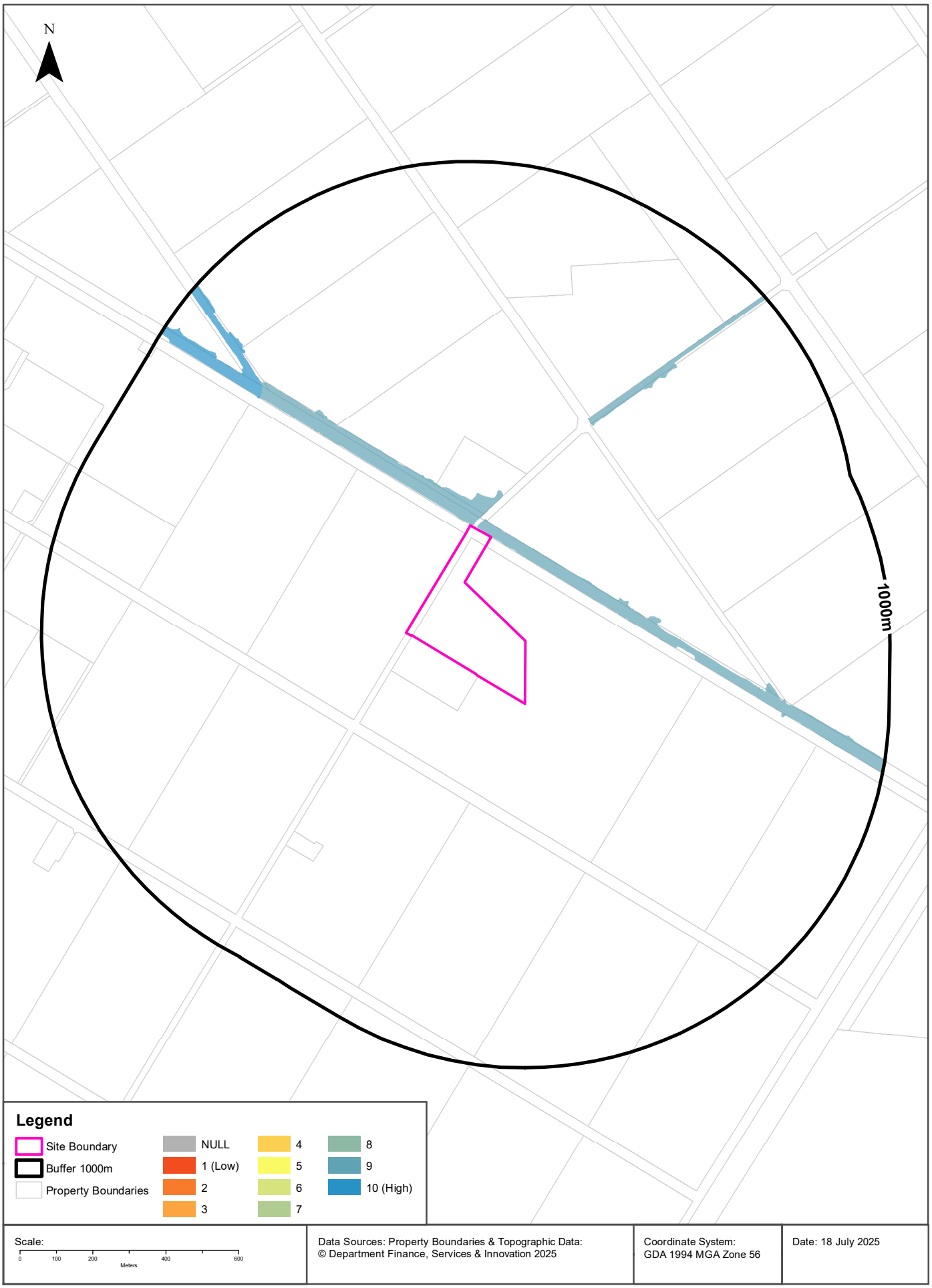
Ecological Constraints - Inflow Dependent Ecosystems Likelihood

15 Bob Irvin Road, Yoogali, NSW 2680



Ecological Constraints

15 Bob Irvin Road, Yoogali, NSW 2680

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	9	Alluvial plain.	Vegetation		1m	East
Terrestrial	10	Alluvial plain.	Vegetation		676m	North West

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

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Ecological Constraints

15 Bob Irvin Road, Yoogali, NSW 2680

NSW BioNet Species Sightings

Species sightings from the NSW BioNet Repository that have either a state or federal conservation status, or a sensitivity status, and are within 10 km of the site:
Note: This data does not include NSW Category 1 sensitive species.

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Aphelocephala leucopsis	Southern Whiteface	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Not Sensitive	Endangered	Endangered	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Not Sensitive	Endangered	Not Listed	
Animalia	Aves	Certhionyx variegatus	Pied Honeyeater	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Circus assimilis	Spotted Harrier	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Ephippiorhynchus asiaticus	Black-necked Stork	Not Sensitive	Endangered	Not Listed	
Animalia	Aves	Falco hypoleucos	Grey Falcon	Category 2	Vulnerable	Vulnerable	
Animalia	Aves	Falco subniger	Black Falcon	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Gelochelidon nilotica	Gull-billed Tern	Not Sensitive	Not Listed	Not Listed	CAMBA
Animalia	Aves	Grantiella picta	Painted Honeyeater	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Lathamus discolor	Swift Parrot	Not Sensitive	Endangered	Critically Endangered	
Animalia	Aves	Lophochroa leadbeateri	Pink Cockatoo	Category 2	Vulnerable	Endangered	
Animalia	Aves	Melanodryas cucullata cucullata	South-eastern Hooded Robin	Not Sensitive	Endangered	Endangered	
Animalia	Aves	Neophema chrysostoma	Blue-winged Parrot	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Ninox connivens	Barking Owl	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Oxyura australis	Blue-billed Duck	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Category 3	Vulnerable	Vulnerable	
Animalia	Aves	Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Not Sensitive	Vulnerable	Not Listed	
Plantae	Flora	Wahlenbergia scopulicola	Rock-face Bluebell	Not Sensitive	Endangered	Not Listed	

Source: NSW BioNet Species Sightings
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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 F: Site Photolog

Photograph 1

SB01 Soil Profile.

Photograph 2

SB02 Soil Profile.

Photograph 3

SB03 Soil Profile.

Photograph 4

SB04 Soil Profile.

Photograph 5

SB05 Soil Profile.

Photograph 6

SB06 Soil Profile.

Photograph 7

SB07 Soil Profile.

Photograph 8

SB08 Soil Profile.

Photograph 9

View of additional farmland to the east.

Photograph 10

Concrete slabs indicating pathway between fields.

Photograph 11

Northerly view from the centre of the Site.

Photograph 12

South easterly view of the site from the western boundary.

Photograph 13

View of shed to the south of the Site.

Photograph 14

View of small shed to the south of the Site, noted to contain asbestos containing materials.

Photograph 15

View of AST to the south of the Site.

Photograph 16

View inside the shed to the south of the Site.

Photograph 17

View of the exposed asbestos pipe on the western boundary.

Photograph 18

Close-up view of the exposed asbestos pipe on the western boundary.

Photograph 19

View of Bob Irvin Road immediately west of the Site boundary.

Photograph 20

View of the irrigation channel immediately north of the Site boundary.

Appendix G: Soil Bore Logs

ARC Environmental
309/546 Collins St, Melbourne VIC 3000
Phone: 03 8383 1950

Environmental Log - Borehole

SB01

UTM	: 55H	Drill Rig	: Hand Auger	Job Number	: 2507426
Easting (m)	: 417923.24	Driller Supplier	: ARC Environmental	Client	: Cogency Australia
Northing (m)	: 6202109.21	Logged By	: Paolo Moniz	Project	: Cogency Griffith BESS PSI and Soil Survey
Ground Elevation	: Not Surveyed	Reviewed By	: Elliot Nance	Location	: 15 Bob Irvin Road, Yoogali NSW, Australia
Total Depth	: 0.75 m BGL	Date	: 30/07/2025	Loc Comment	:

Drilling Method	Depth (m)	Soil Origin	Graphic Log	Material Description	Samples	PID	Remarks
Hand auger	0.10	Natural		Silty CLAY, Dark brown, high plasticity, frequent rootlets, moist, soft	SB01_0.1	0.0	No staining, no odour, no waste
	0.20						
	0.30						
	0.40	Natural		Silty sandy CLAY, brown, low plasticity, frequent lenses of sand, dry, stiff			
	0.50				SB01_0.5	0.0	
	0.60						
	0.70				SB01_0.75	0.0	
				SB01 Terminate at 0.75 m (Practical refusal was reached at 0.75 m.)			

This report must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

ARC Environmental

309/546 Collins St, Melbourne VIC 3000

Phone: 03 8383 1950

Environmental Log - Borehole

SB02

UTM	: 55H	**Drill Rig**	: Hand Auger	**Job Number**	: 2507426
Easting (m)	: 418010.86	**Driller Supplier**	: ARC Environmental	**Client**	: Cogency Australia
Northing (m)	: 6202250.23	**Logged By**	: Paolo Moniz	**Project**	: Cogency Griffith BESS PSI and Soil Survey
Ground Elevation	: Not Surveyed	**Reviewed By**	: Elliot Nance	**Location**	: 15 Bob Irvin Road, Yoogali NSW, Australia
Total Depth	: 1.2 m BGL	**Date**	: 30/07/2025	**Loc Comment**	:

Drilling Method	Depth (m)	Soil Origin	Graphic Log	Material Description	Samples	PID	Remarks
Hand auger	0.10	Natural		Silty CLAY, Dark brown, high plasticity, frequent rootlets, moist, soft	SB02_0.1, QC02	0.0	No staining, no odour, no waste
	0.20						
	0.30	Natural		Silty sandy CLAY, brown, low plasticity, frequent lenses of sand, dry, stiff			
	0.40						
	0.50				SB02_0.5	0.0	
	0.60						
	0.70						
	0.80						
	0.90						
	1.00						
	1.10				SB02_1.1	0.0	
				SB02 Terminate at 1.2 m (Practical refusal was reached at 1.2 m.)			

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309/546 Collins St, Melbourne VIC 3000

Phone: 03 8383 1950

Environmental Log - Borehole

SB03

UTM	: 55H	**Drill Rig**	: Hand Auger	**Job Number**	: 2507426
Easting (m)	: 418046.48	**Driller Supplier**	: ARC Environmental	**Client**	: Cogency Australia
Northing (m)	: 6202281.89	**Logged By**	: Paolo Moniz	**Project**	: Cogency Griffith BESS PSI and Soil Survey
Ground Elevation	: Not Surveyed	**Reviewed By**	: Elliot Nance	**Location**	: 15 Bob Irvin Road, Yoogali NSW, Australia
Total Depth	: 0.65 m BGL	**Date**	: 30/07/2025	**Loc Comment**	:

Drilling Method	Depth (m)	Soil Origin	Graphic Log	Material Description	Samples	PID	Remarks
Hand auger	0.10	Natural		Silty CLAY, Dark brown, high plasticity, frequent rootlets, moist, soft	SB03_0.1	0.0	
	0.20						
	0.30	Natural		Silty sandy CLAY, brown, low plasticity, frequent lenses of sand, dry, stiff	SB03_0.4	0.0	
	0.40						
	0.50						
	0.60				SB03_0.65	0.0	
				SB03 Terminate at 0.65 m (Practical refusal was reached at 0.65 m.)			

ARC Environmental
309/546 Collins St, Melbourne VIC 3000
Phone: 03 8383 1950

Environmental Log - Borehole

SB04

UTM	: 55H	Drill Rig	: Hand Auger	Job Number	: 2507426
Easting (m)	: 417998.67	Driller Supplier	: ARC Environmental	Client	: Cogency Australia
Northing (m)	: 6202176.20	Logged By	: Paolo Moniz	Project	: Cogency Griffith BESS PSI and Soil Survey
Ground Elevation	: Not Surveyed	Reviewed By	: Elliot Nance	Location	: 15 Bob Irvin Road, Yoogali NSW, Australia
Total Depth	: 0.85 m BGL	Date	: 30/07/2025	Loc Comment	:

Drilling Method	Depth (m)	Soil Origin	Graphic Log	Material Description	Samples	PID	Remarks
Hand auger	0.10	Natural		Silty CLAY, Dark brown, high plasticity, frequent rootlets, moist, soft	SB04_0.1	0.0	No staining, no odour, no waste
	0.20						
	0.30	Natural		Silty sandy CLAY, brown, low plasticity, frequent lenses of sand, dry, stiff			
	0.40						
	0.50				SB04_0.5	0.0	
	0.60						
	0.70						
	0.80				SB04_0.85	0.0	
				SB04 Terminate at 0.85 m (Practical refusal was reached at 0.85 m.)			

ARC Environmental

309/546 Collins St, Melbourne VIC 3000

Phone: 03 8383 1950

Environmental Log - Borehole

SB05

UTM	: 55H	Drill Rig	: Hand Auger	Job Number	: 2507426
Easting (m)	: 417968.19	Driller Supplier	: ARC Environmental	Client	: Cogency Australia
Northing (m)	: 6202049.66	Logged By	: Paolo Moniz	Project	: Cogency Griffith BESS PSI and Soil Survey
Ground Elevation	: Not Surveyed	Reviewed By	: Elliot Nance	Location	: 15 Bob Irvin Road, Yoogali NSW, Australia
Total Depth	: 0.75 m BGL	Date	: 30/07/2025	Loc Comment	:

Drilling Method	Depth (m)	Soil Origin	Graphic Log	Material Description	Samples	PID	Remarks
Hand auger	0.10	Natural		Silty CLAY, Dark brown, high plasticity, frequent rootlets, moist, soft	SB05_0.1	0.0	
	0.20						
	0.30	Natural		Silty sandy CLAY, brown, low plasticity, frequent lenses of sand, dry, stiff			
	0.40						
	0.50				SB05_0.5	0.0	
	0.60						
	0.70				SB05_0.7	0.0	
				SB05 Terminate at 0.75 m (Practical refusal was reached at 0.75 m.)			

ARC Environmental
309/546 Collins St, Melbourne VIC 3000
Phone: 03 8383 1950

Environmental Log - Borehole

SB06

UTM	: 55H	Drill Rig	: Hand Auger	Job Number	: 2507426
Easting (m)	: 418019.34	Driller Supplier	: ARC Environmental	Client	: Cogency Australia
Northing (m)	: 6202013.68	Logged By	: Paolo Moniz	Project	: Cogency Griffith BESS PSI and Soil Survey
Ground Elevation	: Not Surveyed	Reviewed By	: Elliot Nance	Location	: 15 Bob Irvin Road, Yoogali NSW, Australia
Total Depth	: 1 m BGL	Date	: 30/07/2025	Loc Comment	:

Drilling Method	Depth (m)	Soil Origin	Graphic Log	Material Description	Samples	PID	Remarks
Hand auger	0.10	Natural		Silty CLAY, Dark brown, high plasticity, frequent rootlets, moist, soft	SB06_0.1	0.0	No staining, no odour, no waste
	0.20						
	0.30	Natural		Silty sandy CLAY, brown, low plasticity, frequent lenses of sand, dry, stiff			
	0.40						
	0.50				SB06_0.5	0.0	
	0.60						
	0.70						
	0.80						
	0.90						
	1.00				SB06_1	0.0	
				SB06 Terminate at 1 m (Practical refusal was reached at 1 m.)			

ARC Environmental
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Phone: 03 8383 1950

Environmental Log - Borehole

SB07

UTM	: 55H	Drill Rig	: Hand Auger	Job Number	: 2507426
Easting (m)	: 418124.71	Driller Supplier	: ARC Environmental	Client	: Cogency Australia
Northing (m)	: 6201986.67	Logged By	: Paolo Moniz	Project	: Cogency Griffith BESS PSI and Soil Survey
Ground Elevation	: Not Surveyed	Reviewed By	: Elliot Nance	Location	: 15 Bob Irvin Road, Yoogali NSW, Australia
Total Depth	: 1 m BGL	Date	: 30/07/2025	Loc Comment	:

Drilling Method	Depth (m)	Soil Origin	Graphic Log	Material Description	Samples	PID	Remarks
Hand auger	0.10	Natural		Silty CLAY, Dark brown, high plasticity, frequent rootlets, moist, soft	SB07_0.1, QC01	0.0	No staining, no odour, no waste
	0.20			Silty sandy CLAY, brown, low plasticity, frequent lenses of sand, dry, stiff			
	0.30						
	0.40						
	0.50				SB07_0.5	0.0	
	0.60	Natural					
	0.70						
	0.80						
	0.90						
	1.00				SB07_1	0.0	
				SB07 Terminate at 1 m (Practical refusal was reached at 1 m.)			

ARC Environmental
309/546 Collins St, Melbourne VIC 3000
Phone: 03 8383 1950

Environmental Log - Borehole

SB08

UTM	: 55H	Drill Rig	: Hand Auger	Job Number	: 2507426
Easting (m)	: 418076.00	Driller Supplier	: ARC Environmental	Client	: Cogency Australia
Northing (m)	: 6202082.05	Logged By	: Paolo Moniz	Project	: Cogency Griffith BESS PSI and Soil Survey
Ground Elevation	: Not Surveyed	Reviewed By	: Elliot Nance	Location	: 15 Bob Irvin Road, Yoogali NSW, Australia
Total Depth	: 0.6 m BGL	Date	: 30/07/2025	Loc Comment	:

Drilling Method	Depth (m)	Soil Origin	Graphic Log	Material Description	Samples	PID	Remarks
Hand auger	0.10	Natural		Silty CLAY, Dark brown, high plasticity, frequent rootlets, moist, soft	SB01_0.1	0.0	No staining, no odour, no waste
	0.20						
	0.30	Natural		Silty sandy CLAY, brown, low plasticity, frequent lenses of sand, dry, stiff	SB08_0.6	0.0	
	0.40						
	0.50						
				SB08 Terminate at 0.6 m (Practical refusal was reached at 0.6 m.)			

Appendix H: Calibration Certificates

PID Calibration Certificate

146.0 2372025M

Instrument Tiger
Serial No. T-114166

airmet

Air-Met Scientific Pty Ltd
1800 000 744

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
Pump	Operation	✓	
	Filter	✓	
	Flow	✓	
	Valves, Diaphragm	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	PID	✓	10.6 eV
Alarms	Beeper	✓	**Low** 50ppm / **High** 100ppm / **TWA** 100ppm / **STEL** 250ppm
	Settings	✓	
Software	Version	✓	
Data logger	Operation	✓	
Download	Operation	✓	
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		100ppm Isobutylene	NIST	ME1305		100ppm Isobutylene

Calibrated by: Jack Sparke

Calibration date: **23/07/2025**

Next calibration due: **19/01/2026**

Appendix I: Laboratory Certificates

Chain of Custody Documentation

ARC ENVIRONMENTAL
Suite 309, 546 Collins Street, Melbourne (3000) VIC
Phone: (03) 8383 1950

LAB: ALS	SAMPLER: Paolo Moniz
LAB ADDRESS : 2-4 Westall Road, Springvale	MOBILE 0401 663 928
PROJECT MANAGER (PM): Elliot Nance	PHONE:
PROJECT ID: 2507426	EMAIL REPORT TO: elliot@arcenvironmental.com.au
SITE: Griffith BESS NSW — Primary Lab Quote: EM23ARCENV0001	EMAIL INVOICE TO: (if different to report) admin@arcenvironmental.com.au
RESULTS REQUIRED (Date). Normal TAT (5 days) — EDD Format. ESdat	ANALYSIS REQUIRED including SUITES (and Code)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note S = Soil, W=Water)					CONTAINER INFORMATION		S-02: 8 Metals	S-12: OCP/OPP	EP202: Phenoxy Acid Herbicides (16 Analytes)	S-4: TRH/TPH/BTEXN	EA014 Salinity - Total Soluble Salts	IN-4S: pH plus EC	EA058: Emerson Aggregate Testing	EA006: Sodium Absorption Ratio	W-12: OCP/OPP	W-18: TRH/BTEX	W-02.8 metals - Total	P-22: NEPM Soil Characterisation	HOLD	Notes
LAB ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles														
1	SB01_0.1	S	30/07/2025	10:45	1 Glass Jar + 1 Zip Lock Bag + NEPM Bag	3	X	X			X	X	X	X				X		
2	SB01_0.5	S	30/07/2025	10:45	1 Glass Jar + 1 Zip Lock Bag	2													X	
3	SB01_0.75	S	30/07/2025	10:45	1 Glass Jar + 1 Zip Lock Bag	2						X								
4	SB02_0.1	S	30/07/2025	13:30	1 Glass Jar + 1 Zip Lock Bag	2						X								
5	SB02_0.5	S	30/07/2025	13:30	1 Glass Jar + 1 Zip Lock Bag	2													X	
6	SB02_1.1	S	30/07/2025	13:30	1 Glass Jar + 1 Zip Lock Bag	2	X				X	X	X	X						
7	SB03_0.1	S	30/07/2025	13:00	1 Glass Jar + 1 Zip Lock Bag	2	X	X	X		X	X	X	X						
8	SB03_0.4	S	30/07/2025	13:00	1 Glass Jar + 1 Zip Lock Bag	2						X								
9	SB03_0.65	S	30/07/2025	13:00	1 Glass Jar + 1 Zip Lock Bag + NEPM Bag	3													X	
10	SB04_0.1	S	30/07/2025	12:20	1 Glass Jar + 1 Zip Lock Bag	2	X	X				X								
11	SB04_0.5	S	30/07/2025	12:20	1 Glass Jar + 1 Zip Lock Bag	2													X	
12	SB04_0.85	S	30/07/2025	12:20	1 Glass Jar + 1 Zip Lock Bag	2					X	X	X	X						
13	SB05_0.1	S	30/07/2025	10:00	1 Glass Jar + 1 Zip Lock Bag	2	X			X	X	X	X	X						
14	SB05_0.5	S	30/07/2025	10:00	1 Glass Jar + 1 Zip Lock Bag	2						X								
15	SB05_0.7	S	30/07/2025	10:00	1 Glass Jar + 1 Zip Lock Bag	2													X	
16	SB06_0.1	S	30/07/2025	9:00	1 Glass Jar + 1 Zip Lock Bag	2				X		X								
17	SB06_0.5	S	30/07/2025	9:00	1 Glass Jar + 1 Zip Lock Bag	2	X				X		X	X						
18	SB06_1.0	S	30/07/2025	9:00	1 Glass Jar + 1 Zip Lock Bag	2						X								
19	SB07_0.1	S	30/07/2025	8:00	1 Glass Jar + 1 Zip Lock Bag	2	X	X	X			X								
20	SB07_0.5	S	30/07/2025	8:00	1 Glass Jar + 1 Zip Lock Bag	2						X								
21	SB07_1.0	S	30/07/2025	8:00	1 Glass Jar + 1 Zip Lock Bag	2					X		X	X						
22	SB08_0.1	S	30/07/2025	11:45	1 Glass Jar + 1 Zip Lock Bag	2					X	X	X	X						
23	SB08_0.6	S	30/07/2025	11:45	1 Glass Jar + 1 Zip Lock Bag	2	X					X								
24	QC01	S	30/07/2025		1 Glass Jar + 1 Zip Lock Bag	2	X	X												
25	QC02	S	30/07/2025		1 Glass Jar + 1 Zip Lock Bag	2													X	
26	QC03	W	30/07/2025		1AG, 1N, 2V	4									X		X			
27	QC04	W	30/07/2025		2V	2										X				

Environmental Division
Melbourne
Work Order Reference
EM2513727

Telephone : + 61-3-8549 9600

RELINQUISHED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: Elliot Nance	Date: 31/07/2025	Name:	Date:	Con' Note No:
Of: ARC Environmental	Time:	Of:	Time:	
Name: Paolo Moniz	Date: 31/07/2025	Name:	Date:	Transport Co:
Of: ARC Environmental	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved, S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved.
V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved, SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottles, ST = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate Soils, B = Unpreserved Bag

Monica 31/7, 11-30

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2513727**

Client	: **ARC ENVIRONMENTAL**	Laboratory	: Environmental Division Melbourne
Contact	: ELLIOT NANCE	Contact	: Katie Davis
Address	: Suite 309, 546 Collins St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: Elliot@arcenvironmental.com.au	E-mail	: katie.davis@alsglobal.com
Telephone	: 03 8383 1950	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 2507426	Page	: 1 of 4
Order number	: ----	Quote number	: EM2023ARCENV0001 (EM23ARCENV0001 VIC Custom Quote)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Griffith BESS NSW		
Sampler	: PAOLO MONIZ		

Dates

Date Samples Received	: 31-Jul-2025 11:30	Issue Date	: 31-Jul-2025
Client Requested Due Date	: 14-Aug-2025	Scheduled Reporting Date	: **14-Aug-2025**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not intact.
No. of coolers/boxes	: 3	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 27 / 21

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
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- Analytical work for this work order will be conducted at ALS Melbourne, ALS Newcastle, ALS Sydney and ALS Brisbane, NATA accreditation no. 825, site no. 13778.
- **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 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.

- **No sample container / preservation non-compliance exists.**

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 - EA006 (solids) Sodium Adsorption Ratio	SOIL - EA014 Total Soluble Salts	SOIL - EA055-103 Moisture Content	SOIL - IN-4S-EM pH (CaCl) plus EC (1:5)	SOIL - P-22 (Melb) Soil Characterisation Package	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-12 OC/OP Pesticides
EM2513727-001	30-Jul-2025 10:45	SB01_0.1	✓	✓	✓	✓	✓	✓	✓
EM2513727-003	30-Jul-2025 10:45	SB01_0.75				✓			
EM2513727-004	30-Jul-2025 13:30	SB02_0.1				✓			
EM2513727-006	30-Jul-2025 13:30	SB02_1.1	✓	✓	✓	✓		✓	
EM2513727-007	30-Jul-2025 13:00	SB03_0.1	✓	✓	✓	✓		✓	✓
EM2513727-008	30-Jul-2025 13:00	SB03_0.4				✓			
EM2513727-010	30-Jul-2025 12:20	SB04_0.1			✓	✓		✓	✓
EM2513727-012	30-Jul-2025 12:20	SB04_0.85	✓	✓		✓			
EM2513727-013	30-Jul-2025 10:00	SB05_0.1	✓	✓	✓	✓		✓	
EM2513727-014	30-Jul-2025 10:00	SB05_0.5				✓			
EM2513727-016	30-Jul-2025 09:00	SB06_0.1			✓	✓			
EM2513727-017	30-Jul-2025 09:00	SB06_0.5	✓	✓	✓			✓	
EM2513727-018	30-Jul-2025 09:00	SB06_1.0				✓			
EM2513727-019	30-Jul-2025 08:00	SB07_0.1			✓	✓		✓	✓
EM2513727-020	30-Jul-2025 08:00	SB07_0.5				✓			
EM2513727-021	30-Jul-2025 08:00	SB07_1.0	✓	✓					
EM2513727-022	30-Jul-2025 11:45	SB08_0.1	✓	✓		✓			
EM2513727-023	30-Jul-2025 11:45	SB08_0.6			✓	✓		✓	
EM2513727-024	30-Jul-2025 00:00	QC01			✓			✓	✓

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) SOIL No analysis requested	SOIL - EA058 Emerson Aggregate Test	SOIL - EP202 (solids) Phenoxyacetic acids	SOIL - S-04 TRH/BTEXN
EM2513727-001	30-Jul-2025 10:45	SB01_0.1		✓		
EM2513727-002	30-Jul-2025 10:45	SB01_0.5	✓			
EM2513727-005	30-Jul-2025 13:30	SB02_0.5	✓			
EM2513727-006	30-Jul-2025 13:30	SB02_1.1		✓		
EM2513727-007	30-Jul-2025 13:00	SB03_0.1		✓	✓	

			(On Hold) SOIL No analysis requested	SOIL - EA058 Emerson Aggregate Test	SOIL - EP202 (solids) Phenoxyacetic acids	SOIL - S-04 TRH/BTEXN
EM2513727-009	30-Jul-2025 13:00	SB03_0.65	✓			
EM2513727-011	30-Jul-2025 12:20	SB04_0.5	✓			
EM2513727-012	30-Jul-2025 12:20	SB04_0.85		✓		
EM2513727-013	30-Jul-2025 10:00	SB05_0.1		✓		✓
EM2513727-015	30-Jul-2025 10:00	SB05_0.7	✓			
EM2513727-016	30-Jul-2025 09:00	SB06_0.1				✓
EM2513727-017	30-Jul-2025 09:00	SB06_0.5		✓		
EM2513727-019	30-Jul-2025 08:00	SB07_0.1			✓	
EM2513727-021	30-Jul-2025 08:00	SB07_1.0		✓		
EM2513727-022	30-Jul-2025 11:45	SB08_0.1		✓		
EM2513727-025	30-Jul-2025 00:00	QC02	✓			

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - W-02T 8 metals (Total)	WATER - W-12 OC/OP Pesticides	WATER - W-18 TRH(C6 - C9)/BTEXN
EM2513727-026	30-Jul-2025 00:00	QC03	✓	✓	
EM2513727-027	30-Jul-2025 00:00	QC04			✓

Proactive Holding Time Report

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

Requested Deliverables

Admin

- A4 - AU Tax Invoice (INV)	Email	admin@arcenvironmental.com.au

ELLIOT NANCE

- *AU Certificate of Analysis - NATA (COA)	Email	Elliot@arcenvironmental.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Elliot@arcenvironmental.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Elliot@arcenvironmental.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Elliot@arcenvironmental.com.au
- A4 - AU Tax Invoice (INV)	Email	Elliot@arcenvironmental.com.au
- Chain of Custody (CoC) (COC)	Email	Elliot@arcenvironmental.com.au
- EDI Format - ESDAT (ESDAT)	Email	Elliot@arcenvironmental.com.au

ESDAT REPORTING

- EDI Format - ESDAT (ESDAT)	Email	arcenvironmental@esdat.com.au

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(SOIL) EA006: Sodium Adsorption Ratio (SAR)

(SOIL) EA058: Emerson Aggregate Test

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

(SOIL) EA150: Soil Classification based on Particle Size

(SOIL) EA152: Soil Particle Density

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry / Biology).

(SOIL) EP202A: Phenoxyacetic Acid Herbicides by LCMS

CERTIFICATE OF ANALYSIS

Work Order	: **EM2513727**	Page	: 1 of 23
Client	: **ARC ENVIRONMENTAL**	Laboratory	: Environmental Division Melbourne
Contact	: ELLIOT NANCE	Contact	: Katie Davis
Address	: Suite 309, 546 Collins St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: 03 8383 1950	Telephone	: +61-3-8549 9600
Project	: 2507426	Date Samples Received	: 31-Jul-2025 11:30
Order number	: ----	Date Analysis Commenced	: 01-Aug-2025
C-O-C number	: ----	Issue Date	: 15-Aug-2025 15:31
Sampler	: PAOLO MONIZ		
Site	: Griffith BESS NSW		
Quote number	: EM23ARCENV0001 VIC Custom Quote		
No. of samples received	: 27		
No. of samples analysed	: 21		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Aleksandar Vujkovic	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW
Beatriz Llarinas	Senior Chemist	Brisbane Inorganics, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Layla Hafner	Acid Sulphate Soils - Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Tahlia Freeman	Instrument Operator	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

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

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

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

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

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

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

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

- EP202: Particular samples required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- ALS is not NATA accredited for the analysis of Exchangeable Cations on Alkaline Soils when performed under ALS Method ED006.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EA058 Emerson: V. = Very, D. = Dark, L. = Light, VD. = Very Dark
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H+ + Al3+).
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SB01_0.1	SB01_0.75	SB02_0.1	SB02_1.1	SB03_0.1
			Sampling date / time	30-Jul-2025 10:45	30-Jul-2025 10:45	30-Jul-2025 13:30	30-Jul-2025 13:30	30-Jul-2025 13:00
Compound	CAS Number	LOR	Unit	EM2513727-001	EM2513727-003	EM2513727-004	EM2513727-006	EM2513727-007
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	5.4	7.8	6.7	8.0	6.8
EA002-AD: pH (Soils) dried at 40°C								
pH Value	----	0.1	pH Unit	6.0	----	----	----	----
EA006: Sodium Adsorption Ratio (SAR)								
ø Sodium Adsorption Ratio	----	0.01	-	1.30	----	----	32.6	1.31
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	80	474	101	1100	286
EA010-AD: Conductivity (Soils) dried at 40°C								
Electrical Conductivity @ 25°C	----	1	µS/cm	112	----	----	----	----
EA014 Total Soluble Salts								
Total Soluble Salts	----	5	mg/kg	271	----	----	3730	974
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	15.0	----	----	24.3	17.8
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Very Dark Grayish Brown (10YR 3/2)	----	----	Light Brown (7.5YR 6/4)	Grayish Brown (10YR 5/2)
Texture	----	-	-	Medium Clay	----	----	Silty Clay Loam	Light Medium Clay
Emerson Class Number	EC/TC	-	-	1	----	----	1	4
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	50	----	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.51	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	8.4	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	5.5	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	1.6	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	0.6	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	16.1	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SB01_0.1	SB01_0.75	SB02_0.1	SB02_1.1	SB03_0.1
			Sampling date / time	30-Jul-2025 10:45	30-Jul-2025 10:45	30-Jul-2025 13:30	30-Jul-2025 13:30	30-Jul-2025 13:00
Compound	CAS Number	LOR	Unit	EM2513727-001	EM2513727-003	EM2513727-004	EM2513727-006	EM2513727-007
				Result	Result	Result	Result	Result
EG005(ED093)T: Total Metals by ICP-AES								
Iron	7439-89-6	0.005	%	**2.19**	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	**35**	----	----	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	<1
Chromium	7440-47-3	2	mg/kg	**23**	----	----	**23**	**24**
Copper	7440-50-8	5	mg/kg	**16**	----	----	**13**	**16**
Lead	7439-92-1	5	mg/kg	**122**	----	----	**10**	**13**
Nickel	7440-02-0	2	mg/kg	**15**	----	----	**14**	**14**
Zinc	7440-66-6	5	mg/kg	**40**	----	----	**25**	**32**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	<0.1	<0.1
EP004: Organic Matter								
Organic Matter	----	0.5	%	**3.1**	----	----	----	----
Total Organic Carbon	----	0.5	%	**1.8**	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	<0.05
gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	<0.05	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	<0.05
^ **Total Chlordane (sum)**	----	0.05	mg/kg	<0.05	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB01_0.1	SB01_0.75	SB02_0.1	SB02_1.1	SB03_0.1
				Sampling date / time	30-Jul-2025 10:45	30-Jul-2025 10:45	30-Jul-2025 13:30	30-Jul-2025 13:30	30-Jul-2025 13:00
Compound	CAS Number	LOR	Unit		EM2513727-001	EM2513727-003	EM2513727-004	EM2513727-006	EM2513727-007
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDE	72-55-9	0.05	mg/kg		**0.27**	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	<0.05
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	<0.2
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	<0.05
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.05	mg/kg		**0.27**	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB01_0.1	SB01_0.75	SB02_0.1	SB02_1.1	SB03_0.1
				Sampling date / time	30-Jul-2025 10:45	30-Jul-2025 10:45	30-Jul-2025 13:30	30-Jul-2025 13:30	30-Jul-2025 13:00
Compound	CAS Number	LOR	Unit		EM2513727-001	EM2513727-003	EM2513727-004	EM2513727-006	EM2513727-007
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	<0.05
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		----	----	----	----	<0.04
2.4-DB	94-82-6	0.02	mg/kg		----	----	----	----	<0.04
Dicamba	1918-00-9	0.02	mg/kg		----	----	----	----	<0.04
Mecoprop	93-65-2	0.02	mg/kg		----	----	----	----	<0.04
MCPA	94-74-6	0.02	mg/kg		----	----	----	----	<0.04
2.4-DP	120-36-5	0.02	mg/kg		----	----	----	----	<0.04
2.4-D	94-75-7	0.02	mg/kg		----	----	----	----	<0.04
Triclopyr	55335-06-3	0.02	mg/kg		----	----	----	----	<0.04
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		----	----	----	----	<0.04
2.4.5-T	93-76-5	0.02	mg/kg		----	----	----	----	<0.04
MCPB	94-81-5	0.02	mg/kg		----	----	----	----	<0.04
Picloram	1918-02-1	0.02	mg/kg		----	----	----	----	<0.04
Clopyralid	1702-17-6	0.02	mg/kg		----	----	----	----	<0.04
Fluroxypyr	69377-81-7	0.02	mg/kg		----	----	----	----	<0.04
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**100**	----	----	----	**93.5**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**110**	----	----	----	**111**
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%		----	----	----	----	**72.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SB03_0.4	SB04_0.1	SB04_0.85	SB05_0.1	SB05_0.5
			Sampling date / time	30-Jul-2025 13:00	30-Jul-2025 12:20	30-Jul-2025 12:20	30-Jul-2025 10:00	30-Jul-2025 10:00
Compound	CAS Number	LOR	Unit	EM2513727-008	EM2513727-010	EM2513727-012	EM2513727-013	EM2513727-014
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.9	6.1	8.0	6.4	7.6
EA006: Sodium Adsorption Ratio (SAR)								
ø Sodium Adsorption Ratio	----	0.01	-	----	----	3.74	1.05	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	188	72	376	93	264
EA014 Total Soluble Salts								
Total Soluble Salts	----	5	mg/kg	----	----	1280	315	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	26.5	----	20.4	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	----	Dark Yellowish Brown (10YR 3/4)	Dark Brown (7.5YR 3/2)	----
Texture	----	-	-	----	----	Light Medium Clay	Silty Clay Loam	----
Emerson Class Number	EC/TC	-	-	----	----	1	1	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	6	----	19	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	24	----	24	----
Copper	7440-50-8	5	mg/kg	----	16	----	18	----
Lead	7439-92-1	5	mg/kg	----	25	----	86	----
Nickel	7440-02-0	2	mg/kg	----	17	----	17	----
Zinc	7440-66-6	5	mg/kg	----	31	----	45	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB03_0.4	SB04_0.1	SB04_0.85	SB05_0.1	SB05_0.5
				Sampling date / time	30-Jul-2025 13:00	30-Jul-2025 12:20	30-Jul-2025 12:20	30-Jul-2025 10:00	30-Jul-2025 10:00
Compound	CAS Number	LOR	Unit		EM2513727-008	EM2513727-010	EM2513727-012	EM2513727-013	EM2513727-014
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg		----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB03_0.4	SB04_0.1	SB04_0.85	SB05_0.1	SB05_0.5
				Sampling date / time	30-Jul-2025 13:00	30-Jul-2025 12:20	30-Jul-2025 12:20	30-Jul-2025 10:00	30-Jul-2025 10:00
Compound	CAS Number	LOR	Unit		EM2513727-008	EM2513727-010	EM2513727-012	EM2513727-013	EM2513727-014
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Dimethoate	60-51-5	0.05	mg/kg		----	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg		----	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg		----	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg		----	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg		----	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg		----	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	<0.05	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg		----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg		----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg		----	----	----	<50	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB03_0.4	SB04_0.1	SB04_0.85	SB05_0.1	SB05_0.5
				Sampling date / time	30-Jul-2025 13:00	30-Jul-2025 12:20	30-Jul-2025 12:20	30-Jul-2025 10:00	30-Jul-2025 10:00
Compound	CAS Number	LOR	Unit		EM2513727-008	EM2513727-010	EM2513727-012	EM2513727-013	EM2513727-014
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg		----	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	----	<50	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		----	----	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg		----	----	----	<1	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	**98.7**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	**52.9**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	**70.6**	----
Toluene-D8	2037-26-5	0.2	%		----	----	----	**68.6**	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	**78.5**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SB06_0.1	SB06_0.5	SB06_1.0	SB07_0.1	SB07_0.5
			Sampling date / time	30-Jul-2025 09:00	30-Jul-2025 09:00	30-Jul-2025 09:00	30-Jul-2025 08:00	30-Jul-2025 08:00
Compound	CAS Number	LOR	Unit	EM2513727-016	EM2513727-017	EM2513727-018	EM2513727-019	EM2513727-020
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	6.5	----	8.0	5.4	7.9
EA006: Sodium Adsorption Ratio (SAR)								
ø Sodium Adsorption Ratio	----	0.01	-	----	2.85	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	113	----	457	116	377
EA014 Total Soluble Salts								
Total Soluble Salts	----	5	mg/kg	----	965	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	17.2	----	----	----	----
Moisture Content	----	1.0	%	----	13.6	----	19.0	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	----	Reddish Brown (5YR 4/3)	----	----	----
Texture	----	-	-	----	Light Medium Clay	----	----	----
Emerson Class Number	EC/TC	-	-	----	2	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	----	<5	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	27	----	20	----
Copper	7440-50-8	5	mg/kg	----	17	----	14	----
Lead	7439-92-1	5	mg/kg	----	10	----	10	----
Nickel	7440-02-0	2	mg/kg	----	20	----	15	----
Zinc	7440-66-6	5	mg/kg	----	28	----	22	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB06_0.1	SB06_0.5	SB06_1.0	SB07_0.1	SB07_0.5
				Sampling date / time	30-Jul-2025 09:00	30-Jul-2025 09:00	30-Jul-2025 09:00	30-Jul-2025 08:00	30-Jul-2025 08:00
Compound	CAS Number	LOR	Unit		EM2513727-016	EM2513727-017	EM2513727-018	EM2513727-019	EM2513727-020
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
beta-BHC	319-85-7	0.05	mg/kg		----	----	----	<0.05	----
gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg		----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SB06_0.1	SB06_0.5	SB06_1.0	SB07_0.1	SB07_0.5
			Sampling date / time	30-Jul-2025 09:00	30-Jul-2025 09:00	30-Jul-2025 09:00	30-Jul-2025 08:00	30-Jul-2025 08:00
Compound	CAS Number	LOR	Unit	EM2513727-016	EM2513727-017	EM2513727-018	EM2513727-019	EM2513727-020
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	<0.05	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB06_0.1	SB06_0.5	SB06_1.0	SB07_0.1	SB07_0.5
				Sampling date / time	30-Jul-2025 09:00	30-Jul-2025 09:00	30-Jul-2025 09:00	30-Jul-2025 08:00	30-Jul-2025 08:00
Compound	CAS Number	LOR	Unit		EM2513727-016	EM2513727-017	EM2513727-018	EM2513727-019	EM2513727-020
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		----	----	----	<0.04	----
2.4-DB	94-82-6	0.02	mg/kg		----	----	----	<0.04	----
Dicamba	1918-00-9	0.02	mg/kg		----	----	----	<0.04	----
Mecoprop	93-65-2	0.02	mg/kg		----	----	----	<0.04	----
MCPA	94-74-6	0.02	mg/kg		----	----	----	<0.04	----
2.4-DP	120-36-5	0.02	mg/kg		----	----	----	<0.04	----
2.4-D	94-75-7	0.02	mg/kg		----	----	----	<0.04	----
Triclopyr	55335-06-3	0.02	mg/kg		----	----	----	<0.04	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		----	----	----	<0.04	----
2.4.5-T	93-76-5	0.02	mg/kg		----	----	----	<0.04	----
MCPB	94-81-5	0.02	mg/kg		----	----	----	<0.04	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB06_0.1	SB06_0.5	SB06_1.0	SB07_0.1	SB07_0.5
				Sampling date / time	30-Jul-2025 09:00	30-Jul-2025 09:00	30-Jul-2025 09:00	30-Jul-2025 08:00	30-Jul-2025 08:00
Compound	CAS Number	LOR	Unit		EM2513727-016	EM2513727-017	EM2513727-018	EM2513727-019	EM2513727-020
					Result	Result	Result	Result	Result
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued									
Picloram	1918-02-1	0.02	mg/kg		----	----	----	<0.04	----
Clopyralid	1702-17-6	0.02	mg/kg		----	----	----	<0.04	----
Fluroxypyr	69377-81-7	0.02	mg/kg		----	----	----	<0.04	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	**91.6**	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	**88.6**	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**88.0**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**88.0**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**95.7**	----	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%		----	----	----	**76.0**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SB07_1.0	SB08_0.1	SB08_0.6	QC01	----
			Sampling date / time	30-Jul-2025 08:00	30-Jul-2025 11:45	30-Jul-2025 11:45	30-Jul-2025 00:00	----
Compound	CAS Number	LOR	Unit	EM2513727-021	EM2513727-022	EM2513727-023	EM2513727-024	--------
				Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	5.7	7.9	----	----
EA006: Sodium Adsorption Ratio (SAR)								
ø Sodium Adsorption Ratio	----	0.01	-	6.78	1.09	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	51	281	----	----
EA014 Total Soluble Salts								
Total Soluble Salts	----	5	mg/kg	2220	172	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	----	14.6	19.7	----
EA058: Emerson Aggregate Test								
Color (Munsell)	----	-	-	Brown (7.5YR 5/4)	Very Dark Gray (5YR 3/1)	----	----	----
Texture	----	-	-	Light Medium Clay	Medium Clay	----	----	----
Emerson Class Number	EC/TC	-	-	1	2	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	<5	<5	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	27	24	----
Copper	7440-50-8	5	mg/kg	----	----	18	15	----
Lead	7439-92-1	5	mg/kg	----	----	9	9	----
Nickel	7440-02-0	2	mg/kg	----	----	20	16	----
Zinc	7440-66-6	5	mg/kg	----	----	28	27	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB07_1.0	SB08_0.1	SB08_0.6	QC01	----
				Sampling date / time	30-Jul-2025 08:00	30-Jul-2025 11:45	30-Jul-2025 11:45	30-Jul-2025 00:00	----
Compound	CAS Number	LOR	Unit		EM2513727-021	EM2513727-022	EM2513727-023	EM2513727-024	--------
					Result	Result	Result	Result	----
EP068A: Organochlorine Pesticides (OC) - Continued									
gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg		----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	----	<0.2	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SB07_1.0	SB08_0.1	SB08_0.6	QC01	----
				Sampling date / time	30-Jul-2025 08:00	30-Jul-2025 11:45	30-Jul-2025 11:45	30-Jul-2025 00:00	----
Compound	CAS Number	LOR	Unit		EM2513727-021	EM2513727-022	EM2513727-023	EM2513727-024	--------
					Result	Result	Result	Result	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Dimethoate	60-51-5	0.05	mg/kg		----	----	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg		----	----	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg		----	----	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg		----	----	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg		----	----	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg		----	----	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	----	<0.05	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	**92.0**	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	**73.0**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC03	QC04	----	----	----
				Sampling date / time	30-Jul-2025 00:00	30-Jul-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2513727-026	EM2513727-027	--------	--------	--------
					Result	Result	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	----	----	----	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC03	QC04	----	----	----
				Sampling date / time	30-Jul-2025 00:00	30-Jul-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2513727-026	EM2513727-027	--------	--------	--------
					Result	Result	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
Endosulfan sulfate	1031-07-8	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L		<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L		<2.0	----	----	----	----
^ **Total Chlordane (sum)**	----	0.5	µg/L		<0.5	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.5	µg/L		<0.5	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.5	µg/L		<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L		<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L		<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L		<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L		<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L		<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L		<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L		<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L		<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L		<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L		<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L		<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC03	QC04	----	----	----
				Sampling date / time	30-Jul-2025 00:00	30-Jul-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2513727-026	EM2513727-027	--------	--------	--------
					Result	Result	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		----	<20	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		----	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		----	<20	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		----	<1	----	----	----
Toluene	108-88-3	2	µg/L		----	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		----	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		----	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		----	<2	----	----	----
^ Total Xylenes	----	2	µg/L		----	<2	----	----	----
^ Sum of BTEX	----	1	µg/L		----	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		----	<5	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**96.9**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**115**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		----	**90.4**	----	----	----
Toluene-D8	2037-26-5	2	%		----	**100**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		----	**101**	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	62	128
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	40	139
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	45	139

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	117
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	51	127
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(SOIL) EA006: Sodium Adsorption Ratio (SAR)

(SOIL) EA058: Emerson Aggregate Test

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

(SOIL) EA150: Soil Classification based on Particle Size

(SOIL) EA152: Soil Particle Density

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry / Biology).

(SOIL) EP202A: Phenoxyacetic Acid Herbicides by LCMS

(SOIL) EP202S: Phenoxyacetic Acid Herbicide Surrogate

QUALITY CONTROL REPORT

Work Order	: **EM2513727**	Page	: 1 of 15
Client	: **ARC ENVIRONMENTAL**	Laboratory	: Environmental Division Melbourne
Contact	: ELLIOT NANCE	Contact	: Katie Davis
Address	: Suite 309, 546 Collins St MELBOURNE 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: 03 8383 1950	Telephone	: +61-3-8549 9600
Project	: 2507426	Date Samples Received	: 31-Jul-2025
Order number	: ----	Date Analysis Commenced	: 01-Aug-2025
C-O-C number	: ----	Issue Date	: 15-Aug-2025
Sampler	: PAOLO MONIZ		
Site	: Griffith BESS NSW		
Quote number	: EM23ARCENV0001 VIC Custom Quote		
No. of samples received	: 27		
No. of samples analysed	: 21		

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

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

This 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.

Signatories	*Position*	*Accreditation Category*
Aleksandar Vujkovic	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW
Beatriz Llarinas	Senior Chemist	Brisbane Inorganics, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Layla Hafner	Acid Sulphate Soils - Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Tahlia Freeman	Instrument Operator	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

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: 6775076)									
EM2513727-001	SB01_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	23	22	0.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	15	15	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	35	31	11.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	16	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	122	116	4.7	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	40	39	2.8	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	2.19 %	21000	4.3	0% - 20%
EM2514165-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	30	24	23.9	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	15	12	21.7	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	14	22.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	8	30.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	28	22	26.3	No Limit
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 6766245)									
EM2513589-003	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	5.0	4.9	0.0	0% - 20%
EM2513727-006	SB02_1.1	EA001: pH (CaCl2)	----	0.1	pH Unit	8.0	8.0	0.0	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 6766246)									
EM2513727-022	SB08_0.1	EA001: pH (CaCl2)	----	0.1	pH Unit	5.7	5.7	0.0	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 (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 6766246) - continued									
EM2513738-008	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	6.7	6.7	0.0	0% - 20%
EA002-AD: pH (Soils) dried at 40°C (QC Lot: 6769816)									
EM2513727-001	SB01_0.1	EA002-AD: pH Value	----	0.1	pH Unit	6.0	6.0	0.0	0% - 20%
EM2513738-010	Anonymous	EA002-AD: pH Value	----	0.1	pH Unit	6.1	6.1	0.0	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 6766084)									
EM2513727-001	SB01_0.1	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	80	69	14.8	0% - 20%
EM2513727-014	SB05_0.5	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	264	254	3.7	0% - 20%
EA010-AD: Conductivity (Soils) dried at 40°C (QC Lot: 6769815)									
EM2513727-001	SB01_0.1	EA010-AD: Electrical Conductivity @ 25°C	----	1	µS/cm	112	112	0.0	0% - 20%
EM2513738-010	Anonymous	EA010-AD: Electrical Conductivity @ 25°C	----	1	µS/cm	421	418	0.7	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6774834)									
EM2513727-001	SB01_0.1	EA055: Moisture Content	----	0.1 (1.0)*	%	15.0	15.5	3.0	0% - 50%
EM2514014-004	Anonymous	EA055: Moisture Content	----	0.1	%	10.6	10.7	1.3	0% - 20%
ED007: Exchangeable Cations (QC Lot: 6769822)									
EM2513727-001	SB01_0.1	ED007: Exchangeable Calcium	----	0.1	meq/100g	8.4	8.3	0.0	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	5.5	5.4	0.0	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	1.6	1.5	0.0	0% - 50%
		ED007: Exchangeable Sodium	----	0.1	meq/100g	0.6	0.6	0.0	No Limit
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	16.1	16.0	1.0	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 6775077)									
EM2513727-001	SB01_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2514165-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP004: Organic Matter (QC Lot: 6775060)									
EM2513727-001	SB01_0.1	EP004: Organic Matter	----	0.5	%	3.1	2.7	14.2	No Limit
		EP004: Total Organic Carbon	----	0.5	%	1.8	1.6	14.3	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 6775072)									
EM2513727-001	SB01_0.1	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	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 (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 6775072) - continued									
EM2513727-001	SB01_0.1	EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	0.27	0.17	48.7	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 6775072)									
EM2513727-001	SB01_0.1	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6775067)									
EM2513727-013	SB05_0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6775073)									
EM2513727-013	SB05_0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6775067)									
EM2513727-013	SB05_0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6775073)									
EM2513727-013	SB05_0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 6775067)									
EM2513727-013	SB05_0.1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 6765886)									
ES2523787-002	Anonymous	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: 2.4-DB	94-82-6	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: Dicamba	1918-00-9	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: Mecoprop	93-65-2	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: MCPA	94-74-6	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: 2.4-DP	120-36-5	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: 2.4-D	94-75-7	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: Triclopyr	55335-06-3	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: 2.4.5-T	93-76-5	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: MCPB	94-81-5	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: Picloram	1918-02-1	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: Clopyralid	1702-17-6	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit
		EP202: Fluroxypyr	69377-81-7	0.02 (0.04)*	mg/kg	<0.04	<0.04	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 6775886)									
EM2513727-026	QC03	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: Chromium	7440-47-3	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: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	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: 6775886) - continued									
EM2513727-026	QC03	EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 6766171)									
EM2513556-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EM2513727-026	QC03	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 6758538)									
EM2513556-001	Anonymous	EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: gamma-BHC - (Lindane)	58-89-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	<2.0	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 6758538)									
EM2513556-001	Anonymous	EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	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 (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 6758538) - continued									
EM2513556-001	Anonymous	EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Parathion	56-38-2	2	µg/L	<2.0	<2.0	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6762279)									
EM2513556-007	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6762279)									
EM2513556-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 6762279)									
EM2513556-007	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	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**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6775076)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	94.8	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	62.8	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	102	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	85.7	70.0	130
EG005T: Iron	7439-89-6	50	mg/kg	<50	33227 mg/kg	102	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	87.8	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	91.0	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	71.6	70.0	130
EA001: pH in soil using 0.01M CaCl extract (QCLot: 6766245)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	100	99.3	101
EA001: pH in soil using 0.01M CaCl extract (QCLot: 6766246)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	100	99.3	101
EA002-AD: pH (Soils) dried at 40°C (QCLot: 6769816)								
EA002-AD: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	98.8	101
				----	7 pH Unit	100	99.3	101
EA006: Sodium Adsorption Ratio (SAR) (QCLot: 6774186)								
EA006: Sodium Adsorption Ratio	----	0.01	-	<0.01	----	----	----	----
EA006: Sodium Adsorption Ratio (SAR) (QCLot: 6787313)								
EA006: Sodium Adsorption Ratio	----	0.01	-	<0.01	----	----	----	----
EA010: Conductivity (1:5) (QCLot: 6766084)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1413 µS/cm	100	94.5	105
EA010-AD: Conductivity (Soils) dried at 40°C (QCLot: 6769815)								
EA010-AD: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1413 µS/cm	100	90.0	110
ED007: Exchangeable Cations (QCLot: 6769822)								
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	24.13 meq/100g	83.7	80.0	130
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	1.96 meq/100g	92.0	72.2	130
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	1.01 meq/100g	100	77.4	130
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.86 meq/100g	111	89.2	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
ED007: Exchangeable Cations (QCLot: 6769822) - continued								
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6775077)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.64 mg/kg	91.4	69.0	128
EP004: Organic Matter (QCLot: 6775060)								
EP004: Organic Matter	----	0.5	%	<0.5	77 %	106	70.0	130
EP004: Total Organic Carbon	----	0.5	%	<0.5	43.5 %	109	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 6775072)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	101	71.8	126
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	96.8	72.2	125
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	101	70.0	124
EP068: gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	100	69.1	124
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	69.2	125
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.6	66.6	122
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	104	68.8	123
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	97.7	67.2	124
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	66.0	126
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	70.2	126
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.9	72.1	124
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	102	68.0	122
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	104	68.9	124
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	99.5	55.8	130
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	67.9	124
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	72.0	127
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	90.8	66.3	131
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	62.4	131
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	93.0	55.4	130
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	93.7	68.8	128
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	96.7	55.5	132
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6775072)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	92.2	65.6	127
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	63.0	129
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	102	10.0	136
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	58.3	128
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	99.6	69.0	122

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6775072) - continued								
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	96.4	68.0	122
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	90.4	59.6	124
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	63.8	128
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	71.1	124
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	101	67.4	126
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	81.6	57.9	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	100	66.2	123
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	111	59.8	123
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	65.4	127
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.0	52.1	128
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	65.2	122
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	95.9	63.2	124
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	65.9	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	92.8	43.1	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6775067)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	97.0	58.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6775073)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	810 mg/kg	97.8	80.0	120
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2880 mg/kg	96.1	80.0	120
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1460 mg/kg	95.6	80.0	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6775067)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	97.0	59.3	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6775073)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1120 mg/kg	96.7	80.0	120
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3800 mg/kg	95.2	80.0	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	260 mg/kg	101	80.0	120
EP080: BTEXN (QCLot: 6775067)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	89.3	61.6	117
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	92.3	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	92.8	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	100	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	103	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	89.7	61.8	123

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 6765886)								
EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.8	54.4	128
EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	0.1 mg/kg	64.7	45.5	130
EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	0.1 mg/kg	87.1	51.7	135
EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	0.1 mg/kg	92.1	60.0	130
EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	0.1 mg/kg	94.1	56.8	131
EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	0.1 mg/kg	96.4	50.0	141
EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	0.1 mg/kg	90.7	68.5	131
EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	0.1 mg/kg	94.1	50.8	141
EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	0.1 mg/kg	71.1	40.8	126
EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	0.1 mg/kg	94.1	57.4	139
EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	0.1 mg/kg	53.5	38.9	137
EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	0.1 mg/kg	69.7	48.7	129
EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	0.1 mg/kg	60.3	49.4	106
EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.7	53.2	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 6775886)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	89.2	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	103	86.4	115
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.6	89.0	112
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.0	88.3	111
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.8	88.3	112
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.7	88.8	113
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.7	90.0	115
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6766171)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	103	73.4	119
EP068A: Organochlorine Pesticides (OC) (QCLot: 6758538)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	2.5 µg/L	96.3	50.6	119
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	2.5 µg/L	90.4	44.2	117
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	2.5 µg/L	97.6	53.7	119
EP068: gamma-BHC - (Lindane)	58-89-9	0.5	µg/L	<0.5	2.5 µg/L	97.8	47.7	117
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	2.5 µg/L	98.2	52.5	117
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	2.5 µg/L	94.2	46.9	118

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 6758538) - continued								
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	2.5 µg/L	94.7	48.0	115
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	2.5 µg/L	99.5	51.1	119
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	2.5 µg/L	100	48.4	120
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	2.5 µg/L	90.1	50.1	122
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	2.5 µg/L	100	51.0	118
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	2.5 µg/L	95.8	48.4	116
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	2.5 µg/L	96.2	49.3	116
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	2.5 µg/L	104	47.1	130
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	2.5 µg/L	101	51.6	118
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	2.5 µg/L	97.5	48.6	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	2.5 µg/L	100	49.4	128
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	2.5 µg/L	83.7	49.1	123
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	2.5 µg/L	97.8	45.6	126
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	2.5 µg/L	97.6	52.8	117
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	2.5 µg/L	102	47.1	126
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6758538)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	2.5 µg/L	97.4	47.4	133
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	2.5 µg/L	103	46.4	129
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	2.5 µg/L	18.3	10.0	42.9
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	2.5 µg/L	102	41.7	131
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	2.5 µg/L	96.9	50.5	122
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	2.5 µg/L	95.4	52.4	123
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	2.5 µg/L	100	52.0	132
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	2.5 µg/L	104	51.8	133
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	2.5 µg/L	96.9	52.3	123
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	2.5 µg/L	99.0	48.7	122
EP068: Parathion	56-38-2	2	µg/L	<2.0	2.5 µg/L	102	49.5	136
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	2.5 µg/L	100.0	50.4	123
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	2.5 µg/L	102	50.9	131
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	2.5 µg/L	99.4	47.5	126
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	2.5 µg/L	122	46.5	138
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	2.5 µg/L	117	49.2	119
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	2.5 µg/L	103	50.0	126
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	2.5 µg/L	105	50.0	131

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6758538) - continued								
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	2.5 µg/L	116	41.7	147
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6762279)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	105	66.2	134
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6762279)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	98.0	66.2	132
EP080: BTEXN (QCLot: 6762279)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	93.8	68.8	127
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	104	72.9	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	106	71.7	130
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	108	72.3	136
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	109	75.9	134
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	90.4	68.3	131

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**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6775076)							
EM2513727-006	SB02_1.1	EG005T: Arsenic	7440-38-2	50 mg/kg	82.9	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.2	79.7	116
		EG005T: Chromium	7440-47-3	50 mg/kg	92.3	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	93.1	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	89.3	80.0	120
		EG005T: Nickel	7440-02-0	50 mg/kg	91.1	78.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	88.4	80.0	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6775077)							
EM2513727-006	SB02_1.1	EG035T: Mercury	7439-97-6	0.5 mg/kg	101	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 6775072)							
EM2513727-007	SB03_0.1	EP068: gamma-BHC - (Lindane)	58-89-9	0.5 mg/kg	102	51.4	139
		EP068: Heptachlor	76-44-8	0.5 mg/kg	98.2	49.1	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	107	38.4	135
		EP068: Dieldrin	60-57-1	0.5 mg/kg	108	58.4	136
		EP068: Endrin	72-20-8	0.5 mg/kg	101	33.0	146

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EP068A: Organochlorine Pesticides (OC) (QCLot: 6775072) - continued							
EM2513727-007	SB03_0.1	EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	85.2	20.0	133
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6775072)							
EM2513727-007	SB03_0.1	EP068: Diazinon	333-41-5	0.5 mg/kg	99.1	65.1	135
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	95.4	56.3	127
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	96.4	55.0	133
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	97.6	55.1	133
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	84.6	43.8	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6775067)							
EM2513727-016	SB06_0.1	EP080: C6 - C9 Fraction	----	28 mg/kg	81.3	33.4	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6775073)							
EM2513727-016	SB06_0.1	EP071: C10 - C14 Fraction	----	810 mg/kg	95.2	70.0	130
		EP071: C15 - C28 Fraction	----	2880 mg/kg	93.3	70.0	130
		EP071: C29 - C36 Fraction	----	1460 mg/kg	93.2	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6775067)							
EM2513727-016	SB06_0.1	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	81.5	30.8	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6775073)							
EM2513727-016	SB06_0.1	EP071: >C10 - C16 Fraction	----	1120 mg/kg	94.1	70.0	130
		EP071: >C16 - C34 Fraction	----	3800 mg/kg	92.5	70.0	130
		EP071: >C34 - C40 Fraction	----	260 mg/kg	100	70.0	130
EP080: BTEXN (QCLot: 6775067)							
EM2513727-016	SB06_0.1	EP080: Benzene	71-43-2	2 mg/kg	96.1	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	96.4	57.1	131
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 6765886)							
ES2523787-002	Anonymous	EP202: Mecoprop	93-65-2	0.1 mg/kg	62.2	60.0	140
		EP202: MCPA	94-74-6	0.1 mg/kg	66.5	57.0	143
		EP202: 2.4-D	94-75-7	0.1 mg/kg	71.3	68.0	139
		EP202: Triclopyr	55335-06-3	0.1 mg/kg	76.5	51.0	145
		EP202: 2.4.5-T	93-76-5	0.1 mg/kg	82.8	57.0	142
		EP202: Picloram	1918-02-1	0.1 mg/kg	67.6	49.0	138
		EP202: Clopyralid	1702-17-6	0.1 mg/kg	69.1	49.0	149

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
EG020T: Total Metals by ICP-MS (QCLot: 6775886)							
EM2513727-026	QC03	EG020A-T: Arsenic	7440-38-2	1 mg/L	99.1	82.0	123
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	103	81.8	123

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: 6775886) - continued							
EM2513727-026	QC03	EG020A-T: Chromium	7440-47-3	1 mg/L	102	78.9	119
		EG020A-T: Copper	7440-50-8	1 mg/L	99.2	80.4	118
		EG020A-T: Lead	7439-92-1	1 mg/L	114	80.5	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	98.3	80.0	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	98.2	74.0	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6766171)							
EM2513556-002	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	103	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 6758538)							
EM2513556-002	Anonymous	EP068: gamma-BHC - (Lindane)	58-89-9	2.5 µg/L	88.2	47.0	119
		EP068: Heptachlor	76-44-8	2.5 µg/L	99.5	32.0	117
		EP068: Aldrin	309-00-2	2.5 µg/L	80.4	43.0	124
		EP068: Dieldrin	60-57-1	2.5 µg/L	91.0	43.0	124
		EP068: Endrin	72-20-8	2.5 µg/L	99.4	42.0	128
		EP068: 4.4`-DDT	50-29-3	2.5 µg/L	75.5	26.8	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6758538)							
EM2513556-002	Anonymous	EP068: Diazinon	333-41-5	2.5 µg/L	91.8	48.0	131
		EP068: Chlorpyrifos-methyl	5598-13-0	2.5 µg/L	93.5	29.6	122
		EP068: Pirimphos-ethyl	23505-41-1	2.5 µg/L	104	39.0	119
		EP068: Bromophos-ethyl	4824-78-6	2.5 µg/L	100	32.0	118
		EP068: Prothiofos	34643-46-4	2.5 µg/L	98.2	44.0	108
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6762279)							
EM2513556-008	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	87.2	33.9	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6762279)							
EM2513556-008	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	84.3	34.0	122
EP080: BTEXN (QCLot: 6762279)							
EM2513556-008	Anonymous	EP080: Benzene	71-43-2	20 µg/L	99.3	56.3	133
		EP080: Toluene	108-88-3	20 µg/L	106	60.4	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2513727**	Page	: 1 of 10
Client	: **ARC ENVIRONMENTAL**	Laboratory	: Environmental Division Melbourne
Contact	: ELLIOT NANCE	Telephone	: +61-3-8549 9600
Project	: 2507426	Date Samples Received	: 31-Jul-2025
Site	: Griffith BESS NSW	Issue Date	: 15-Aug-2025
Sampler	: PAOLO MONIZ	No. of samples received	: 27
Order number	: ----	No. of samples analysed	: 21

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 Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA002-AD: pH (Soils) dried at 40°C						
Soil Glass Jar - Unpreserved						
SB01_0.1	08-Aug-2025	06-Aug-2025	**2**	----	----	----
EA010-AD: Conductivity (Soils) dried at 40°C						
Soil Glass Jar - Unpreserved						
SB01_0.1	08-Aug-2025	06-Aug-2025	**2**	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type / Analytical Methods	Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Matrix Spikes (MS)						
Organic Matter	EP004	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

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.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001)							
SB01_0.1, SB01_0.75,	**30-Jul-2025**	**06-Aug-2025**	06-Aug-2025	✓	**06-Aug-2025**	06-Aug-2025	✓
SB02_0.1, SB02_1.1,							
SB03_0.1, SB03_0.4,							
SB04_0.1, SB04_0.85,							
SB05_0.1, SB05_0.5,							
SB06_0.1, SB06_1.0,							
SB07_0.1, SB07_0.5,							
SB08_0.1, SB08_0.6							
EA002-AD: pH (Soils) dried at 40°C							
Soil Glass Jar - Unpreserved (EA002-AD)							
SB01_0.1	**30-Jul-2025**	**08-Aug-2025**	06-Aug-2025	×	**08-Aug-2025**	08-Aug-2025	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA006: Sodium Adsorption Ratio (SAR)							
Snap Lock Bag (EA006)							
SB01_0.1, SB02_1.1, SB03_0.1, SB04_0.85, SB05_0.1, SB06_0.5, SB07_1.0	**30-Jul-2025**	**11-Aug-2025**	26-Jan-2026	✓	**11-Aug-2025**	26-Jan-2026	✓
Snap Lock Bag (EA006)							
SB08_0.1	**30-Jul-2025**	**15-Aug-2025**	26-Jan-2026	✓	**15-Aug-2025**	26-Jan-2026	✓
EA010: Conductivity (1:5)							
Soil Glass Jar - Unpreserved (EA010)							
SB01_0.1, SB01_0.75, SB02_0.1, SB02_1.1, SB03_0.1, SB03_0.4, SB04_0.1, SB04_0.85, SB05_0.1, SB05_0.5, SB06_0.1, SB06_1.0, SB07_0.1, SB07_0.5, SB08_0.1, SB08_0.6	**30-Jul-2025**	**06-Aug-2025**	06-Aug-2025	✓	**06-Aug-2025**	03-Sep-2025	✓
EA010-AD: Conductivity (Soils) dried at 40°C							
Soil Glass Jar - Unpreserved (EA010-AD)							
SB01_0.1	**30-Jul-2025**	**08-Aug-2025**	06-Aug-2025	×	**08-Aug-2025**	05-Sep-2025	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
SB01_0.1, SB02_1.1, SB03_0.1, SB04_0.1, SB05_0.1, SB06_0.1, SB06_0.5, SB07_0.1, SB08_0.6, QC01	**30-Jul-2025**	**----**	----	----	**08-Aug-2025**	13-Aug-2025	✓
EA058: Emerson Aggregate Test							
Snap Lock Bag (EA058)							
SB01_0.1, SB02_1.1, SB03_0.1, SB04_0.85, SB05_0.1, SB06_0.5, SB07_1.0	**30-Jul-2025**	**----**	----	----	**07-Aug-2025**	26-Jan-2026	✓
Snap Lock Bag (EA058)							
SB08_0.1	**30-Jul-2025**	**----**	----	----	**14-Aug-2025**	26-Jan-2026	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150H)							
SB01_0.1	**30-Jul-2025**	**----**	----	----	**12-Aug-2025**	26-Jan-2026	✓
EA152: Soil Particle Density							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA152)							
SB01_0.1	**30-Jul-2025**	**----**	----	----	**12-Aug-2025**	26-Jan-2026	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED006: Exchangeable Cations on Alkaline Soils							
Soil Glass Jar - Unpreserved (ED006)							
SB01_0.1	**30-Jul-2025**	**06-Aug-2025**	27-Aug-2025	✓	**11-Aug-2025**	27-Aug-2025	✓
ED007: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED007)							
SB01_0.1	**30-Jul-2025**	**06-Aug-2025**	27-Aug-2025	✓	**11-Aug-2025**	27-Aug-2025	✓
ED008: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED008)							
SB01_0.1	**30-Jul-2025**	**06-Aug-2025**	27-Aug-2025	✓	**11-Aug-2025**	27-Aug-2025	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
SB01_0.1, SB02_1.1, SB03_0.1, SB04_0.1, SB05_0.1, SB06_0.5, SB07_0.1, SB08_0.6, QC01	**30-Jul-2025**	**08-Aug-2025**	26-Jan-2026	✓	**08-Aug-2025**	26-Jan-2026	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
SB01_0.1, SB02_1.1, SB03_0.1, SB04_0.1, SB05_0.1, SB06_0.5, SB07_0.1, SB08_0.6, QC01	**30-Jul-2025**	**08-Aug-2025**	27-Aug-2025	✓	**08-Aug-2025**	27-Aug-2025	✓
EP004: Organic Matter							
Soil Glass Jar - Unpreserved (EP004)							
SB01_0.1	**30-Jul-2025**	**08-Aug-2025**	27-Aug-2025	✓	**11-Aug-2025**	27-Aug-2025	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
SB01_0.1, SB03_0.1, SB04_0.1, SB07_0.1, QC01	**30-Jul-2025**	**08-Aug-2025**	13-Aug-2025	✓	**08-Aug-2025**	17-Sep-2025	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
SB01_0.1, SB03_0.1, SB04_0.1, SB07_0.1, QC01	**30-Jul-2025**	**08-Aug-2025**	13-Aug-2025	✓	**08-Aug-2025**	17-Sep-2025	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
SB05_0.1, SB06_0.1	**30-Jul-2025**	**06-Aug-2025**	13-Aug-2025	✓	**08-Aug-2025**	13-Aug-2025	✓
Soil Glass Jar - Unpreserved (EP071)							
SB05_0.1, SB06_0.1	**30-Jul-2025**	**08-Aug-2025**	13-Aug-2025	✓	**08-Aug-2025**	17-Sep-2025	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) SB05_0.1, SB06_0.1	30-Jul-2025	06-Aug-2025	13-Aug-2025	✓	08-Aug-2025	13-Aug-2025	✓
Soil Glass Jar - Unpreserved (EP071) SB05_0.1, SB06_0.1	30-Jul-2025	08-Aug-2025	13-Aug-2025	✓	08-Aug-2025	17-Sep-2025	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) SB05_0.1, SB06_0.1	30-Jul-2025	06-Aug-2025	13-Aug-2025	✓	08-Aug-2025	13-Aug-2025	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Snap Lock Bag (EP202) SB07_0.1	30-Jul-2025	05-Aug-2025	13-Aug-2025	✓	11-Aug-2025	14-Sep-2025	✓
Soil Glass Jar - Unpreserved (EP202) SB03_0.1	30-Jul-2025	05-Aug-2025	13-Aug-2025	✓	11-Aug-2025	14-Sep-2025	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		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) QC03	30-Jul-2025	08-Aug-2025	26-Jan-2026	✓	08-Aug-2025	26-Jan-2026	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) QC03	30-Jul-2025	----	----	----	05-Aug-2025	27-Aug-2025	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) QC03	30-Jul-2025	01-Aug-2025	06-Aug-2025	✓	01-Aug-2025	10-Sep-2025	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) QC03	30-Jul-2025	01-Aug-2025	06-Aug-2025	✓	01-Aug-2025	10-Sep-2025	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) QC04	30-Jul-2025	05-Aug-2025	13-Aug-2025	✓	05-Aug-2025	13-Aug-2025	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) QC04	30-Jul-2025	05-Aug-2025	13-Aug-2025	✓	05-Aug-2025	13-Aug-2025	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC04	30-Jul-2025	05-Aug-2025	13-Aug-2025	✓	05-Aug-2025	13-Aug-2025	✓

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)							
Electrical Conductivity (1:5)	EA010	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5) on 40°C dried soil	EA010-AD	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5) on 40°C dried soil	EA002-AD	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Electrical Conductivity (1:5)	EA010	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5) on 40°C dried soil	EA010-AD	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5) on 40°C dried soil	EA002-AD	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Electrical Conductivity (1:5)	EA010	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5) on 40°C dried soil	EA010-AD	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sodium Adsorption Ratio (SAR)	EA006	2	20	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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	
Method Blanks (MB) - Continued							
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Organic Matter	EP004	0	1	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	3	33.33	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)							
Pesticides by GCMS	EP068	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Pesticides by GCMS	EP068	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Pesticides by GCMS	EP068	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Pesticides by GCMS	EP068	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	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
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
pH (1:5) on 40°C dried soil	EA002-AD	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on 40°C dried soil after a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3)
Sodium Adsorption Ratio (SAR)	* EA006	SOIL	In house: Referenced to USEPA 600/2 - 78 - 54. The concentration as meq of Ca, Mg and Na are determined on saturated soil by water leach. Results are used to calculate SAR.
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to Rayment and Lyons 3A1 and APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Electrical Conductivity (1:5) on 40°C dried soil	EA010-AD	SOIL	In house: Referenced to Rayment and Lyons 3A1 and APHA 2510. Conductivity is determined on soil samples dried at 40°C using a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Total Soluble Salts	EA014	SOIL	In house: The concentration of Total Soluble Salts in a soil is calculated from the Electrical conductivity of a water extract. This method is compliant with NEPM Schedule B(3).
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).
Emerson Aggregate Test	EA058	SOIL	In house: Referenced to AS1289.3.8.1. Testing is performed only on soils with suitable aggregates; sands and gravels are usually unsuitable for this test. The test classifies the behaviour of soil aggregates, when immersed, on their coherence in water.
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3
Soil Particle Density	EA152	SOIL	Soil Particle Density by AS 1289.3.5.1: Methods of testing soils for engineering purposes - Soil classification tests - Determination of the soil particle density of a soil - Standard method
Exchangeable Cations on Alkaline Soils	* ED006	SOIL	In house: Referenced to Soil Survey Test Method C5. Soluble salts are removed from the sample prior to analysis. Cations are exchanged from the sample by contact with alcoholic ammonium chloride at pH 8.5. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil.
Exchangeable Cations	ED007	SOIL	In house: Referenced to Rayment & Lyons Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM Schedule B(3).
Exchangeable Cations with pre-treatment	ED008	SOIL	In house: Referenced to Rayment & Lyons Method 15A2. Soluble salts are removed from the sample prior to analysis. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. 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)

Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2) (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 SnCl2 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)
Organic Matter	EP004	SOIL	In house: Referenced to AS1289.4.1.1. Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	SOIL	In house: LCMS (Electrospray in negative mode). Residues of acid herbicides are extracted from soil samples under the alkaline condition. An aliquot of the alkaline aqueous phase is taken and acidified before a SPE cleanup. After eluting off from the SPE cartridge, residues of acid herbicides are dissolved in HPLC mobile phase prior to instrument analysis.
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 APHA 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 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).
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Lyons 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
SAR Prep	EA006PR	SOIL	In house: Referenced to USEPA 600/2. Soil is bought to saturation with distilled water by capiliary action.

Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method (Alkaline Soils)	* ED006PR	SOIL	In house: Referenced to Rayment and Lyons method 15C1.
Exchangeable Cations Preparation Method	ED007PR	SOIL	In house: Referenced to Rayment & Lyons method 15A1. A 1M NH4Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
1:5 solid / water leach following drying at 40°C	EN34-AD	SOIL	10 g of 40°C dried soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
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).
Organic Matter	EP004-PR	SOIL	In house: Referenced to AS1289.4.1.1. Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM Schedule B(3).
Extraction for Phenoxy Acid Herbicides in Soils.	EP202-PR	SOIL	In-House: Alkaline extract followed by SPE clean up of acidified portion of the sample extract.
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
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)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

Appendix J: EIL Calculations

Inputs
Select contaminant from list below
Cr_III
Below needed to calculate fresh and aged ACLs
Enter % clay (values from 0 to 100%)
50
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
2.19
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cr III soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	120	230
Urban residential and open public spaces	300	690
Commercial and industrial	480	1100

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
16.1
Enter soil pH (calcium chloride method) (values from 1 to 14)
6
Enter organic carbon content (%OC) (values from 0 to 50%)
1.8
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
2.19
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cu soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	60	80
Urban residential and open public spaces	110	210
Commercial and industrial	160	300

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
16.1
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
2.19
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Ni soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	20	45
Urban residential and open public spaces	85	240
Commercial and industrial	160	400

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
16.1
Enter soil pH (calcium chloride method) (values from 1 to 14)
6
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
2.19
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Zn soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	55	170
Urban residential and open public spaces	170	480
Commercial and industrial	260	700

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