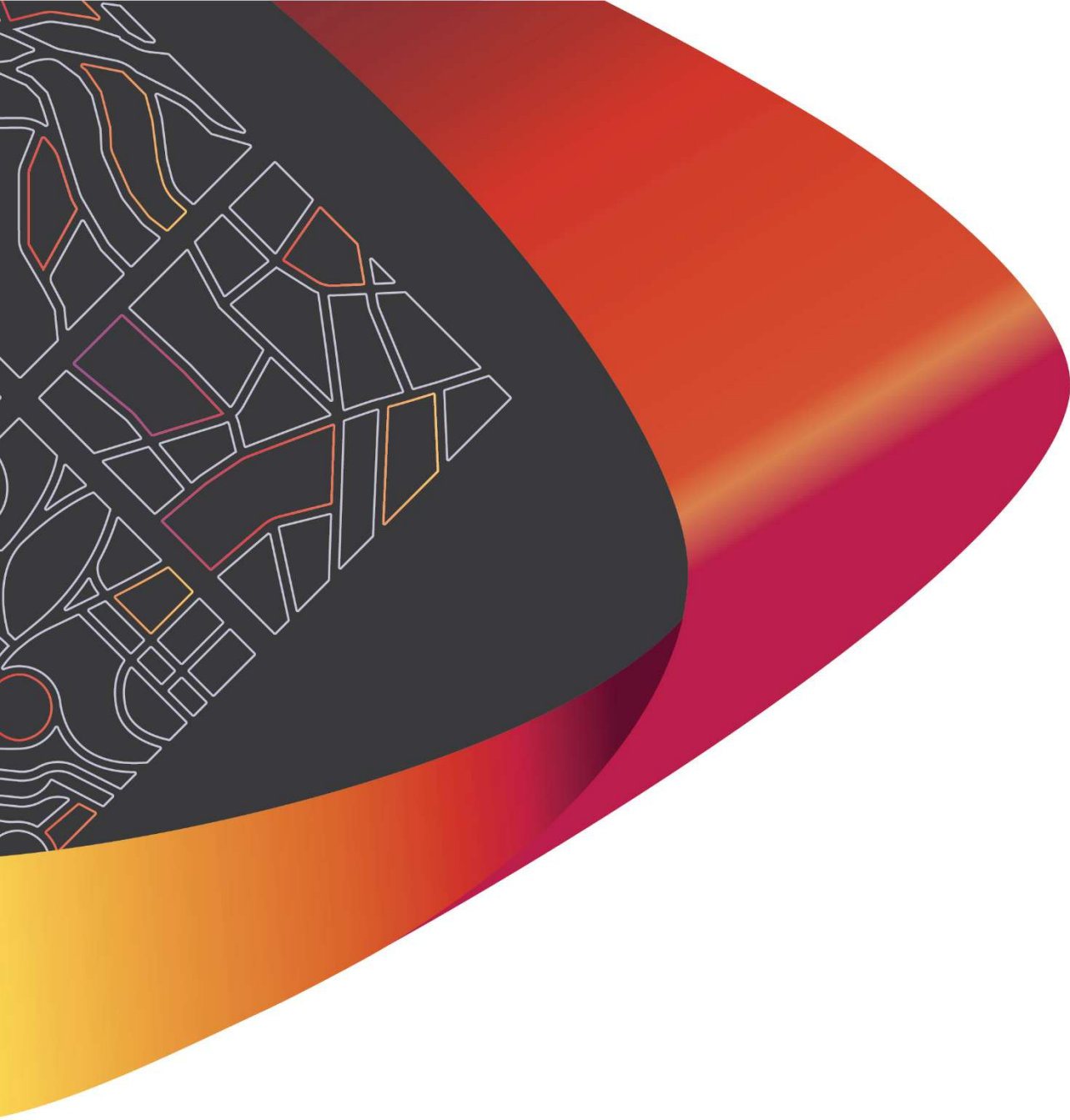




Deniliquin East BESS
Preliminary Site Investigation
BESS Arctic Pty Ltd C/- Gransolar
Development Australia

P000824_PSI_001D

Rev: D

7 November 2025



Premise

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1. INTRODUCTION

1.1 Background

Premise was engaged by BESS Arctic Pty Ltd C/- Gransolar Development Australia (Gransolar) to conduct a Preliminary Site Investigation (PSI) for the area designated as the 'development site' (the site), as part of a due-diligence investigation prior to development of the Deniliquin East Battery Energy Storage System (BESS). The proposed BESS will have a nominal capacity of 100MW/200MWh and an installed cell capacity of up to 120MW/240MWh, on land adjacent to the Deniliquin substation.

The development site includes a portion in the south-east of Lot 11 Deposited Plan (DP) 856212, as well as an access arrangement and electrical connection transecting the Riverina Highway road reserve and portions of Lots 1 and 2 DP 536901, and Lot 2 DP 598648. The development site is located on land zoned part RU1 – Primary Production and part SP2 – Classified Road under the Deniliquin Local Environmental Plan 2013 (LEP).

The development site is located approximately 7 km south-east of the Deniliquin township, as shown in **Figure 1**. The development site is the subject of this PSI based on the potential increase of risk resulting from the change in land use, and future construction and operation of the proposed BESS on the site.

Development of the site would necessitate determination of development applications by the consent authority. Clause 4.6 of the *Resilience and Hazards State Environmental Planning Policy* (R&H SEPP) requires that a consent authority must consider contamination and remediation in determining a development application and must not grant consent unless:

- (a) it has considered whether the land is contaminated, and*
- (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
- (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

With regard to due-diligence investigations as a prelude to development approval, this PSI is recommended by the *Managing Land Contamination – Planning Guidelines* (Department of Urban Affairs and Planning, 1998) under the *NSW State Environmental Planning Policy (Resilience and Hazards)* 2021 (R&H SEPP).

This PSI is based on a desktop review of available information, a site walkover reconnaissance, analysis of targeted soil samples and a search of historical records. The primary focus of this PSI is limited to areas within the development site where a change in land use is proposed. Accordingly the 'investigation area' is identified as corresponding to the 'lease area' where construction and operation of the BESS would change the predominant existing land use from agriculture to electrical infrastructure works.

1.2 Objectives

This PSI has been prepared in general accordance with the NSW EPA publication *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Land* (EPA, April 2020). The overall objective is to identify the potential for land contamination at the site. Where land is not considered to be suitable for

proposed land uses, recommendations for management and/or remediation to minimise risk to the environment, future occupants and contractors would be included.

The specific objective of the PSI was to assess the extent of potential soil contamination at the site to have resulted from historic operations at or in proximity to the site. Findings of this investigation are intended to assist the developer of the site in understanding the nature and extent of potential contamination risks at the site which may preclude or prohibit approval(s) by the consent authority in determination of development applications associated with a change of land use. The data collected is also intended to identify potential contaminant sources and to evaluate remediation or mitigation options.

This PSI provides data relating to the type, extent and level of contamination at the site, by assessing:

- > known site history and operations;
- > contaminant distribution in surface soil;
- > the adequacy and completeness of all information available to be used in making decisions on remediation to further characterise potential impacts to areas of the site;
- > the scope of any further investigation required; and
- > any interim management measures required to limit exposure.

Figure 1 – Site Locality



1.3 Investigation Area

This report considers two distinct areas:

- > The Development Site (as defined in **Section 1.1**), and
- > The Investigation Area: The 3.5-hectare portion within the development site comprising the south-east portion of Lot 11 DP 856212, which will be subject to a change in land use.

The assessment of potential contamination is focused on the investigation area, as shown in **Figure 2**. This area does not have direct frontage to the Riverina Highway, with the southern boundary of this title existing as the Moulamein irrigation channel.

The potential for chemicals of potential concern (COPC) to be present in the soil of the site requires assessment. Elevated COPC may be representative of a contamination risk to human health and environmental receptors.

Figure 2 – Site Investigation Area



1.4 Scope of Work

The scope of work for this assessment consisted of the following components:

- > Review of the following third-party documents:
 - Existing environmental reports for the site or portions of the site;
 - Published topographical, geological and soil maps of the area;
 - Details of groundwater bores located within 500 m of the site and registered on the groundwater bore database, maintained by the NSW Office of Water (<https://realtimedata.watersnsw.com.au/water.stm>);
 - The public register managed by the NSW EPA for information on scheduled activities and penalty notices issued under the Protection of the Environment Operations Act;
 - The database managed by the NSW Environment Protection Authority (EPA) for information on notices issued under the Contaminated Land Management Act 1997;

- Aerial photographs – selected historical aerial photographs of the site available for review to provide evidence of the history of development of the site and indications of potential sources of contamination;
 - Historic title information and charting maps.
- > Site inspection – A site inspection by Premise personnel of the site and surrounding areas was undertaken to provide further information, via visual inspection, of potential sources and areas of significant environmental liability. The site inspection focused on the following:
- Areas where operational processes may have occurred, including waste management, water management, site structures, surfaces and infrastructure.
 - Areas of potential landfilling.
 - Potential impacts of neighbouring land uses.
 - Sensitivity of the receiving environment.
- > Collection of samples from surface soil at the site in accordance with the NSW EPA publications *Contaminated Land Guidelines, Sampling Design Part 1 – Application* (2022), and *Contaminated Land Guidelines, Sampling Design Part 2 – Interpretation* (2022).
- > Laboratory analysis for chemicals of potential concern (COPC) to establish potential for residual chemical impacts.
- > Preparation of this factual report detailing the assessment findings in accordance with the NSW EPA publication *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Land* (EPA, 2020).

An overview of the neighbouring area was also conducted to identify the presence and proximity of sensitive receptors which could be significantly impacted upon by the site, and off-site operations which could have a significant impact on land contamination at the site.



2. SITE DESCRIPTION

2.1 Site Definition

Table 1 – Summary of Property Description Details

Feature	Development Site	Investigation Area
Site Address ¹	21541 Riverina Highway, and 21356 Riverina Highway, Deniliquin (Portion)	21356 Riverina Highway, Deniliquin (Portion)
Title Identification Details ¹	Lot 11 in DP 856212 (Portion) Lots 1 and 2 in DP 536901 (Portion) Lot 2 in DP 598648 (Portion)	Lot 11 in DP 856212 (Portion)
Current Ownership	Various	Tanderra Enterprises Pty Ltd
Current Site Use and Zoning ²	Land Use: Low Intensity Agriculture (Pasture) / Road Reserve Zoning: Primary Production (RU1 zoning)	Land Use: Low Intensity Agriculture (Pasture) Zoning: Primary Production (RU1 zoning)
Future Site Use	Battery Energy Storage System	
Previous Environmental Reports	Nil	
Site Area ¹	10.7 hectares (approximately)	3.5 hectares (approximately)
Sources: 1: Spatial Collaboration Portal Website developed by NSW Government, Spatial Services. https://portal.spatial.nsw.gov.au/explorer/index.html (accessed August 2025). 2: Edward River Local Environmental Plan 2013, under the Environmental Planning and Assessment Act 1979.		

2.2 Site Setting

2.2.1 REGIONAL SETTING

The site includes a portion in the south-east of Lot 11 Deposited Plan (DP) 856212, and transects the Riverina Highway road reserve and portions of Lots 1 and 2 DP 536901, and Lot 2 DP 598648. The site is located approximately 7 km south-east of the Deniliquin township. The site is in a rural/agricultural area.

The Moulamein Channel and the larger Mulwala Canal transect the site.

The following sensitive receptors are located within the vicinity of the site:

- > Watercourses, including contributory drainage features, discharging to irrigation channel infrastructure. Such drainage pathways are considered to be sensitive receptors insofar as their connectivity with off-site waterways.
- > Current users of the site, and future workers / occupants of the site.
- > Residents of dwellings in proximity to the site.
- > Groundwater present in aquifer(s) underlying the site.

2.2.2 LOCAL SETTING

No structures exist within the investigation area of the site. The site itself consists of pasture groundcover, and a perimeter fence at the eastern and southern boundaries.

Land uses adjacent to the site were obtained from the site inspection conducted by Premise personnel in July 2025. The local area surrounding the site is displayed in **Figure 1**. Identified adjacent land uses are summarised in **Table 2**:

Table 2 – Adjacent Properties Descriptions

Feature	Details
North	Pasture – Residual portion of Lot 11 DP 856212
South	Pasture / Cropping – Residual portion of Lot 2 DP 536901
East	Pasture, Homestead beyond
West	Pasture

2.3 Topography and Surface Water

Topographical site information was obtained from the:

- > Blighty 7926-N, 1:50,000 Scale, Topographic Map, 2022 Edition (NSW Department of Customer Service, Spatial Services); and
- > Site visit in July 2025

The site of the investigation area consists of a generally level landscape with undiscernible slope. The elevation at the site is approximately 93.5 m Australian Height Datum (mAHD), with the highest point located in the south-west of the site.

Surface water features of the Moulamein Channel and the Mulwala Canal transect the site.

With the exception of the aforementioned irrigation channels, no defined drainage pathways exist at the site, and the majority of overland surface flow is presumed to be absorbed into the site. Based on the local topography, the catchment of surface water flow at the site is considered unlikely to include off-site areas.

2.4 Regional and Site Geology

During the site inspection the soil of the investigation area was identified to be 'Red Chromosols and Brown Vertosols' across the site, consisting of sandy loam topsoil overlying a predominantly clay subsoil.

The Deniliquin SI/55-13 Geological 1 : 250,000 Series Sheet (First Edition, Geological Survey of NSW, 1991) indicates the underlying geology comprises Holocene era clay, silty clay, coarse to fine sand and gravel of the Shepparton Formation.

The NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) Acid Sulfate Soils Risk project has mapped the occurrence of acid sulfate soils within areas of NSW. The area encompassing the investigation area has not been assessed for the potential presence of acid sulfate within the landform of the surrounding region.

The NSW Heads of Asbestos Coordination Authorities (HACA) *Mapping of Naturally Occurring Asbestos in NSW* (2015) has assessed the geology surrounding the site (i.e., alluvial sediments) as having low potential for naturally occurring asbestos (NOA) to be found within 10 m of the ground surface.

2.5 Regional Hydrogeology

A search for registered groundwater users located proximal to the investigation area was undertaken using the WaterNSW on-line database (<https://realtimedata.waternsw.com.au/water.stm>), in August 2025. The results indicated that there are no groundwater bores registered at within the investigation area and 2 bores are registered within 500 m of the Lot 11 DP 856212 title boundary. Locations of the closest bores to the site are provided in **Figure 3**, and hydrogeology particulars are detailed in **Table 3**.

Figure 3 – Registered Groundwater Bores Proximal to Site



Table 3 – Groundwater Bores within 500 m of Investigation Area

Licence Reference and Registered Use	Distance from Investigation Area	Depth	Uppermost Water Bearing Zone
GW505001 (Stock, Domestic)	410 m (to east)	20.0 m	No data
GW503030 (use not identified)	370 m (to south-east)	9.1 m	No data

Registration details of the above groundwater bore are included in **Appendix A**.

Premise has considered the surrounding land uses (refer **Section 3**) and notes the potential for unregistered bores for irrigation, stock and/or domestic purposes proximal to the site.

3. SITE HISTORICAL REVIEW

A review of the site history was undertaken to assess historical use of the site, and in particular to identify activities with the potential to contaminate soil and/or groundwater at the site.

3.1 NSW EPA Records

3.1.1 SCHEDULED ACTIVITIES AND/OR ENVIRONMENTAL NOTICES

A search of the NSW EPA on-line register (<https://www.epa.nsw.gov.au/prpoeoapp/>) was undertaken in August 2025 for environment protection licences (EPLs) and/or penalty notices issued under the Protection of the Environment Operations Act (POEO) 1997. The search indicated that no EPLs have been issued for titles comprising properties located within 500 metres of the site, with the exception of the *Murray Irrigation Area of Operations* within the Edward River Shire.

No clean-up notices relating to the site or surrounding properties have been issued by the NSW EPA.

3.1.2 CONTAMINATED SITES REGISTER

A search of the NSW EPA on-line register (<https://app.epa.nsw.gov.au/prclmapp/searchregister.aspx>) and 'List of Notified Sites' was undertaken in August 2025 for contaminated land notices issued or regulated under the Contaminated Land Management (CLM) Act 1997. The search indicated that the NSW EPA holds no contaminated land notices relating to the site or properties within 500 m of the site. No properties were recorded as having been notified to the NSW EPA as potentially contaminated.

3.2 Previous Title Information

Historic title information was sought for the Lot 11 DP 856212 title comprising the investigation area. Previous title ownership particulars are attached in **Appendix B** and summarised in **Table 4**:

Table 4 – Title History, Lot 11 DP 856212

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
10.11.1924 (1924 to 1936)	William Ulric Walker (Grazier)	Volume 47 Folios 223 & 224
19.03.1936 (1936 to 1936)	Ernest Thomas Matthews (Auctioneer) Ruby Elsie May Walker (Widow) (Transmission Application not investigated)	Volume 47 Folios 223 & 224 Volume 4749 Folio 180
26.05.1936 (1936 to 1940)	Geoffrey Hetherington (Farmer)	Volume 4749 Folio 180
16.09.1940 (1940 to 1946)	Thomas Edwin Hetherington (Grazier)	Volume 4749 Folio 180 Volume 5563 Folio 77
03.04.1946 (1946 to 1948)	Florence Marion Windeyer (Married Woman)	Volume 5563 Folio 77

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
03.09.1948 (1948 to 1949)	Samuel Park (Farmer)	Volume 5563 Folio 77
21.01.1949 (1949 to 1949)	Albert John Barrass (Shearing Contractor)	Volume 5563 Folio 77
08.07.1949 (1949 to 1952)	Terry Fitzwilliam Forehan (Farmer and Grazier)	Volume 5563 Folio 77
25.11.1952 (1952 to 1974)	Thomas Henry Rourke (Butcher) Patrick Desmond Rourke (Butcher)	Volume 5563 Folio 77 Volume 6606 Folios 233 & 234
30.05.1974 (1974 to 1976)	Rita Louise Chalmers (Married Woman)	Volume 6606 Folios 233 & 234 Volume 12488 Folio 108
05.05.1976 (1976 to 1976)	Pasadena Nominees Pty Limited	Volume 12488 Folio 108
03.11.1976 (1976 to 1984)	Alan Hector Holden (Farmer)	Volume 12488 Folio 108
19.10.1984 (1984 to 1996)	Alan David Walsh (No occupation noted)	Volume 12488 Folio 108 A/431491 11/856212
20.02.1996 (1996 to 2016)	David Stuart Rosenbaum (Irrigation Officer)	11/856212
15.08.2016 (2016 to date)	Tanderra Enterprises Pty Ltd	11/856212

An easement to drain water is present in Lot 11 DP 856212 is located to the north of the investigation area, and is not considered to be relevant to this PSI.

3.3 Historic Aerial Photography

An historical aerial photography survey was undertaken for the site, with a total of seven (7) photographs identified and reviewed. The historical aerial photographs that were reviewed spanned a period of approximately 54 years, with the most recent from 2022, to the earliest in 1968. Aerial photographs, as attached in **Appendix C**, were reviewed to track changes in use of the site and surrounding properties over time. Key observations made during the review of aerial photos are summarised in **Table 5** as follows:

Table 5 – Summary of Aerial Photo Information

Date	Site Activity	Surrounding Land Use
1968	The site consists agricultural land (cropping or pasture). Contour banks or drainage lines appear to be present. No trees are present.	The Moulamein Channel and Mulwala Canal are present to the south and south-east of the site. The Riverina Highway exists to the south of the site
1976	The area encompassing the site is generally unchanged.	The Deniliquin Substation is now present to the south-east of the site. Land uses of the remainder of the surrounding area do not appear to have been significantly altered.
1985	Contour banks or drainage lines appear to have been realigned. The area encompassing the remainder of the site is generally unchanged.	Land uses of the surrounding area do not appear to have been significantly altered.
1996	Site appears to have been subject to strip-grazing. The area encompassing the remainder of the site is generally unchanged.	Land uses of the surrounding area do not appear to have been significantly altered.
2005	The area encompassing the site is generally unchanged.	A farm dam is now present to the north-west of the site. Land uses of the remainder of the surrounding area do not appear to have been significantly altered.
2014	The area encompassing the site is generally unchanged.	Land uses of the surrounding area do not appear to have been significantly altered.
2022	The area encompassing the site is generally unchanged.	Land uses of the surrounding area do not appear to have been significantly altered.

3.4 Summary of Site History Information

The site of the investigation area appears to not contain any structures and has not been actively utilised beyond low-intensity agricultural uses, primarily cropping and/or pasture.

No evidence of landfilling was apparent from the historic aerial photography, and no evidence of significant 'cut' and/or 'fill' occurring exists.

The following chemicals are potential contaminants at areas of the site based on known historic uses:

- > Agricultural chemical application
 - Organochlorine pesticides (OCPs) and Organophosphorus pesticides (OPPs)
 - Phenoxyacid Herbicides
 - Heavy metals

4. AREA RECONNAISSANCE

Observations from the inspection of the investigation area are summarised below.

4.1 Waste Management / Landfilling

Evidence of wastes having been disposed at the investigation area by burial / landfilling was not identified. The ground surface was observed to be generally even, and no areas of potential subsidence were apparent.

Stressed vegetation, which may be indicative of soil and/or groundwater contamination, was generally not apparent at any locations during the inspection.

No stockpiled material or material of unknown origin was observed at the investigation area.

Based on observations there is little potential for 'cut-and-fill' civil works of significance to have occurred at the investigation area.

4.2 Stormwater

The majority of site stormwater would be infiltrated, however sheet flow may be generated and discharge to the Moulamein Channel to the south of the investigation area. No ponded water was evident during the inspection in July 2025.

4.3 Chemical and Fuel Storage / Spills

No evidence of storage fuels or oils chemicals was observed at the investigation area.

No findings of the historic aerial photography review (refer to **Section 3.3**) indicate the presence (historic or otherwise) of bulk chemical storage infrastructure at the investigation area.

No sheep dips or cattle dips were observed at the investigation area or anecdotally known to have been constructed.

4.4 Asbestos

Based on the findings of this assessment, the overall potential for forms of asbestos to have resulted in contamination at the investigation area is considered to be low.



5. ENVIRONMENTAL INVESTIGATION

5.1 Potential Contamination Issues

5.1.1 POTENTIAL SOURCES

Based on the historic and predominantly agricultural uses of the investigation area, activities that are considered to have the potential to adversely impact the soil and groundwater environment are limited to those associated with application of agricultural chemicals.

5.1.2 CHEMICALS OF POTENTIAL CONCERN (COPC)

COPC associated with previous uses of the investigation area and considered to have the potential to adversely impact the underlying soil and groundwater environments include:

- > Heavy metals
 - Arsenic (As)
 - Cadmium (Cd)
 - Chromium (Cr)
 - Copper (Cu)
 - Lead (Pb)
 - Mercury (Hg)
 - Nickel (Ni)
 - Zinc (Zn)
- > Organochlorine pesticides (OCPs)
- > Organophosphorus pesticides (OPPs)
- > Phenoxyacid Herbicides

5.2 Data Quality Objectives

The Data Quality Objectives (DQOs) process is used to define the type, quantity and quality of data needed to support decisions relating to the environmental condition of a site (i.e., for the purposes of this section, the 'investigation area' as defined in **Section 1.1**).

A summary of the site-specific DQO process to be adopted in this investigation is provided in the following sections, in the context of the seven-step iterative planning approach provided in the 'Amended ASC NEPM' (NEPC, 2013), and the United States Environment Protection Agency (US EPA) documents *Guidance on Systematic Planning Using the Data Quality Objectives Process* (2006) and *Data Quality Objectives Process for Hazardous Waste Site Investigations* (2000).

5.2.1 STEP 1 – STATE THE PROBLEM

The primary objective is to assess for the presence and extent of contamination in soil at the site in the context of the proposed future land use scenarios i.e., construction and operation of the proposed BESS on the site.

The main problems are:

- > At present there is limited data and existing data gaps on the contamination status of the site.

- > Contamination remaining at the site may present an unacceptable risk to human health and/or ecological receptors.

The investigation area is illustrated in **Figure 2**.

5.2.2 STEP 2 – IDENTIFY THE DECISION

The principal study question that arises from Step 1 is:

What scope of work is required to assess the potential risks posed by contamination and obtain sufficient data to enable conclusive statements to be made on land use suitability; or allow the development of strategies to remediate and/or manage the contamination to an end land use that is suitable for the proposed redevelopment?

Project decisions include:

- > Does the environmental media at the site contain concentrations of chemicals of potential concern (COPC) above the investigation criteria for the current and proposed land use?
- > Do current concentrations of contaminants pose a human health or ecological risk to the receptors of concern?
- > What are the pathways of exposure for human and ecological receptors?
- > Is there sufficient data to develop the scope for further investigation or remedial strategies?
- > Is there sufficient data to establish whether portions of the site are currently suitable for the intended land uses?
- > Can the site be made suitable for the proposed future land use?

5.2.3 STEP 3 – IDENTIFY THE INPUTS TO THE DECISION

The primary inputs required include:

- > Relevant background data provided and any relevant data obtained from previous investigations.
- > New data collected and observations made during field works, which may include information on potential contaminant migration pathways (e.g., stormwater drainage and groundwater flow directions).
- > Results of chemical analyses of samples for the identified COPC.
- > Assessment of the suitability of new and old data for the purposes of environmental assessment through application of data quality indicators (DQIs), namely precision, accuracy, representativeness, completeness and comparability (PARCC) parameters.
- > Assessment of the data in the context of the adopted investigation criteria.

5.2.4 STEP 4 – DEFINE THE STUDY BOUNDARIES

The spatial boundaries are limited to:

- > Lateral – as defined by the areas illustrated in **Figure 2**, i.e., the development area.
- > Vertical – from the existing ground level to the depth necessary to collect soil data to delineate the vertical extent of impact.

Temporal boundaries are not considered to be necessary in the context of this investigation.

5.2.5 STEP 5 – DEVELOP A DECISION RULE

The decision rules will be:

- > If the concentrations of contaminants in the new data exceed investigation criteria; then assess the need to further investigate the extent of impacts on-site and off-site.
- > If it is assessed that contamination at the site poses an unacceptable risk to human health and/or the environment; then make recommendations for potential management options necessary to remove/reduce the risk.
- > If aesthetic issues (i.e., visible waste material) identified during field observations pose potential concerns for the future development, then consider similar recommendations for potential management options necessary to remove/reduce the concern.

Decision criteria for QA/QC measures are defined below. A decision on the acceptance of the analytical data will be made on the basis of the Data Quality Indicators (DQI) in the context of the 'PARCC' parameters as follows.

- > Precision: A quantitative measure of the variability (or reproducibility) of data.
- > Accuracy: A quantitative measure of the closeness of reported data to the "true" value.
- > Representativeness: The confidence (expressed qualitatively) that data are representative of each media present on-site.
- > Completeness: A measure of the amount of useable data from a data collection activity.
- > Comparability: The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.

The quantitative and qualitative measures/criteria employed to enable application of these parameters are described as follows:

Precision

Suitable criteria and/or performance indicators for assessment of precision include:

- > Performance of laboratory duplicate sample sets through calculation of relative percentage differences (RPD).

The RPDs will be assessed as acceptable if less than 30%. RPDs that exceed this range may be considered where:

- > Results are less than 10 times the limit of reporting (LOR) – RPDs values of 100% or less would be acceptable in consideration of all other DQI data.
- > Results are less than 20 times the LOR and the RPD value is less than 50%.
- > Elevated organic compounds are detected, where field observations indicated organic matter or volatile compounds to be present, and the RPD is less than 50%.
- > Heterogeneous materials and variations in soil types and compositions are encountered.

Accuracy (Bias)

The closeness of the reported data to the 'true' value is assessed through review of performance of:

- > Method blanks, which are analysed for the analytes targeted in the primary samples.
- > Matrix spike and matrix spike duplicate sample sets (to be specifically requested to be performed by the primary laboratory, for each sample batch submitted).

- > Laboratory control samples.
- > Surrogates.

Representativeness

To ensure the data produced by the laboratory is representative of conditions encountered in the field, the following steps are taken by the laboratory and subsequently reviewed:

- > Blank samples will be run in parallel with field samples to confirm there are no unacceptable instances of laboratory cross-contamination.
- > Review of relative percentage differences (RPD) values for field or laboratory duplicates to provide an indication that the samples are generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities.

The appropriateness of collection methodologies, handling, storage and preservation techniques will be assessed to ensure/confirm there was minimal opportunity for sample interference or degradation (e.g., volatile loss during transport due to incorrect preservation / transport methods).

A review of the methodology used to collect all soil samples will also ensure the representativeness of the data.

Completeness

In validating the degree of completeness of the analytical data sets acquired during the program the following is considered:

- > Whether standard operating procedures (SOPs) for sampling protocols have been adhered to.
- > Copies of all COC documentation are reviewed and presented.
- > Have sufficient soil samples have been collected and analysed.

It can therefore be considered whether the proportion of 'useable data' generated in the data collection activities is sufficient for the purposes of the land use assessment.

Comparability

Given that the reported data set can comprise several data sets from separate sampling events, issues of comparability between data sets are reduced through adherence to Standard Operating Procedures (SOPs) and regulator endorsed or made guidelines and standards on each data gathering activity.

In addition, the data will be collected by experienced field staff and NATA accredited laboratory methodologies will be engaged in all laboratory operations.

5.2.6 STEP 6 – SPECIFY LIMITS ON DECISION ERRORS

Specific limits for this project are in accordance with the appropriate guidance made or endorsed by the NSW EPA, appropriate indicators of data quality, and standard procedures for field sampling and handling.

This step also examines the certainty of conclusive statements based on the available site data collected to quantify the allowable errors in decision making. This should include the following points to quantify tolerable limits:

A decision can be made based on whether the calculated 95% Upper Confidence Limit of the arithmetic mean concentration of a chemical in soil, within a specified soil data set, will satisfy the given site criteria. Therefore, a limit on the decision error will be 5% that a conclusive statement regarding a specified soil data set may be incorrect.

For the 95% Upper Confidence Limit of the arithmetic mean concentration of a chemical in soil to be considered, the standard deviation of the results should be less than 50% of the relevant investigation or screening level, and no single value should exceed 250% of the relevant investigation or screening level.

5.2.7 STEP 7 – OPTIMISE THE DESIGN

The investigation program presented for the area identified in **Figure 2** is aimed at obtaining the necessary data to allow the identified decisions in Step 2 to be made.

The sampling design is presented in detail in **Section 5.4** of this document. A comprehensive Sampling and Analysis Quality Plan (SAQP), identified in *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Land* (EPA, April 2020) as a requirement of a Stage 1 PSI where sampling is undertaken, has not been prepared as a component of this investigation. Premise notes this as a deviation from the guidelines, however considers a SAQP to not be warranted based on the relatively low-risk historic uses of the site as identified in the desktop portion of this investigation.

5.3 Soil Investigation Criteria

The primary guidance document for environmental site assessment in Australia, which is approved by the EPA under Section 105 of the Contaminated Land Management Act 1997, is the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM). *Schedule B2 (Site Characterisation)* and *Schedule B3 (Laboratory Analysis of Contaminated Soil)* are of particular relevance to this PSI.

The EPA has also made the following guidelines that are relevant to this PSI:

- > Contaminated Land Guidelines, Sampling Design Part 1 – Application (EPA, 2022)
- > Contaminated Land Guidelines, Sampling Design Part 2 – Interpretation (EPA, 2022)
- > Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Land (EPA, 2020)
- > Guidelines for the NSW Site Auditor Scheme, 3rd edition (EPA 2017)
- > Guidelines for the assessment and management of groundwater contamination (EPA 2007)
- > Guidelines on the duty to report contamination under the Contaminated Land Management Act 1997 (EPA 2015)

and has approved the:

- > Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018)

The work described in this PSI was carried out in general accordance with the guidelines listed above.

5.3.1 HUMAN HEALTH ENVIRONMENTAL GUIDELINE VALUES

The National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure, 1999* (amended 2013) provides a framework for the use of investigation and screening levels. The framework (i.e. the 'Amended ASC NEPM') is applicable for assessing human health risk via all relevant pathways of exposure and covers a broad range of metals and organic substances.

Health Investigation Levels

The Amended ASC NEPM (NEPC, 2013) Health Investigation Levels (HILs) have been developed to be protective of human health. Based on the current and proposed land use and zoning for the investigation area, concentrations of contaminants in soil at the investigation area are to be conservatively compared against the residential (with access to soil) 'HIL A' land use HILs.

5.3.2 ECOLOGICAL ASSESSMENT GUIDELINES VALUES

Ecological Investigation Levels and Ecological Screening Levels

Ecological investigations levels (EILs) from the Amended ASC NEPM (NEPC, 2013) are applicable for assessing risk to natural terrestrial ecosystems, including plants and animals. These EILs depend on specific soil physicochemical properties, age of impacts and land use scenarios, and generally apply to the top two metres of soil. Based on the intended future land uses of the investigation area.

Based on the current land uses and zoning for the site, the 'Urban Residential' EILs are to be adopted as investigation criteria at the investigation area.

EILs will not be adopted as validation criteria for soil under slabs, roads and buildings. In other areas where soils are accessible, EILs will be considered.

5.4 Sampling and Analysis Strategy

5.4.1 METHODOLOGY

The following table outlines the scope and method of the assessment.

Table 6 – Soil Assessment Methodology Summary

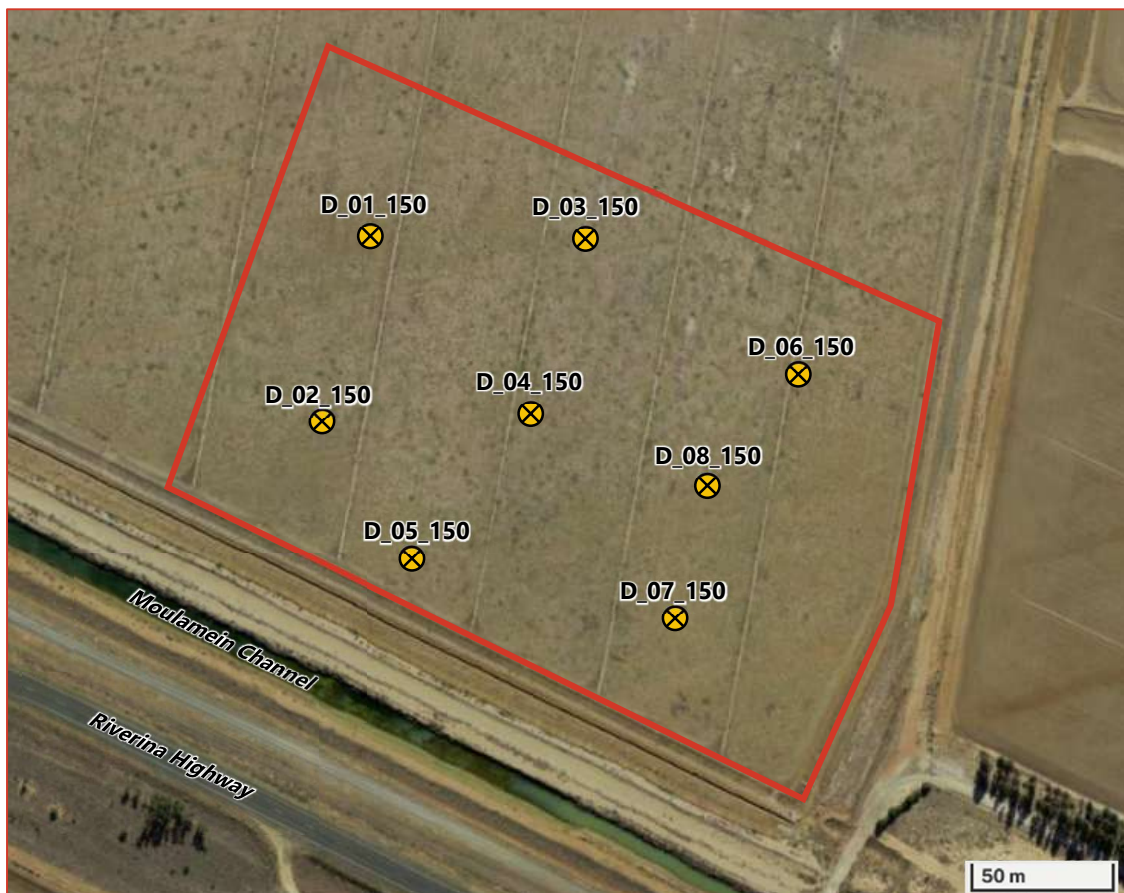
Activity / Item	Details
Date of Field Activities	31 July 2025
Samples Collected	Sample locations are shown in Figure 4. Eight (8) soil samples were collected in a combined systematic / judgemental sampling pattern from across the investigation area.
Sample Depth	Shallow soil samples were collected at each of eight (8) locations, at a depth corresponding to soil most likely to have been impacted by off-site COPC sources (i.e., in the upper 15 cm and within the root zone). Sample locations were extended to a depth of 0.4 m below ground level (mBGL) to visually assess for the presence of fill or buried waste.
Methodology	Soil samples were collected directly by hand auger or trowel. All samples were placed in clean, laboratory-supplied acid washed solvent rinsed glass jars with seal-insert lids.
Sample Preservation	Samples were stored on ice in a chilled container whilst on-site and in transit to the laboratory.
Decontamination	Re-usable equipment was decontaminated before each use using decontamination solution, then rinsed in potable water. Dedicated single-use items were not decontaminated, but were disposed following use. Nitrile gloves used for sampling were changed between each sample.

5.4.2 SAMPLE ANALYSIS

Eight (8) samples of soil where potential for COPC impacts to be present were submitted to ALS Laboratories (ALS) for analysis. ALS is NATA (National Association of Testing Authorities) certified for the analyses performed.

Samples were analysed COPC described in **Section 5.1.2**, as appropriate.

Figure 4 – Investigation Sampling Locations



5.5 Sampling Observations and Analytical Results

Soil descriptions were logged as a brown sandy loam topsoil overlying a predominantly clay subsoil across the investigation area. No evidence of buried waste or stained material was apparent during collection of soil samples to a depth of 0.4 mBGL.

Soil analytical results are presented in the laboratory certificates in **Appendix D** and summarised in **Table 1** (attached). Results were compared to human health and ecological criteria adopted from the Amended ASC NEPM (NEPC, 2013), as detailed in **Section 5.3**.

Findings of the soil investigation indicated no exceedances of residential HIL criteria or urban residential EIL criteria:

Premise notes the conservative nature of the adopted EILs, which corresponds to the 'added contaminant limit' (ACL), which is not an absolute concentration, but rather "*the added concentration (above the ambient background concentration) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required*" (NEPC, 2013).

5.6 Quality of Analytical Data

5.6.1 OUTLINE

Analytical data validation is the process of assessing whether data are in compliance with method requirements and project specifications. The primary objectives of this process are to ensure that data of known quality are reported, and to identify if the data can be used to fulfil the overall project objectives.

The adopted data validation process is based on guidance documents published by the United States Environmental Protection Agency (USEPA) and the National Environment Protection Council. These include the following guidelines:

- > USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review (EPA 540-R-2017-001, dated January 2017);
- > USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (EPA 540-R-2017-002, dated January 2017); and
- > NEPC (2013), National Environment Protection (Assessment of Site Contamination) Measure, 1999, Guideline on Investigation Levels for Soil and Groundwater.

The process involves the checking of analytical procedure compliance and the assessment of the accuracy and precision of analytical data from a range of quality control measurements, generated from both field sampling and analytical programs.

5.6.2 QA/QC ASSESSMENT

Specific elements that have been checked and assessed for this project include:

- > Preservation and storage of samples upon collection and during transport to the laboratory;
- > Holding times;
- > Use of appropriate analytical procedures;
- > Required limit of reporting (LOR);
- > Frequency of conducting quality control measurements;
- > Laboratory blanks;
- > Laboratory duplicates;
- > Matrix spike / matrix spike duplicates (MS/MSDs);
- > Surrogates (or System Monitoring Compounds); and
- > The occurrence of apparently unusual or anomalous results, e.g., laboratory results that appear to be inconsistent with field observations or measurements.

Laboratory chain of custody (COC) documentation and analytical QA/QC reports are included in **Appendix E**.

The coverage provided by the systematic / judgemental sampling pattern from across the investigation area is considered to have sufficiently delineated lateral impacts.

On the basis of the analytical data validation procedure employed, the overall quality of the analytical data produced is considered to be of an acceptable standard for interpretive use.



6. DISCUSSION

6.1 Conceptual Site Model

A conceptual site model (CSM) for the investigation area has been prepared to identify contamination sources and transport mechanisms, and exposure pathways to receptors. An 'incomplete' linkage between the source and the receptor (indicated by a ) indicates the risk to that receptor is considered to be negligible. Based on the current investigation findings, linkages in the CSM between sources and receptors are illustrated below in **Figure 5**.

Figure 5 – Conceptual Site Model

CSM Aspect	Comments			
Primary Source	Agricultural Land Uses / Chemical Storage			
				
Potential Contaminant	Pesticides / Herbicides / Hydrocarbons			
				
Release Mechanism	Spills / Application			
	 1			
Media Impacted	On-Site Soil			
				
Pathways	Sediment Migration		Direct Contact	
				
Potential Receptors	Aquatic Ecology	Recreational Users	Site Personnel Future Occupants	Terrestrial Ecology
				
Exposure Route	Flora / Fauna Uptake	Ingestion / Direct Contact	Inhalation / Ingestion	Flora / Fauna Uptake
				
Source / Pathway / Receptor Linkage	Incomplete linkage – Low risk to receptors			
Pathway Legend:				
 Complete		 Potentially Complete		 Incomplete

6.1.1 INCOMPLETE PATHWAYS

Incomplete source / pathway / receptor linkages identified in the CSM are explained below:



1 – The risk to future occupants and ecological receptors at the investigation area, resulting from agricultural-use COPC (specifically pesticides, herbicides and hydrocarbons) is low, based on recorded concentrations in soil being lower than the adopted human health and ecological investigation criteria

6.1.2 CHARACTERISATION OF RESIDUAL RISKS

No potentially complete linkages (i.e., connection pathways from contaminant sources to receptors) were identified to be present in the CSM:

6.2 Summary

No significant routes of exposure by human-health receptors (current or future) to potential contamination sources have been identified as being present, primarily due to the site inspection and environmental investigation not identifying COPC at concentrations exceeding the adopted HIL criteria for a residential land-use setting.

Within the investigation area, no potential risk to ecology posed by herbicides, pesticides or heavy metals was identified. The disturbed nature of the site and the absence of stressed vegetation indicates the potential for impact from associated risks is considered to be low.

With regard to the *Managing Land Contamination Guidelines* under the 2021 *R&H SEPP*, any proposed development works are not considered to possess potential for increasing the risk of exposure to inherent contamination.

7. CONCLUSIONS

7.1 Summary

Premise make the following conclusions regarding the potential for land contamination at the site, based on a desktop review of available information, a review of historical records, site walkover reconnaissance, and analytical results of collected samples.

The portion of the site comprising the investigation area (**Figure 2**) appears to have predominantly been historically utilised for passive rural / agricultural purposes. No structures are recorded as having been historically present on the investigation area.

Based on analytical results of samples collected from the soil investigation, and consideration of routes of exposure by receptors (current or future) to potential contamination sources (refer to CSM, **Figure 5**), minimal potential exists for risks to human health within or downgradient of the investigation area.

No potentially complete linkages in the CSM (source – pathway – receptor) have been identified. The following items were considered to be of significance in the context of this investigation:

- > The risk to future occupants and ecological receptors at the investigation area, resulting from agricultural-use COPC (specifically pesticides, herbicides and heavy metals) is low, based on recorded concentrations in soil being lower than the adopted human health and ecological investigation criteria.
- > For the remainder of the development site outside the investigation area, no change in land use is proposed. Accordingly, the risk profile from contamination for human and ecological receptors is considered to remain unchanged.
- > No defined surface water pathways identified to be present at the investigation area, and COPC concentrations in soil were generally low. A risk of mobilisation to downgradient aquatic ecology or surface water bodies used for recreation is not considered to be present.

At the area subject to this preliminary site investigation (PSI), there is little evidence of historic land uses from the site or surrounding area to have caused impacts within the investigation area that may present a risk to human health. The overall risk to the broader ecological framework in the area is considered to be minimal.

During construction activities at the site, work health and safety (WHS) controls are to be implemented to mitigate risks if unexpected findings of potentially impacted material is identified. Such controls may include:

- > Any land disturbance incorporating material containing demolition waste should include assessment for the presence of contaminants (including asbestos), and managed accordingly.
- > Avoiding skin contact with soil that is discoloured, malodourous, containing foreign matter and/or generally inconsistent with virgin soil.
- > No entry permitted into confined spaces and excavations; and
- > Controls are to be in place to contain soil and soil impacts (e.g. dust, sediment, etc) to within the area of the site.

Based on the findings of the site investigation, Premise considers that no further assessment of contamination impacts resulting from historic land practices at the site is warranted, with the suitability of the site for electrical infrastructure land uses having been established.

DATA TABLES



TABLE 1:Deniliquin East BESS - Site Assessment
Soil Sampling Analytical Results
JULY 2025



	Sample ID	Sample Date				D_01_150	D_02_150	D_03_150	D_04_150	D_05_150	D_06_150	D_07_150	D_08_150
		Criteria				31/07/2025	31/07/2025	31/07/2025	31/07/2025	31/07/2025	31/07/2025	31/07/2025	31/07/2025
Group	Analyte	LOR	Units	Ecol. / Health		PS	PS	PS	PS	PS	PS	PS	PS
Physical Parameters	Moisture Content	1	%	-	-	11.7	13	11.2	10	15.3	12.8	15.6	19.3
OC Pesticides	Aldrin	0.05	mg/kg	-	3	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Aldrin + Dieldrin (sum)	0.05	mg/kg	-	6	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Alpha BHC	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Alpha Chlordane	0.05	mg/kg	-	25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Alpha Endosulfan	0.05	mg/kg	-	90	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Beta BHC	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Beta Endosulfan	0.05	mg/kg	-	90	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	p,p'-DDD	0.05	mg/kg	-	40	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	p,p'-DDE	0.05	mg/kg	-	40	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	p,p'-DDT	0.2	mg/kg	-	40	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	DDD + DDE + DDT (sum)	0.05	mg/kg	-	240	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Delta BHC	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Dieldrin	0.05	mg/kg	-	3	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Endosulfan (sum)	0.05	mg/kg	-	270	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Endosulfan sulphate	0.05	mg/kg	-	90	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Endrin	0.05	mg/kg	-	10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Endrin ketone	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Heptachlor	0.05	mg/kg	-	6	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Hexachlorobenzene (HCB)	0.05	mg/kg	-	10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Lindane (gamma BHC)	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Methoxychlor	0.2	mg/kg	-	300	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	Total Chlordane (sum)	0.05	mg/kg	-	50	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	trans-Chlordane	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
OP Pesticides	Azinphos-methyl	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Bromophos Ethyl	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Carbophenothion	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Chlorfenvinphos	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Chlorpyrifos (Chlorpyrifos Ethyl)	0.05	mg/kg	-	160	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Chlorpyrifos-methyl	0.05	mg/kg	-	160	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Demeton-S-methyl	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Diazinon (Dimpylate)	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Dichlorvos	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Dimethoate	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Ethion	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Fenamiphos	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Fenthion	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Malathion	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Monocrotophos	0.2	mg/kg	-	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	Parathion-ethyl (Parathion)	0.2	mg/kg	-	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	Parathion-methyl	0.2	mg/kg	-	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	Pirimphos-ethyl	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Prothiofos	0.05	mg/kg	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

TABLE 1:Deniliquin East BESS - Site Assessment
Soil Sampling Analytical Results
JULY 2025



	Sample ID					D_01_150	D_02_150	D_03_150	D_04_150	D_05_150	D_06_150	D_07_150	D_08_150
	Sample Date					31/07/2025	31/07/2025	31/07/2025	31/07/2025	31/07/2025	31/07/2025	31/07/2025	31/07/2025
Group	Analyte	LOR	Units	Criteria Ecol. / Health		PS	PS	PS	PS	PS	PS	PS	PS
Phenoxyacetic Acid Herbicides	2.4.5-T	0.02	mg/kg	-	600	-	< 0.04	-	-	-	< 0.04	-	-
	2.4.5-TP (Silvex)	0.02	mg/kg	-	-	-	< 0.04	-	-	-	< 0.04	-	-
	2.4-D	0.02	mg/kg	-	900	-	< 0.04	-	-	-	< 0.04	-	-
	2.4-DB	0.02	mg/kg	-	-	-	< 0.04	-	-	-	< 0.04	-	-
	2.4-DP	0.02	mg/kg	-	-	-	< 0.04	-	-	-	< 0.04	-	-
	4-Chlorophenoxy acetic acid	0.02	mg/kg	-	-	-	< 0.04	-	-	-	< 0.04	-	-
	Clopyralid	0.02	mg/kg	-	-	-	< 0.04	-	-	-	< 0.04	-	-
	Dicamba	0.02	mg/kg	-	-	-	< 0.04	-	-	-	< 0.04	-	-
	Fluroxypyr	0.02	mg/kg	-	-	-	< 0.04	-	-	-	< 0.04	-	-
	MCPA	0.02	mg/kg	-	600	-	< 0.04	-	-	-	< 0.04	-	-
	MCPB	0.02	mg/kg	-	600	-	< 0.04	-	-	-	< 0.04	-	-
	Mecoprop	0.02	mg/kg	-	600	-	< 0.04	-	-	-	< 0.04	-	-
	Picloram	0.02	mg/kg	-	4500	-	< 0.04	-	-	-	< 0.04	-	-
Trace Metals	Triclopyr	0.02	mg/kg	-	-	-	< 0.04	-	-	-	< 0.04	-	-
	Arsenic (As)	5	mg/kg	100	100	< 5	< 5	6	< 5	6	6	7	6
	Cadmium (Cd)	1	mg/kg	-	20	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	Chromium (Cr)	2	mg/kg	250	-	19	20	17	19	26	26	29	30
	Copper (Cu)	5	mg/kg	130	6000	12	12	9	12	17	17	21	18
	Lead (Pb)	5	mg/kg	1100	300	14	15	17	14	18	18	18	18
	Mercury (Hg)	0.1	mg/kg	-	40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel (Ni)	2	mg/kg	170	400	7	7	5	8	11	10	13	17
	Zinc (Zn)	5	mg/kg	270	7400	19	20	13	21	26	26	32	36

mg/kg milligrams per kilogram

LOR limit of reporting

PS primary sample

FD field duplicate

TEQ toxicity equivalent quotient

D / ND detect / non-detect

Criteria Criteria adopted from *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPC 2013):

 'HIL' A (Residential with garden/accessible soil)

 'EIL' A (Urban residential and public open space)

	within criteria
	HIL / HSL criteria exceeded
	EIL / ESL criteria exceeded
	HIL/HSL & EIL/ESL criteria exceeded



APPENDIX A

REGISTERED GROUNDWATER BORE RECORDS



WaterNSW

Work Summary

GW503030

Licence:

Licence Status:

Authorised Purpose(s):
Intended Purpose(s):

Work Type: Bore

Work Status: Supply Obtained

Construct.Method:

Owner Type: Murray Irrigation Li

Commenced Date:

Completion Date: 12/08/2000

Final Depth: 9.10 m

Drilled Depth: 9.10 m

Contractor Name: (None)

Driller:

Assistant Driller:

Property:

GWMA:

GW Zone:

Standing Water Level (m):

Salinity Description:

Yield (L/s):

Site Details

Site Chosen By:

County

Parish

Cadastre

Form A:
Licensed:

UNKNOWN

Region: 50 - Murray

CMA Map:

River Basin: - Unknown

Grid Zone:

Scale:

Area/District:

Elevation: 0.00 m (A.H.D.)

Northing: 6063385.000

Latitude: 35°33'25.8"S

Elevation Source: Unknown

Easting: 321683.000

Longitude: 145°01'57.3"E

GS Map: -

MGA Zone: 55

Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Fibreglass	0.00	7.10				
1	1	Opening	Slots	7.10	9.10			0	

Remarks

02/11/2005: Form A Remarks:

BQbore 5151

15/12/2009: Updated details as per existing data.

*** End of GW503030 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW505001

Licence: 50WA505336

Licence Status: CURRENT

Authorised Purpose(s): DOMESTIC,STOCK
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore

Work Status:

Construct.Method:

Owner Type: Private

Commenced Date:

Completion Date: 01/01/1950

Final Depth: 20.00 m

Drilled Depth:

Contractor Name:

Driller:

Assistant Driller:

Property: ROBBINS NEST Finley Rd DENILQUIN
2710 NSW

GWMA: 016

GW Zone:

Standing Water Level (m):

Salinity Description: Fair
Yield (L/s):

Site Details

Site Chosen By:

County
Form A: TOWNSEND
Licensed: TOWNSEND

Parish
NORTH DENIL
NORTHDEN

Cadastre
112//1008891
Whole Lot
112//1008891

Region: 50 - Murray

River Basin: 409 - MURRAY RIVERINA
Area/District:

CMA Map: 7926-N

Grid Zone:

Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown

Northing: 6063747.000
Easting: 321915.000

Latitude: 35°33'14.2"S
Longitude: 145°02'06.8"E

GS Map: -

MGA Zone: 55

Coordinate Source: Map Interpre

Remarks

01/01/1950: Form A Remarks:
Entered by Clare Hillier
Guestimation of final depth at 20m as no depth given

*** End of GW505001 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.



APPENDIX B

TITLE RECORDS





ABN: 36 092 724 251

Summary of Owners Report

Address: - 21356 Riverina Highway, Deniliquin NSW 2710

Description: - Lot 11 D.P. 856212

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
10.11.1924 (1924 to 1936)	William Ulric Walker (Grazier)	Volume 47 Folios 223 & 224 (Grants)
19.03.1936 (1936 to 1936)	Ernest Thomas Matthews (Auctioneer) Ruby Elsie May Walker (Widow) (Transmission Application not investigated)	Volume 47 Folios 223 & 224 (Grants) Now Volume 4749 Folio 180
26.05.1936 (1936 to 1940)	Geoffrey Hetherington (Farmer)	Volume 4749 Folio 180
16.09.1940 (1940 to 1946)	Thomas Edwin Hetherington (Grazier)	Volume 4749 Folio 180 Now Volume 5563 Folio 77
03.04.1946 (1946 to 1948)	Florence Marion Windeyer (Married Woman)	Volume 5563 Folio 77
03.09.1948 (1948 to 1949)	Samuel Park (Farmer)	Volume 5563 Folio 77
21.01.1949 (1949 to 1949)	Albert John Barrass (Shearing Contractor)	Volume 5563 Folio 77
08.07.1949 (1949 to 1952)	Terry Fitzwilliam Forehan (Farmer and Grazier)	Volume 5563 Folio 77
25.11.1952 (1952 to 1974)	Thomas Henry Rourke (Butcher) Patrick Desmond Rourke (Butcher)	Volume 5563 Folio 77 Now Volume 6606 Folios 233 & 234
30.05.1974 (1974 to 1976)	Rita Louise Chalmers (Married Woman)	Volume 6606 Folios 233 & 234 Now Volume 12488 Folio 108
05.05.1976 (1976 to 1976)	Pasadena Nominees Pty Limited	Volume 12488 Folio 108
03.11.1976 (1976 to 1984)	Alan Hector Holden (Farmer)	Volume 12488 Folio 108
19.10.1984 (1984 to 1996)	Alan David Walsh (No occupation noted)	Volume 12488 Folio 108 Then A/431491 Now 11/856212
20.02.1996 (1996 to 2016)	David Stuart Rosenbaum (Irrigation Officer)	11/856212
15.08.2016 (2016 to date)	# Tanderra Enterprises Pty Ltd	11/856212

Denotes Current Registered Proprietor

Continued over.



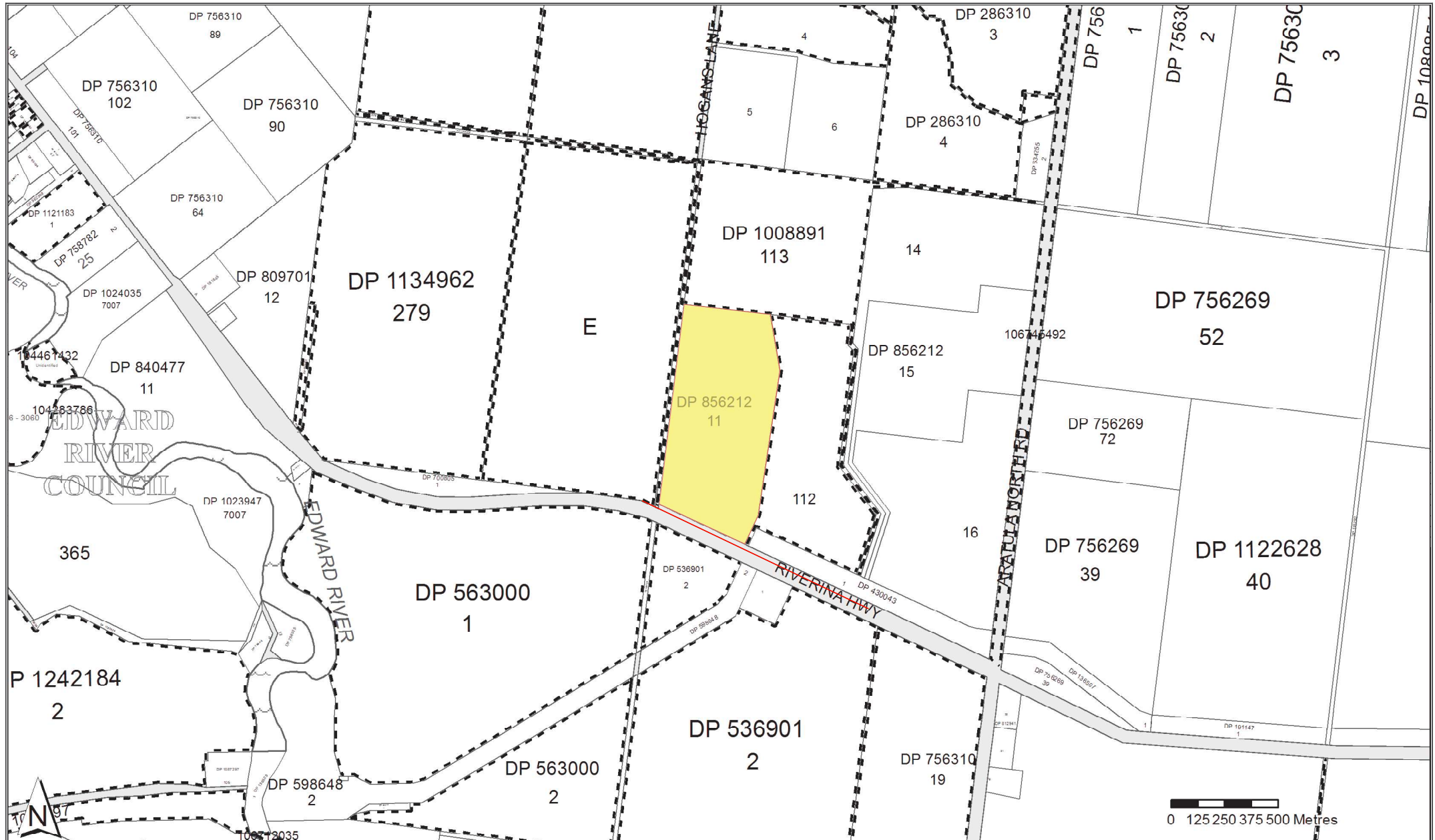
ABN: 36 092 724 251

Leases: - NIL

Easements: -

- 05.02.1996 (D.P. 856212) Easement to Drain Water 5 & 10 metres wide.
 - Varied in plan with Dealing No. 3654343 (New location).

Yours Sincerely
Mark Groll
18 July 2025

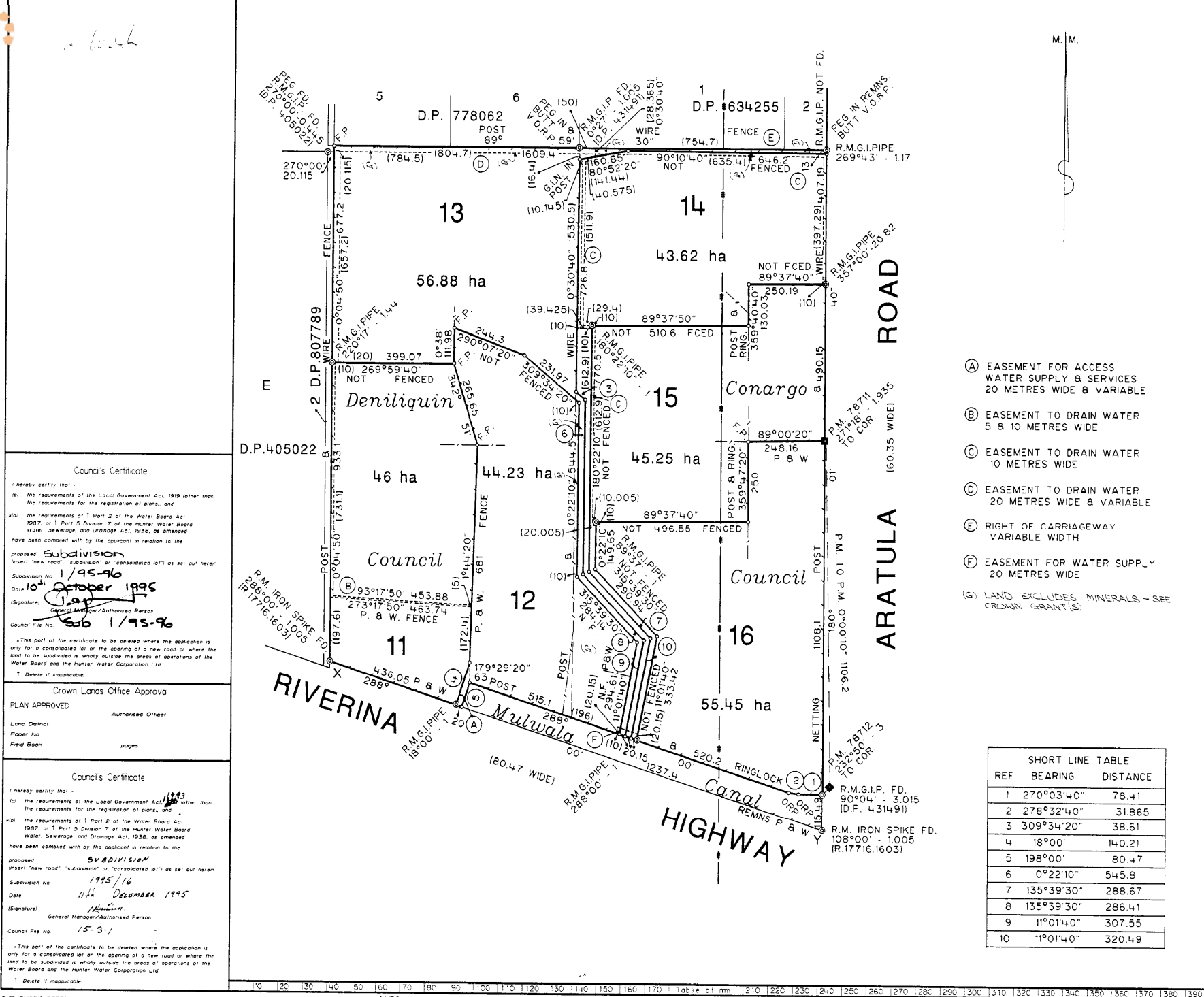




SIGNATURES, SEALS AND STATEMENTS of intention to dedicate public roads or to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

Plan Drawing only to appear in this space

* OFFICE USE ONLY



- (A) EASEMENT FOR ACCESS WATER SUPPLY & SERVICES 20 METRES WIDE & VARIABLE
- (B) EASEMENT TO DRAIN WATER 5 & 10 METRES WIDE
- (C) EASEMENT TO DRAIN WATER 10 METRES WIDE
- (D) EASEMENT TO DRAIN WATER 20 METRES WIDE & VARIABLE
- (E) RIGHT OF CARRIAGEWAY VARIABLE WIDTH
- (F) EASEMENT FOR WATER SUPPLY 20 METRES WIDE
- (G) LAND EXCLUDES MINERALS - SEE CROWN GRANT(S)

SHORT LINE TABLE		
REF	BEARING	DISTANCE
1	270°03'40"	78.41
2	278°32'40"	31.865
3	309°34'20"	38.61
4	18°00'	140.21
5	198°00'	80.47
6	0°22'10"	545.8
7	135°39'30"	288.67
8	135°39'30"	286.41
9	11°01'40"	307.55
10	11°01'40"	320.49

DP 856212	
Registered:	5-2-1996
CA No:	1995/16 OF 11-12-1995
The System:	TORRENS
Purpose:	SUBDIVISION
Ref. Map:	PARISH*
Last Plan:	D.P. 431491
PLAN OF SUBDIVISION OF LOTS A AND B IN D.P. 431491	
Lengths are in metres. Reduction Ratio 1:8000	
LGA:	DENILIKUIN CONARGO
Locality:	DENILIKUIN
Perish:	NORTH DENILIKUIN
County:	TOWNSEND (No. 65)
This is Sheet 1 of my plan in sheets (Delete if inapplicable)	
BRIAN LESLIE MITSCH of DENILIKUIN, N.S.W. 2710 a surveyor registered under the Surveyors Act 1929, hereby certify that the survey represented in this plan is accurate, has been made in accordance with the Survey Practice Regulation 1990 and was completed on 12TH SEPTEMBER, 1995	
Signature <i>B. L. Mitsch</i> Surveyor registered under Surveyors Act 1929 Datum Line of Azimuth X - Y	
Plans used in preparation of survey/compilation: D.P. 431491 R.17716.1603 D.P. 405022 D.P. 634265 D.P. 778062 D.P. 807789	
PANEL FOR USE ONLY for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.	
PURSUANT TO SECTION 88B OF THE CONVEYANCING ACT 1919, IT IS INTENDED TO CREATE :	
1 EASEMENT FOR ACCESS, WATER SUPPLY & SERVICES 20 METRES WIDE & VARIABLE	
2 EASEMENT TO DRAIN WATER 5 & 10 METRES WIDE	
3 EASEMENT TO DRAIN WATER 10 METRES WIDE	
4 EASEMENT TO DRAIN WATER 20 METRES WIDE & VARIABLE	
5 RIGHT OF CARRIAGEWAY VARIABLE WIDTH	
6 EASEMENT FOR WATER SUPPLY 20 METRES WIDE	

Form: 97-11R

Licence: 026CN/0536/96

REQUEST

New South Wales
Real Property Act 1900

54343 R



Instructions for filling out this form are
available from the Land Titles Office

- (A) **STAMP DUTY**
If applicable.

Office of State Revenue use only

- (B) **TITLE**
Show no more
than 20 titles.

SERVIENT LAND:

FOLIO IDENTIFIER 11/856212

DOMINANT LAND:

FOLIO IDENTIFIER: 12/856212

- (C) **REGISTERED
DEALING**
If applicable.

- (D) **LODGED BY**

LTO Box	Name, Address or DX and Telephone	Dealing Code
28A	GALLOWAY & CO Phone: (02) 9233 1011 Fax: (02) 9232 6491 DX 340, SYDNEY L.T.O. Delivery 28A REFERENCE (15 character maximum): MILLS, ROSE	OVER SEE ANNEXURE 'B'

- (E) **APPLICANT**

DAVID STUART ROSENBAUM

- (F) **REQUEST**

Request the Registrar General to vary the site of easement to drain water 5 & 10 metres wide as
created by DP 856212.
The easement is to be varied by relocating same as shown in the plan annexure "A" attached hereto.

(11/856212)
CT prod

Page 1 of 3
36B - Request

CHECKED BY (LTO use)

CT (11/856212) prod 374
NOT PRODUCED FOR THIS DEALING

CM13
B 73

(G)

STANDARD EXECUTION

Certified correct for the purposes of the Real Property Act 1900. DATE Do Not Date

Signed in my presence by the Applicant who is personally known to me.

[Signature]

Signature of Witness

HEANNE DUNN

Name of Witness (BLOCK LETTERS)

236 Fitey Rd. Denigun

Address of Witness

[Signature]

Signature of Applicant

EXECUTION INCLUDING STATUTORY DECLARATION

I make this solemn declaration conscientiously believing the same to be true and by virtue of the Oaths Act 1900, and I certify this Application correct for the purposes of the Real Property Act 1900. Made and subscribed at
in the State of on 19 in the presence of

.....
Signature of Witness

.....
Name of Witness (BLOCK LETTERS)

.....
Address and Qualification of Witness

.....
Signature of Applicant

3

654343

x 

Signature of Witness

LEANNE DUNN

Name of Witness (BLOCK LETTERS)

236 Friday Rd. Durlingham

Address and Qualification of Witness

x 

Signature of David Stuart Rosenbaum
Servient Tenement

x 

Signature of Witness

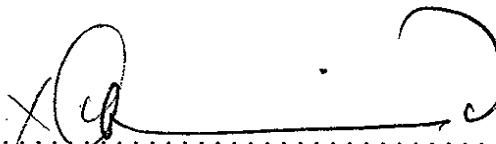
TRACEY WATTON

Name of Witness (BLOCK LETTERS)

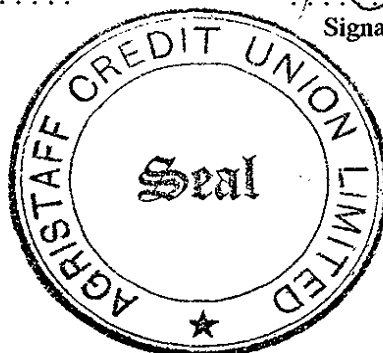
Loans officer

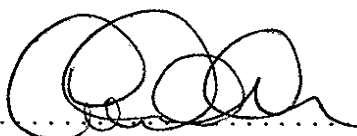
24 Mackillop Cres St Helens Park

Address and Qualification of Witness

x 

Signature of Agristaff Credit Union Limited
Servient Tenement Mortgagee





Signature of Witness

LEANNE DUNN

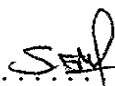
Name of Witness (BLOCK LETTERS)

236 Friday Rd. Durlingham

Address and Qualification of Witness



Signature of John Desmond Robbins &
Kerry Maria Robbins
Dominant Tenement



Signature of Witness

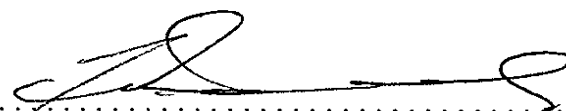
Scott Easton Murfitt

Name of Witness (BLOCK LETTERS)

25 Pierson Street

Lockleys SA 5032

Address and Qualification of Witness

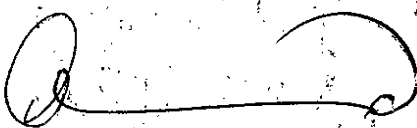


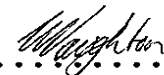
Signature of Westpac Banking Corporation
Dominant Tenement Mortgagee
per Francis Patrick Brady


.....
Signature of Witness
.....
Emma NAUGHTON
.....
Name of Witness (BLOCK)
.....
433 Wood Street, Deniliquin
.....
Address and Qualification of Witness

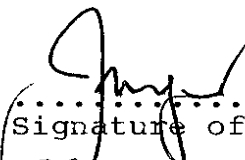

.....
Signature of David Stuart
Rosenbaum - Servient Tenement


.....
Signature of Witness
.....
TRACEY WATTON
.....
Name of Witness (BLOCK)
.....
24 MACKILLOP CRES ST HELENS PARK
.....
Address and Qualification of Witness


.....
Signature of Agristaff Credit
Union Limited
Servient Tenement Mortgagee


.....
Signature of Witness
.....
Emma NAUGHTON
.....
Name of Witness (BLOCK)
.....
433 Wood Street, Deniliquin
.....
Address and Qualification of Witness


.....
Signature of John Desmond Robbins
and Kerry Maria Robbins
Dominant Tenement


.....
Signature of Witness
.....
JEFFREY MEGAW
.....
Name of Witness (BLOCK)
.....
25 PIERSON ST LOCKEYS 5032
.....
Address and Qualification of Witness
BANK OFFICER.

SIGNED for and on behalf of
Westpac Banking Corporation
A.R.B.N. 007 457 141
Under Power of Attorney No. 831, Book No 4059.

by Perry Edwards

and Richard John Hoffman

as duly constituted Attorneys who are personally
known to me.

.....
Signature of Westpac Banking
Corporation - Dominant
Tenement Mortgagee

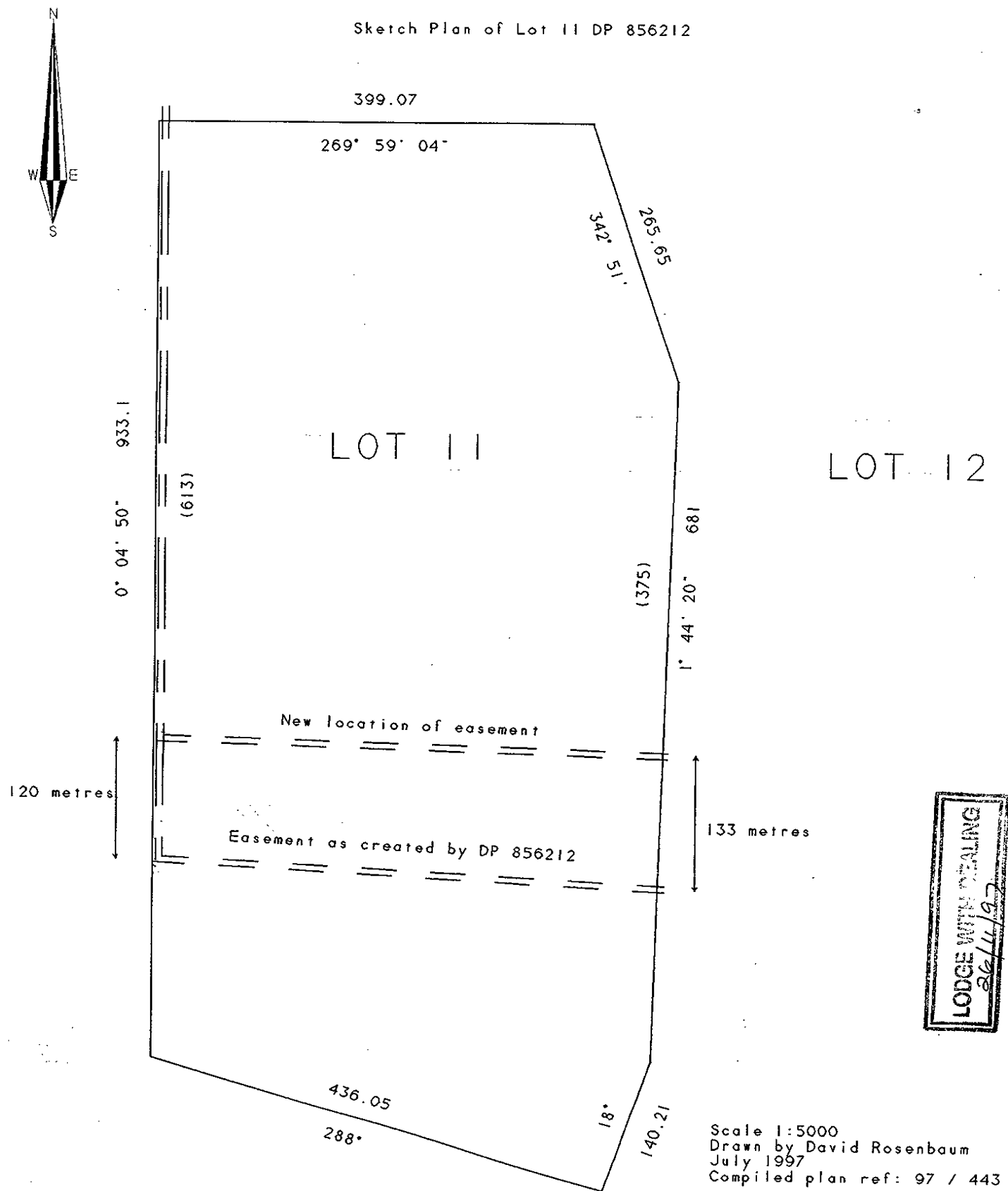
OFFICE USE
(a) & (t)
Westpac
re: 12/856212
Reg 68 5.12.97

FILM WITH 3654343

(PLEASE FILM BACK OF PLAN)
AS WELL (EXECUTION)

ANNEXURE A

Sketch Plan of Lot 11 DP 856212



see reverse for execution

Use this slide only for **Second Schedule** directions

DO NOT USE BOTH SIDES OF THE FORM

FOLIO IDENTIFIER	DIRECTION	NOTFN TYPE	DEALING NUMBER	DETAILS
11/856212	UNDR ON	EB UA	DP 856212	VARIATION OF SITE OF EASEMENT AS SHOWN IN PLAN WITH 3654343
12/856212	UNDR ON	EB UA	DP 856212	VARIATION OF SITE OF EASEMENT AS SHOWN IN PLAN WITH 3654343
11/856212	CT			36 B
12/856212	CT			37Y



CERTIFICATE OF TITLE



12488108

NEW SOUTH WALES

PROPERTY ACT, 1900

Register

Vol. **12488** Fol. **108**

Crown Grants Vol. 47 Fols.222,223&
224

Vol.4486 Fol. 149

Prior Titles Vol.6606 Fol.233 & 234



Edition issued 16-7-1974.

CANCELLED

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

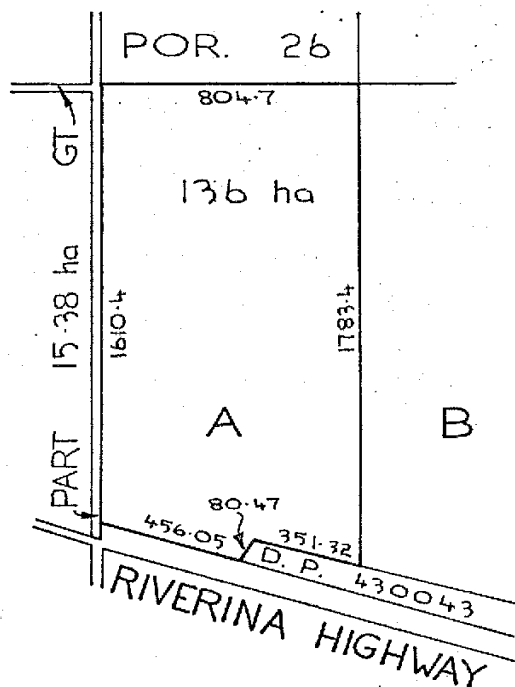
Janet
SEE AUTO FOLIO

Registrar General.



PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



S
N 852635 *e.g.*

REDUCTION RATIO 1:20 000

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot A in Deposited Plan 431491 in the Municipality of Deniliquin Parish of North Deniliquin and County of Townsend. EXCEPTING THEREOUT the minerals reserved by the Crown Grant Volume 4486 Folio 149.

FIRST SCHEDULE

~~RITA-LOUISE CHALMERS of North-Deniliquin, Married Woman.~~

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grants above referred to.

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

Signature of
Registrar General

1703013T
P953300
K-1
V387179T

[illegible]

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



SEARCH DATE

18/7/2025 12:42PM

FOLIO: A/431491

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 12488 FOL 108

Recorded -----	Number -----	Type of Instrument -----	C.T. Issue -----
29/7/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
8/9/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
4/12/1992	E950648	MORTGAGE	EDITION 1
15/1/1996	O833068	REQUEST	
15/1/1996	O833069	DISCHARGE OF MORTGAGE	EDITION 2
5/2/1996	DP856212	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***



SEARCH DATE

18/7/2025 12:42PM

FOLIO: 11/856212

First Title(s): VOL 47 FOL 223 VOL 47 FOL 224

Prior Title(s): A/431491

Recorded	Number	Type of Instrument	C.T. Issue
6/2/1996	DP856212	DEPOSITED PLAN	FOLIO CREATED EDITION 1
20/2/1996	0928197	TRANSFER	
20/2/1996	0928198	MORTGAGE	EDITION 2
29/1/1998	3654343	REQUEST	EDITION 3
26/8/2008	AE171087	DISCHARGE OF MORTGAGE	EDITION 4
15/8/2016	AK680840	TRANSFER	EDITION 5

*** END OF SEARCH ***

97-01T

TRANSFER

Real Property Act, 1900



0
928197 A



Office of State Revenue use only

00.24

201095 0926 04 201032045/03

N.S.W. STAMP DUTY

(A) **LAND TRANSFERRED**

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

Lot 11 in the Vendor's plan of sub-division
now being the whole of the land contained
in Folio Identifier **11 / 856212**

(B) **LODGED BY**

L.T.O. Box

36B.

Name, Address or DX and Telephone

CREDIT UNION MORTGAGE SERVICE
DX10271
SYDNEY STOCK EXCHANGE
BOX No. 36B

REFERENCE (max. 15 characters): **48450**

(C) **TRANSFEROR**

Alan David Walsh

(D) acknowledges receipt of the consideration of\$105,000.00.....

and as regards the land specified above transfers to the Transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. 2. 3.

(F) **TRANSFEE**

T
TS
(s713 LGA)
TW
(Sheriff)

David Stuart ROSENBAUM
4/135 Wirraway Drive, Deniliquin, Irrigation Officer

TENANCY:

(G)

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. **DATED** 19-2-96

Signed in my presence by the Transferor who is personally known to me.

Signature of Witness

E. J. G. W. C. G.

Name of Witness (BLOCK LETTERS)

Lawrence DENILIQUIN

Address of Witness

Signature of Transferor

Signed in my presence by the Transferee who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Signature of Transferee

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

CHECKED BY (office use only)



FOLIO: 11/856212

SEARCH DATE	TIME	EDITION NO	DATE
-----	----	-----	----
18/7/2025	12:42 PM	5	15/8/2016

LAND

LOT 11 IN DEPOSITED PLAN 856212
AT DENILIQUIN
LOCAL GOVERNMENT AREA EDWARD RIVER
PARISH OF NORTH DENILIQUIN COUNTY OF TOWNSEND
TITLE DIAGRAM DP856212

FIRST SCHEDULE

TANDERRA ENTERPRISES PTY LTD (T AK680840)

SECOND SCHEDULE (4 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 DP856212 EASEMENT OF ACCESS, WATER SUPPLY & SERVICES 20
METRES WIDE & VARIABLE APPURTENANT TO THE LAND ABOVE
DESCRIBED
- 3 DP856212 EASEMENT TO DRAIN WATER 5 & 10 METRES WIDE AFFECTING
THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
3654343 VARIATION OF SITE OF EASEMENT AS SHOWN IN PLAN
WITH 3654343
- 4 DP856212 EASEMENT TO DRAIN WATER 20 METRES WIDE & VARIABLE
APPURTENANT TO THE LAND ABOVE DESCRIBED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***



APPENDIX C

HISTORIC AERIAL PHOTOGRAPHY





- Legend**
- Lease Area Boundary
 - Lot 11 DP 856212



- Legend**
- Lease Area Boundary
 - Lot 11 DP 856212



- Legend**
- Lease Area Boundary
 - Lot 11 DP 856212



DENILIKUIN EAST BESS

**Historical Aerial Imagery
1985**



Legend

-  Lease Area Boundary
-  Lot 11 DP 856212

0 100 200m



DENILQUIN EAST BESS

Historical Aerial Imagery
1996



Legend

-  Lease Area Boundary
-  Lot 11 DP 856212



DENILQUIN EAST BESS

**Historical Aerial Imagery
2005**



Legend

-  Lease Area Boundary
-  Lot 11 DP 856212



DENILQUIN EAST BESS

Historical Aerial Imagery
2014



Legend

-  Lease Area Boundary
-  Lot 11 DP 856212



DENILQUIN EAST BESS

Historical Aerial Imagery
2022



APPENDIX D

ANALYTICAL CERTIFICATES





CERTIFICATE OF ANALYSIS

Work Order	: ES2523787	Page	: 1 of 9
Client	: PREMISE NSW Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: BRENDAN STUART	Contact	: Customer Services ES
Address	: 154 Peisley St, Orange 2800	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 6393 5000	Telephone	: +61-2-8784 8555
Project	: P000824 - Deniliquin	Date Samples Received	: 05-Aug-2025 09:00
Order number	: P00824	Date Analysis Commenced	: 05-Aug-2025
C-O-C number	: ----	Issue Date	: 11-Aug-2025 13:26
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 10		
No. of samples analysed	: 8		



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
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW



General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP202: Particular samples required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- 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.



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				D_01_150	D_02_150	D_03_150	D_04_150	D_05_150
Sampling date / time				31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00
Compound	CAS Number	LOR	Unit	ES2523787-001	ES2523787-002	ES2523787-003	ES2523787-004	ES2523787-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	11.7	13.0	11.2	10.0	15.3
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	6	<5	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	20	17	19	26
Copper	7440-50-8	5	mg/kg	12	12	9	12	17
Lead	7439-92-1	5	mg/kg	14	15	17	14	18
Nickel	7440-02-0	2	mg/kg	7	7	5	8	11
Zinc	7440-66-6	5	mg/kg	19	20	13	21	26
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D_01_150	D_02_150	D_03_150	D_04_150	D_05_150
Sampling date / time					31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00
Compound	CAS Number	LOR	Unit		ES2523787-001	ES2523787-002	ES2523787-003	ES2523787-004	ES2523787-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				D_01_150	D_02_150	D_03_150	D_04_150	D_05_150
Sampling date / time				31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00
Compound	CAS Number	LOR	Unit	ES2523787-001	ES2523787-002	ES2523787-003	ES2523787-004	ES2523787-005
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<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	%	96.4	88.3	92.0	106	129
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	98.8	90.4	90.3	98.9	117
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2,4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	----	66.3	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D_06_150	D_07_150	D_08_150	----	----
Sampling date / time					31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2523787-006	ES2523787-007	ES2523787-008	-----	-----
					Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.8	15.6	19.3	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	7	6	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg		26	29	30	----	----
Copper	7440-50-8	5	mg/kg		17	21	18	----	----
Lead	7439-92-1	5	mg/kg		18	18	18	----	----
Nickel	7440-02-0	2	mg/kg		10	13	17	----	----
Zinc	7440-66-6	5	mg/kg		26	32	36	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
gamma-BHC - (Lindane)	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D_06_150	D_07_150	D_08_150	----	----
Sampling date / time					31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2523787-006	ES2523787-007	ES2523787-008	-----	-----
				Result	Result	Result	Result	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4,4'-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	<0.05	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	D_06_150	D_07_150	D_08_150	----	----
Sampling date / time					31-Jul-2025 00:00	31-Jul-2025 00:00	31-Jul-2025 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2523787-006	ES2523787-007	ES2523787-008	-----	-----
					Result	Result	Result	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
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	%		106	93.1	75.3	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		92.0	90.2	78.0	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2,4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%		68.3	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2,4-Dichlorophenyl Acetic Acid	19719-28-9	45	139



APPENDIX E

ANALYTICAL LABORATORY QA/QC & CHAIN OF CUSTODY DOCUMENTS





CHAIN OF CUSTODY

ALS Laboratory:
please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callamondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

MUDGEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mall@alsglobal.com

NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304
Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com

PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Premise Australia		TURNAROUND REQUIREMENTS : ☒ Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Orange		(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) ☐ Non-Standard or urgent TAT (List due date):		Custody Seal Intact? Yes No N/A	
PROJECT: P000824 - Deniliquin		ALS QUOTE NO.: EN/222/24		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER: P00824		COC SEQUENCE NUMBER (Circle)		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: B. Stuart		CONTACT PH:		Other comment:	
SAMPLER: B. Searl		SAMPLER MOBILE: 0418 607 830		RECEIVED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME:	
Email Reports to brendan.stuart@premise.com.au		RELINQUISHED BY: Premise		DATE/TIME: 5/8/25 8:42	
Email Invoice to accounts@premise.com.au		DATE/TIME: 04/08/2025		RECEIVED BY:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-12 OC / OP Pesticides	S-2 8 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	EP202 Phenoxo Acid Herbicides (16 analytes)	S-7 TRH (C6-C40) / BTEXN / PAH	EA200 Asbestos – in 500g Soil (pres/abs)	S-19 TRH (C6-C40) / BTEXN / PAH / Phenols / OC / OP / PCB / 8 Metals				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	D_01_150	31/07/2025	S	JAR	1	X	X								
2	D_02_150	31/07/2025	S	JAR	1	X	X	X							
3	D_03_150	31/07/2025	S	JAR	1	X	X								
4	D_04_150	31/07/2025	S	JAR	1	X	X								
5	D_05_150	31/07/2025	S	JAR	1	X	X								
6	D_06_150	31/07/2025	S	JAR	1	X	X	X							
7	D_07_150	31/07/2025	S	JAR	1	X	X								
8	D_08_150	31/07/2025	S	JAR	1	X	X								
9	D-02-400	31/7/25	S	JAR	1										
10	D-08-400	31/7/25	S	JAR	1										
TOTAL															

Environmental Division
Sydney
Work Order Reference
ES2523787



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Hold
Hold

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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; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial 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.



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2523787	Page	: 1 of 5
Client	: PREMISE NSW Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: BRENDAN STUART	Telephone	: +61-2-8784 8555
Project	: P000824 - Deniliquin	Date Samples Received	: 05-Aug-2025
Site	: ----	Issue Date	: 11-Aug-2025
Sampler	: ----	No. of samples received	: 10
Order number	: P00824	No. of samples analysed	: 8

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

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

Outliers : Frequency of Quality Control Samples

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



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	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) D_01_150, D_02_150, D_03_150, D_04_150, D_05_150, D_06_150, D_07_150, D_08_150	31-Jul-2025	----	----	----	05-Aug-2025	14-Aug-2025	✓	
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) D_01_150, D_02_150, D_03_150, D_04_150, D_05_150, D_06_150, D_07_150, D_08_150	31-Jul-2025	05-Aug-2025	27-Jan-2026	✓	06-Aug-2025	27-Jan-2026	✓	
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) D_01_150, D_02_150, D_03_150, D_04_150, D_05_150, D_06_150, D_07_150, D_08_150	31-Jul-2025	05-Aug-2025	28-Aug-2025	✓	07-Aug-2025	28-Aug-2025	✓	
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068) D_01_150, D_02_150, D_03_150, D_04_150, D_05_150, D_06_150, D_07_150, D_08_150	31-Jul-2025	05-Aug-2025	14-Aug-2025	✓	06-Aug-2025	14-Sep-2025	✓	
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068) D_01_150, D_02_150, D_03_150, D_04_150, D_05_150, D_06_150, D_07_150, D_08_150	31-Jul-2025	05-Aug-2025	14-Aug-2025	✓	06-Aug-2025	14-Sep-2025	✓	

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

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Soil Glass Jar - Unpreserved (EP202) D_02_150, D_06_150	31-Jul-2025	05-Aug-2025	14-Aug-2025	✓	11-Aug-2025	14-Sep-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)							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	16	12.50	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	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Pesticides by GCMS	EP068	1	16	6.25	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	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Pesticides by GCMS	EP068	1	16	6.25	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	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Pesticides by GCMS	EP068	1	16	6.25	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	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
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).
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.
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
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.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ 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.

