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16 December 2024

Attention: Paul O'Brien
Wagga Wagga City Council
PO Box 20
Wagga Wagga NSW 2650
O'Brien.Paul@wagga.nsw.gov.au
BY EMAIL

Dear Paul

Re: Preliminary Site Investigation – 11 Farrer Road Boorooma NSW 2650

I refer to the written request from yourself to prepare a Preliminary Site Investigation (PSI) report for the proposed rezoning of land from R5 Large Lot Residential to R1 General Residential at 11 Farrer Road Boorooma NSW, the site. The intended recipient of this report is Wagga Wagga City Council and the NSW Department of Planning in the case of a planning proposal being submitted to rezone the site.

1. Executive summary

The site has a historical agricultural land use as far as records can ascertain. A stormwater dam was constructed in the south of the site between 2016 and 2018 and the north of the site was used as site compound for the Farrer Road upgrade in 2020. Potential contamination of concern includes agricultural pesticides, vehicle emissions, fill material including bulk fill, road base and asphalt, dumped rubbish, and fuel and oil from machinery maintenance.

Site observations found vacant land in the suburb of Boorooma. Small stockpiles of fill material were observed in the northwest and southwest of the site, along with a small contour bank in the south of the site which feeds into the nearby stormwater dam. No asbestos containing material was identified in fill material or across the site however thick vegetation hampered a thorough visual inspection.

This PSI has been conducted to assess the risk to future site users from potential contaminants across the site. This assessment includes a review of previous investigations conducted in 2021 and 2022, and further inspection, soil sampling, and analysis for potential chemical contaminants, and an assessment of the results against the adopted residential land use criteria.

The soil analysis of the previous investigations from 2021 and 2022 and this one returned results below the adopted criteria for residential land use. Therefore, it is assessed the site is suitable for the proposed rezoning given management strategies are implemented during development.

2. Objectives

To determine whether potential site contamination poses a risk to human health or the environment under a Residential A land use scenario.

3. Scope of work

To conduct a desktop study and detailed site inspection with sampling, analyse the data reliability, and undertake a risk assessment to human health based on the results.

4. Site identification

Project area – 6ha (approximately).

Address – 11 Farrer Road Boorooma NSW 2650.

Real property description – Lot 2 DP 702230.

Centre coordinates – 534485E 6119145N (MGA Zone 55).

Site maps and the current zoning map can be seen in **Attachment A**.

5. Site history

The site has a historical agricultural land use as far as records can ascertain. A stormwater detention basin was excavated along the southern boundary between 2016 and 2018, and the north of the site was used as a site compound for the Farrer Road upgrade in 2020. Historical aerial photographs and satellite images can be seen in **Attachment B**.

The planning proposal involves rezoning land from R5 Large Lot Residential to R1 General Residential.

The site was part of the Gobbagombalin Estate (also known as Gobbagumbalin Estate) that was originally settled on the 1830s and was share farmed by Arthur Clout, Edward Crouch, John Wells Shephard, and Joseph James Bright. The Estate was purchased by the Crown in 1906 and divided into 146 farms available for selection. The balance was absorbed by the share and tenant farmers, who were granted preferential treatment. Wagga Wagga City Council are the current owners of the site.

Previous reports include a Preliminary Site Investigation in 2021 (ref: 7562) and a Detailed Site Investigation (DSI) in 2022 (ref:8342) both undertaken by this office for Transport for NSW as part of a risk assessment for the proposed Old Narrandera Road upgrade. The northern and eastern parts of the site were investigated as a potential ancillary facility areas (known as ON1 and ON2, respectively). Primary contaminants of concern included agricultural pesticides, vehicle emissions, fill material including bulk fill, road base and asphalt, dumped rubbish, and fuel and oil from machinery maintenance from when the site had been used as a site compound for the Farrer Road upgrade. Soil sampling and analysis was undertaken as part of the DSI and found that the identified historical potential contaminating land use is assessed to be of low significance in terms of risk to future site users.

6. Site condition and surrounding environment

The site is bound by Farrer Road, Kingsford Smith Road and Colin Knott Drive. The site is currently vacant. At the time of the site inspection, the predominant vegetation was oats and ryegrass along with a variety of weeds including but not limited to silver grass, thistles, brome grass, Saint Barnaby's thistle, Saint John's wort, verbena, and dock. Some wattle regrowth was also identified.

Small stockpiles of fill material were observed and consisted of soil, plant matter, and rocks. No chemical staining or odours were noted nor asbestos containing material identified in fill material or across the site however thick vegetation hampered a thorough visual inspection. A small contour bank was observed in the south of the site which feeds into the nearby stormwater detention basin. A map of the site features and site photographs can be seen in **Attachment C**.

The surrounding land use is agricultural to the north and south. A caravan park lies the east, across Colin Knott Drive with the Wagga Harness Racing Club to the southeast. The developed residential suburb of Boorooma lies to the west of the site. The southern part of the site is mapped as a natural resource sensitivity area for terrestrial biodiversity. The site is mapped as being in a flood planning area.

The site or any nearby sites are not on the list of NSW contaminated sites notified to the EPA as of November 2024.

The site lies on the long lower slopes of the Bomen Rises formed on Silurian granites associated with the Wantabadgery Formation. Parent materials consist of granite and granodiorite. The Murrumbidgee Floodplain lies to the south. The typical profile is topsoil underlain by reddish and brownish silty sandy clays.

There are no registered groundwater bores on site however nearby groundwater bores data suggests groundwater is >10m below ground level. Groundwater is likely to be a muted reflection of the surface topography in the underlying geology with flow to the southwest. Groundwater is not considered a drinking water resource in the locale.

7. Sampling and Analysis Quality Plan and sampling methodology

The sampling plan includes an analysis of the Data Quality Objectives (DQOs) which have been developed to define the type and quality of data to meet the project objectives. The DQOs have been developed generally in accordance with the seven step DQO process as outlined in AS 4482.1:2005 and the USA EPA: Guidance on Systematic Planning Using the Data Quality Objectives Process (2006a) with the information inputs provided in this PSI. The DQOs can be provided upon request.

The following sampling was executed for the assessment of in situ material for site suitability. These analytes are associated with the previous land use and potential contamination sources.

- A visual and tactile assessment in situ material.
- Eight systematic grid soil sample locations. Samples tested for heavy metals and pesticides at a NATA accredited laboratory. Samples taken from the southern portion of the site which was not sampled during the previous investigations.

- Sampling undertaken by reference to AS 4482.1:2005 - Guide to the investigation and sampling of sites with potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds (Withdrawn) and AS 4482.2:1999 - Guide to the sampling and investigation of potentially contaminated soil Part 2: Volatile substances (Withdrawn). Although these guidelines have recently been withdrawn, they have been used in the absence of other relevant Australian publications.
- A plan of the sampling locations can be seen in **Attachment D**.
- One duplicate and rinsate sample taken for the sampling event.

A duplicate and rinsate sample was used to assess sampling quality assurance and quality control with relative percent differences of <30% expected for the duplicate and negligible levels of contamination expected for the rinsate.

The following will be used as an initial analytical screening of the data to determine whether further assessment is required:

- Residential A assessment criteria from Schedule B1 of the National Environment Protection (Assessment of Site Contamination) Measure 2013: Table 1A (1) Soils with 3m of surface and Table 1B (1-4) Soils within 2m of surface.

Where exceedances of these criteria indicate a risk to human health, further investigation, assessment, and remediation if required, will be carried out as appropriate.

8. Results

The sampling was conducted over one day on 4 December 2024. The weather was warm and sunny. Soils consisted of topsoil overlying reddish and brownish silty sandy clays. A grab sample was taken at each of the eight sampling locations to 0.3m depth in the near surface soil. No chemical staining or odours were noted during the sampling. Sampling locations can be seen in **Attachment D**.

A summary of the analytical results are as follows:

- Heavy metals are below the limit of reporting or the adopted criteria.
- Pesticides are below the limit of reporting and the adopted criteria.

The tabulated results with a comparison to the adopted criteria can be seen in **Attachment E**. Laboratory reports can be seen in **Attachment F**.

9. Quality assurance/quality control data evaluation

The duplicate sample (sample 8) returned relative percent difference of <30% for all analytes. The rinsate sample returned results below the limit of reporting. No outliers exist in the laboratory testing.

In consideration of the adopted QA/QC procedures and the results from their subsequent analysis, McMahon assesses the QA/QC results are suitable for the investigation undertaken and reflect the analytical data is of a suitable quality to determine contamination risk with an appropriate level of confidence.

10. Conceptual site model

The site has a historical agricultural land use as far as records can ascertain with the north and east portions of the site being used as site compound for the Farrer Road upgrade in 2020. Two small stockpiles of fill material were observed on site, along with a small contour bank in the south of the site which feeds into the nearby stormwater dam. No asbestos containing material was identified in fill material or across the site however thick vegetation hampered a thorough visual inspection. Contaminants of concern include agricultural pesticides, vehicle emissions, fill material including bulk fill, road base and asphalt, dumped rubbish, and fuel and oil from machinery maintenance from when the site had been used as a site compound for the Farrer Road upgrade. Contamination pathways are primarily from soil disturbance during development and occupation. Receptors include future site users, construction workers, and the environment. Short to medium-term soil contact is likely for future construction workers, and long-term soil contact is possible for future site users. No asbestos containing material was observed in the fill, but unexpected finds are possible. The inhalation of asbestos fibres is possible if any asbestos containing material is disturbed during development

Based on the past uses, investigations, and sampling undertaken, it is assessed that widespread contamination from the contaminants of concern is not present at the site. There is a low risk of contamination from the fill material as it is considered an aesthetic issue and can be managed during development, with care taken around unexpected finds.

Groundwater exposure pathways were assessed to be incomplete due deep depths (>10m below ground level) and limited access to groundwater. As such, groundwater investigations were not carried out.

There is a low risk of contamination from off-site sources as there are no known grossly contaminating activities nearby.

11. Conclusions and recommendations

This investigation met the objective of investigating and assessing potential contamination to determine whether potential site contamination in the soil poses a risk to human health for the proposed rezoning and subsequent Residential A land use.

The results of the investigation conclude that contamination from the contaminants of concern is not present at the site, and it is suitable for the proposed development given the following management strategies are adopted:

- The fill material is recommended to be removed and disposed of at an appropriately licenced landfill, with care taken to identify potential asbestos containing material.
- Any material generated from the site should be managed in accordance with the NSW EPA Waste Classification Guidelines and Resource Recovery Orders, whichever is relevant. This is normally a standard development consent condition.
- Unexpected finds are possible especially in fill material, including asbestos finds. Filled dams and gullies are not uncommon an agricultural land and are another potential unexpected find. Care must be taken to identify and evaluate unexpected finds such as these during development under an unexpected finds protocol.

If you have any queries about the contents of this report, please contact the undersigned.

Yours sincerely

David McMahon
Certified Professional Soil Scientist
Certified Environmental Practitioner (Site Contamination Specialist)
BAppSc (Ag) GradDip (Water) MEnvMgmt
MALGA MEIANZ MSSA

List of attachments

A. Site maps and current zoning map
B. Aerial photographs and satellite images
C. Map of site features and site photographs
D. Sampling locations
E. Tabulated results
F. Laboratory reports

Limitations and disclaimer

DM McMahon Pty Ltd has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Wagga Wagga City Council, the NSW Department of Planning, and only those third parties who have been authorised by DM McMahon Pty Ltd to rely on this report.

The information contained in this report has been extracted from field and laboratory sources believed to be reliable and accurate. DM McMahon Pty Ltd does not assume any responsibility for the misinterpretation of information supplied in this report. The accuracy and reliability of recommendations identified in this report need to be evaluated with due care according to individual circumstances. It should be noted that the recommendations and findings in this report are based solely upon the said site location and conditions at the time of assessment. The results of the said investigations undertaken are an overall representation of the conditions encountered. The properties of the soil, vapour and groundwater within the location may change due to variations in ground conditions outside of the assessed area. The author has no control or liability over site variability that may warrant further investigation that may lead to significant design and land use changes.

Unexpected findings

If any unconsolidated, odorous, stained, or deleterious soils, or suspect bonded/friable/fibrous asbestos containing material, fuel tanks, or septic systems are encountered during any further excavation, suspected historical contaminating activities are encountered, or conditions that are not alike the above descriptions, the site supervisor should be informed, the work stopped, and this office be contacted immediately for further evaluation by an appropriately qualified environmental consultant. The unexpected findings may trigger the need for more investigation and assessment dependant on the scope and context of the unexpected finding.

Notice of Copyright

Attachment A : *Site maps and supplied proposed development plan*

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2024

Legend
Boundary

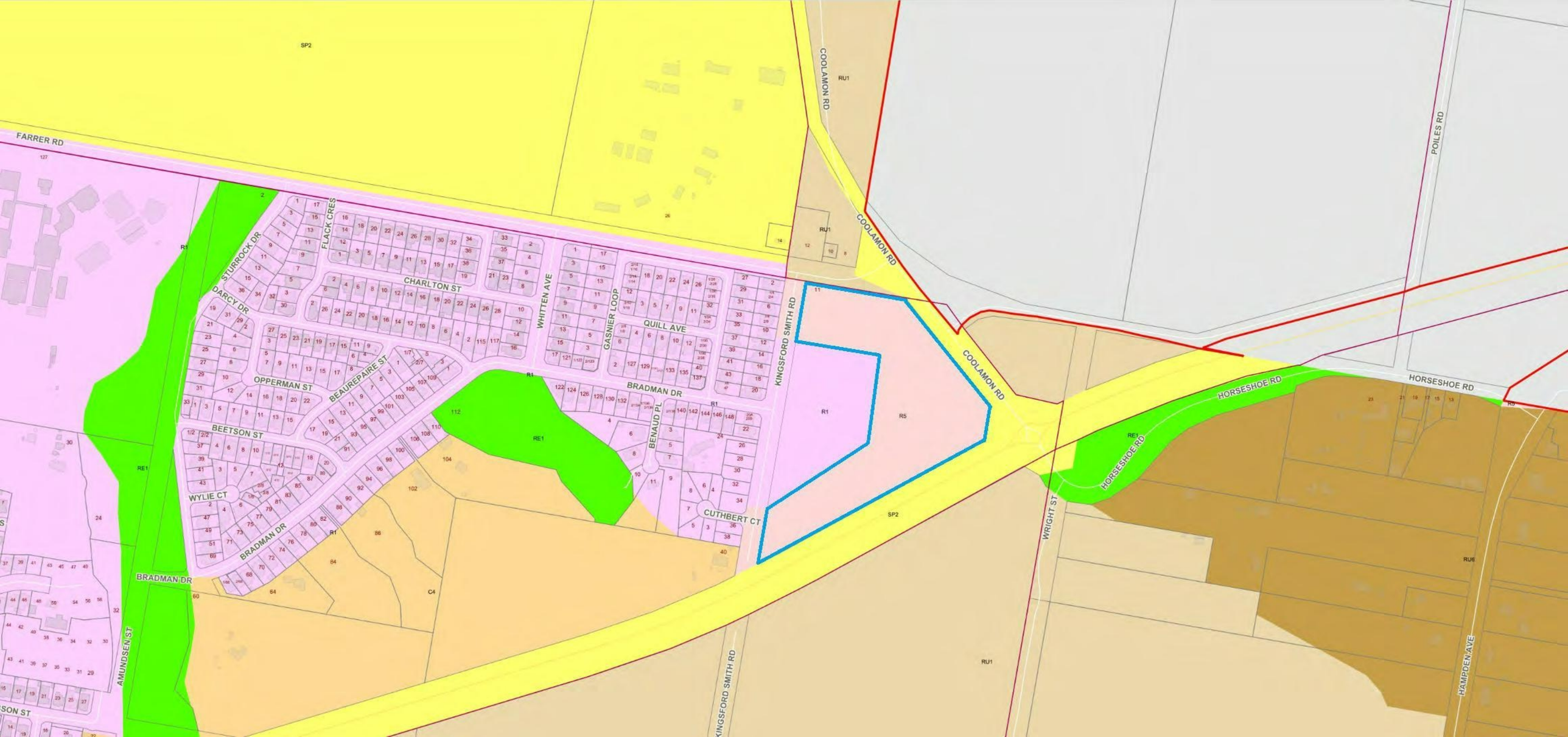
Charles Sturt University
Old Narrandera Rd
Gobbagombalin
Old Narrandera Rd
Estella
Boorooma
A41
Cartwrights Hill
A41
Gardiner St
North Wagga Wagga
Byrnes Rd
Travers St
Wagga Wagga
Murrumbidgee River
Google Earth
Image © 2024 Airbus
N
2 km

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2024

Legend
Boundary

Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
Quill Ave
Whitten Ave
Casnier Lp
Casnier Lp
Bradman Dr
Colin Knott Dr
A41
Horseshoe Rd
Horseshoe Rd
Dukes Creek
N
300 m
Google Earth
Image © 2024 Airbus


FARRER RD
COOLAMON RD
POILES RD
HORSESHOE RD
HORSESHOE RD
HORSESHOE RD
KINGSFORD SMITH RD
KINGSFORD SMITH RD
WRIGHT ST
HAMPDEN AVE
AMUNDSEN ST
BRADMAN DR
BRADMAN DR
BRADMAN DR
CHARLTON ST
QUILL AVE
BEETSON ST
OPPERMAN ST
CUTHBERT CT
WYLIE CT
DARCY DR
STURROCK DR
FLACK CRES
WHITTEN AVE
GASNIER LOOP
BEAUREPAIRE ST
BENAUD PL
SP2
RU1
RU1
RU1
RU6
R1
R5
RE1
C4

Attachment B : *Aerial photographs and satellite images*

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Aerial photograph 1971

Legend
Boundary

Cres
Farrer Rd
harlton St
Whitten Ave
Casnier Lp
Quill Ave
Casnier Lp
Farrer Rd
Poles Rd
Poles Rd
Bradman Dr
Horseshoe Rd
Dukes Creek
Horseshoe Rd
A41
Colin Knott Dr
Google Earth
Image © 2024 Airbus
N
300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Aerial photograph 1980

Legend
Boundary

Cres
Farrer Rd
Farrer Rd
harlton St
Whitten Ave
Casnier Lp
Quill Ave
Casnier Lp
Poles Rd
Poles Rd
Bradman Dr
Horseshoe Rd
Dukes Creek
A41
Colin Knott Dr
Horseshoe Rd
N
300 m
Google Earth
Image © 2024 Airbus

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Aerial photograph 1990

Legend
Boundary

Cres
Farrer Rd
Farrer Rd
harlton St
Whitten Ave
Casnier Lp
Quill Ave
Casnier Lp
Poiles Rd
Poiles Rd
Bradman Dr
Horseshoe Rd
Dukes Creek
A41
Horseshoe Rd
Colin Knott Dr
Google Earth
Image © 2024 Airbus
N
300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Aerial photograph 1995

Legend
Boundary

Cres
Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
harlton St
Whitten Ave
Gasnier Lp
Gasnier Lp
Quill Ave
Bradman Dr
Horseshoe Rd
Dukes Creek
Horseshoe Rd
A41
Colin Knott Dr
Google Earth
Image © 2024 Airbus
N
300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Aerial photograph 1997

Legend

Boundary

Cres
Farrer Rd
Farrer Rd
harlton St
Whitten Ave
Casnier Lp
Quill Ave
Casnier Lp
Bradman Dr
Poiles Rd
Poiles Rd
Horseshoe Rd
Dukes Creek
A41
Horseshoe Rd
Colin Knott Dr
Google Earth
Image © 2024 Airbus
N
300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Aerial photograph 1998

Legend

Boundary

Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
Whitten Ave
Gasnier Lp
Quill Ave
Gasnier Lp
Bradman Dr
Horseshoe Rd
Horseshoe Rd
Dukes Creek
A41
Colin Knott Dr

Google Earth
Image © 2024 Airbus

N

300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2003

Legend
Boundary

Cres
Farrer Rd
Farrer Rd
harlton St
Whitten Ave
Casnier Lp
Quill Ave
Casnier Lp
Bradman Dr
Poiles Rd
Poiles Rd
Horseshoe Rd
Dukes Creek
Horseshoe Rd
A41
Colin Knott Dr
t St
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300 m
Google Earth
Image © 2024 Maxar Technologies
Image Landsat / Copernicus

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2009

Legend

Boundary

Farrer Rd
Farrer Rd
Cres
harlton St
Whitten Ave
Casnier Lp
Quill Ave
Gasnier Lp
Bradman Dr
Poles Rd
Poles Rd
Horseshoe Rd
Dukes Creek
Horseshoe Rd
A41
Colin Knott Dr

Google Earth
Image © 2024 Maxar Technologies

N

300 m


11 Farrer Road Boorooma NSW 2650
Preliminary Site Investigation
Report No. 10283
Google Earth image 2012
Legend
Boundary
Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
Whitten Ave
Gasnier Lp
Gasnier Lp
Quill Ave
Bradman Dr
Horseshoe Rd
Horseshoe Rd
Dukes Creek
A41
Colin Knott Dr
Google Earth
Image © 2024 Maxar Technologies
300 m
N

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2013

Legend
Boundary

Cres
Farrer Rd
Farrer Rd
harlton St
Whitten Ave
Casnier Lp
Quill Ave
Casnier Lp
Bradman Dr
amon Rd
Poiles Rd
Poiles Rd
Horseshoe Rd
Dukes Creek
Horseshoe Rd
A41
Colin Knott Dr
Google Earth
Image © 2024 Maxar Technologies
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300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2014

Legend

Boundary

Cres
Farrer Rd
Farrer Rd
harlton St
Whitten Ave
Casnier Lp
Quill Ave
Casnier Lp
Bradman Dr
amon Rd
Poiles Rd
Poiles Rd
Horseshoe Rd
Dukes Creek
A41
Horseshoe Rd
Colin Knott Dr
t St
Google Earth
Image © 2024 CNES / Airbus
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11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2016

Legend

Boundary

Cres
Farrer Rd
Farrer Rd
harlton St
Whitten Ave
Casnier Lp
Quill Ave
Casnier Lp
Bradman Dr
Poiles Rd
Poiles Rd
Horseshoe Rd
Dukes Creek
Horseshoe Rd
A41
Colin Knott Dr
Google Earth
Image © 2024 Maxar Technologies
N
300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2018

Legend

Boundary

Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
Horseshoe Rd
Horseshoe Rd
Dukes Creek
Colin Knott Dr
A41
Bradman Dr
Whitten Ave
Casnier Lp
Casnier Lp
Quill Ave

Google Earth
Image © 2024 Maxar Technologies

N

300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2019

Legend
Boundary

Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
Horseshoe Rd
Horseshoe Rd
Dukes Creek
Colin Knott Dr
A41
Whitten Ave
Gasnier Lp
Gasnier Lp
Quill Ave
Bradman Dr
Cres
harlton St
amon Rd

Google Earth
Image © 2024 Maxar Technologies

N

300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2020

Legend
Boundary

Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
Horseshoe Rd
Horseshoe Rd
Dukes Creek
Colin Knott Dr
A41
Whitten Ave
Gasnier Lp
Gasnier Lp
Quill Ave
Bradman Dr
Cres
hariton St
t St

Google Earth
Image © 2024 Maxar Technologies
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11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2021

Legend
Boundary

Cres
Farrer Rd
Farrer Rd
harlton St
Whitten Ave
Casnier Lp
Quill Ave
Casnier Lp
Poiles Rd
Poiles Rd
Bradman Dr
Horseshoe Rd
Dukes Creek
Horseshoe Rd
A41
Colin Knott Dr
Google Earth
Image © 2024 Maxar Technologies
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300 m


11 Farrer Road Boorooma NSW 2650
Preliminary Site Investigation
Report No. 10283
Google Earth image 2022
Legend
Boundary
Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
Horseshoe Rd
Horseshoe Rd
Dukes Creek
A41
Colin Knott Dr
Quill Ave
Gasnier Lp
Gasnier Lp
Whitten Ave
Bradman Dr
Google Earth
Image © 2024 Airbus
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300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2023

Legend
Boundary

Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
Horseshoe Rd
Horseshoe Rd
Dukes Creek
Colin Knott Dr
A41
Whitten Ave
Casnier Lp
Casnier Lp
Quill Ave
Bradman Dr
Cres
harlton St

Google Earth
Image © 2024 Airbus
Image © 2024 Maxar Technologies

N
300 m

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2024

Legend
Boundary

Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
Quill Ave
Whitten Ave
Casnier Lp
Casnier Lp
Bradman Dr
Colin Knott Dr
A41
Horseshoe Rd
Horseshoe Rd
Dukes Creek
N
300 m
Google Earth
Image © 2024 Airbus

Attachment C : *Map of site features and site photographs*

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2024

Legend

- Boundary
- Contour bank
- Fill material
- Stormwater dam

Coolamon Rd
Rd
Flack Cres
Farrer Rd
Farrer Rd
Charlton St
Whitten Ave
Gasnar Lp
Quill Ave
Gasnar Lp
Fill material
Poiles Rd
Poiles Rd
Olympic Hwy
Bradman Dr
Horseshoe Rd
Dukes Creek
Horseshoe Rd
A41
Horseshoe Rd
Fill material
Colin Knott Dr
Wright St
Google Earth
Image © 2024 Airbus
N
300 m

Photograph 1: The site entrance off Farrer Road. Photograph taken facing south.

Photograph 2: The site entrance off Kingsford Smith Road. Photograph taken facing east.

Photograph 3: The site. Photograph taken facing southeast.

Photograph 4: The site. Photograph taken facing northwest, from Colin Knott Drive.

Photograph 5: The site. Photograph taken facing north east.

Photograph 6: The houses to the west of the site across Kingsford Smith Road.

Photograph 7: A small stockpile of fill material. Photograph taken facing north.

Photograph 8: The stormwater dam. Photograph taken facing southwest.

Attachment D : *Sampling map*

11 Farrer Road Boorooma NSW 2650

Preliminary Site Investigation
Report No. 10283
Google Earth image 2024

Legend

- Boundary
- ON1 (from previous investigations)
- ON2 (from previous investigations)
- Sampling locations

Farrer Rd
Farrer Rd
Poiles Rd
Poiles Rd
Horseshoe Rd
Horseshoe Rd
Dukes Creek
Colin Knott Dr
Charlton St
Whitten Ave
Gasnier Lp
Quill Ave
Gasnier Lp
Bradman Dr
A41
BH01
BH02
BH03
BH04
BH05
BH06
BH07
BH08
N
300 m
Google Earth
Image © 2024 Airbus

Attachment E : *Tabulated results*

Page: 1 of 1
Job number: 10283
Project: Preliminary Site Investigation - 11 Farrer Road Boorooma NSW

		Sample date	4/12/24	4/12/24	4/12/24	4/12/24	4/12/24	4/12/24	4/12/24	4/12/24	-	-					
		Sample location	1	2	3	4	5	6	7	8	-	-		**Residential A Criteria**			
		Sample ID	1	2	3	4	5	6	7	8	-	-					
		Sample depth (m)	0.0-0.3	0.0-0.3	0.0-0.3	0.0-0.3	0.0-0.3	0.0-0.3	0.0-0.3	0.0-0.3	-	-					
Compound	**LOR**	**Unit**	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	**HILs**	**HSLs**	**ACLs**	**EILs**	**ESLs**
Arsenic	1	mg/kg	3	3	2	2	2	2	5	3	-	-	100	-	-	100	-
Cadmium	0.3	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	20	-	-	-	-
Chromium	0.5	mg/kg	12	16	10	11	8.7	9.4	20	11	-	-	-	-	130	-	-
Copper	0.5	mg/kg	4.1	4.4	3.5	3.2	2.3	2.8	9.2	4	-	-	6000	-	190	-	-
Lead	1	mg/kg	6	7	6	5	5	4	7	6	-	-	300	-	1100	-	-
Nickel	0.5	mg/kg	3.9	3.4	2.9	3	2.1	3.1	8	3.3	-	-	400	-	170	-	-
Zinc	2	mg/kg	11	9	7	7	6	6	15	8	-	-	7400	-	400	-	-
Mercury	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	40	-	-	-	-
Chromium (VI)	0.5	mg/kg	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-
PCBs	1	mg/kg	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
HCB	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	10	-	-	-	-
Heptachlor	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	6	-	-	-	-
Chlordane	0.1	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	50	-	-	-	-
Endrin	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	10	-	-	-	-
Endosulfan	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	270	-	-	-	-
Mirex	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	10	-	-	-	-
Aldrin+dieldrin	0.3	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	6	-	-	-	-
DDT+DDE+DDD	0.3	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	240	-	-	-	-
Chlorpyrifos	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	160	-	-	-	-
Atrazine	0.05	mg/kg	-	-	-	-	-	-	-	-	-	-	320	-	-	-	-
Bifenthrin	0.05	mg/kg	-	-	-	-	-	-	-	-	-	-	600	-	-	-	-
Phenols	0.5	mg/kg	-	-	-	-	-	-	-	-	-	-	3000	-	-	-	-
PAHs	0.8	mg/kg	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-
Benzo(a)pyrene TEQ (half LOR)	0.2	mg/kg	-	-	-	-	-	-	-	-	-	-	3	-	-	-	0.7
TRH C6-C10 minux BTEX (F1)	25	mg/kg	-	-	-	-	-	-	-	-	-	-	-	45	-	-	180
TRH C10-C16 minus napthalene (F2)	25	mg/kg	-	-	-	-	-	-	-	-	-	-	-	110	-	-	120
TRH C16-C34 (F3)	90	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300
TRH C34-C40 (F4)	120	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2800
Benzene	0.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	50
Toluene	0.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	160	-	-	85
Ethylbenzene	0.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	55	-	-	70
Xylenes	0.3	mg/kg	-	-	-	-	-	-	-	-	-	-	-	40	-	-	105
Napthalene	0.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-
Bonded ACM	0.05	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-
FA+AF (Friable asbestos)	0.0001	%	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-	-

Attachment F : *Laboratory reports*

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services Sydney
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	McMahon Earth Science	**Project Name/No:**	11 Farrer Road Boorooma NSW
Address:	6 Jones Street	**Purchase Order No:**	10283
	East Wagga Wagga NSW 2650	**Results Required By:**	Standard TAT
		Telephone:	(02) 6931 0510
Contact Name:	David McMahon	**Facsimile:**	-
		Email Results:	admin@dmmcmahon.com.au

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	CL2 (Metals)	SV3 (OCP/OPP)
1 to 8	4/12/2024	1-8		✓		8	✓	✓
Duplicate	4/12/2024	9		✓		1	✓	
Rinsate	4/12/2024	10	✓			1	✓	

SGS EHS Sydney COC
SE275324

Relinquished By:	D McMahon	**Date/Time:**	4/12/2024	**Received By:**	**Date/Time:** 05/12/24 @ 12:20
Relinquished By:		**Date/Time:**		**Received By:**	**Date/Time:**
Samples Intact: Yes/ No		**Temperature:** Ambient / Chilled		**Sample Cooler Sealed:** Yes/ No	**Laboratory Quotation No:**

Comments:

SAMPLE RECEIPT ADVICE

SE275324

CLIENT DETAILS

Contact	Admin
Client	DM MCMAHON
Address	6 Jones Street Wagga Wagga PO Box 6118 WAGGA WAGGA NSW 2650
Telephone	61 2 69310510
Facsimile	(Not specified)
Email	admin@dmmcmahon.com.au
Project	**10283 11 farrer Road Boorooma NSW**
Order Number	**10283**
Samples	10

LABORATORY DETAILS

Manager	Shane McDermott
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 5/12/2024
Report Due	Thu 12/12/2024
SGS Reference	**SE275324**

SUBMISSION DETAILS

This is to confirm that 10 samples were received on Thursday 5/12/2024. Results are expected to be ready by COB Thursday 12/12/2024.
Please quote SGS reference SE275324 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	9 Soil,1 Water	Type of documentation received	COC
Date documentation received	5/12/2024	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	18.7°c
Sample container provider	Other Lab	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes	Number of eskies/boxes received	

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE275324

CLIENT DETAILS

Client DM MCMAHON

Project 10283 11 farrer Road Boorooma NSW

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Moisture Content	OC Pesticides in Soil	OP Pesticides in Soil	Total Recoverable Elements in Soil/Waste
001	1	1	1	27	14	7
002	2	1	1	27	14	7
003	3	1	1	27	14	7
004	4	1	1	27	14	7
005	5	1	1	27	14	7
006	6	1	1	27	14	7
007	7	1	1	27	14	7
008	8	1	1	27	14	7
009	Duplicate	1	1	-	-	7

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE275324

CLIENT DETAILS

Client DM MCMAHON

Project 10283 11 farrer Road Boorooma NSW

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS
010	Rinsate	1	7

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Admin
Client	DM MCMAHON
Address	6 Jones Street Wagga Wagga PO Box 6118 WAGGA WAGGA NSW 2650
Telephone	61 2 69310510
Facsimile	(Not specified)
Email	admin@dmmcmahon.com.au
Project	**10283 11 farrer Road Boorooma NSW**
Order Number	**10283**
Samples	10

LABORATORY DETAILS

Manager	Shane McDermott
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE275324 R0**
Date Received	5/12/2024
Date Reported	12/12/2024

COMMENTS

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

SIGNATORIES

Dong LIANG	**Ly Kim HA**	**Shane MCDERMOTT**	**Teresa NGUYEN**
Metals/Inorganics Team Leader	Organic Section Head	Laboratory Manager	Organic Chemist

OC Pesticides in Soil [AN420] Tested: 9/12/2024

PARAMETER	UOM	LOR	1 SOIL - 4/12/2024 SE275324.001	2 SOIL - 4/12/2024 SE275324.002	3 SOIL - 4/12/2024 SE275324.003	4 SOIL - 4/12/2024 SE275324.004	5 SOIL - 4/12/2024 SE275324.005
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chlordane (alpha + gamma chlordane)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total OC Pesticides	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total OC VIC EPA IWRG621	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Other OCP VIC EPA IWRG621	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil [AN420] Tested: 9/12/2024 (continued)

PARAMETER	UOM	LOR	6 SOIL - 4/12/2024 SE275324.006	7 SOIL - 4/12/2024 SE275324.007	8 SOIL - 4/12/2024 SE275324.008
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
Chlordane (alpha + gamma chlordane)	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1
Total OC Pesticides	mg/kg	0.1	<0.1	<0.1	<0.1
Total OC VIC EPA IWRG621	mg/kg	0.1	<0.1	<0.1	<0.1
Total Other OCP VIC EPA IWRG621	mg/kg	0.1	<0.1	<0.1	<0.1

OP Pesticides in Soil [AN420] Tested: 9/12/2024

PARAMETER	UOM	LOR	1 SOIL - 4/12/2024 SE275324.001	2 SOIL - 4/12/2024 SE275324.002	3 SOIL - 4/12/2024 SE275324.003	4 SOIL - 4/12/2024 SE275324.004	5 SOIL - 4/12/2024 SE275324.005
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	6 SOIL - 4/12/2024 SE275324.006	7 SOIL - 4/12/2024 SE275324.007	8 SOIL - 4/12/2024 SE275324.008
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 9/12/2024

PARAMETER	UOM	LOR	1 SOIL - 4/12/2024 SE275324.001	2 SOIL - 4/12/2024 SE275324.002	3 SOIL - 4/12/2024 SE275324.003	4 SOIL - 4/12/2024 SE275324.004	5 SOIL - 4/12/2024 SE275324.005
Arsenic, As	mg/kg	1	3	3	2	2	2
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	12	16	10	11	8.7
Copper, Cu	mg/kg	0.5	4.1	4.4	3.5	3.2	2.3
Lead, Pb	mg/kg	1	6	7	6	5	5
Nickel, Ni	mg/kg	0.5	3.9	3.4	2.9	3.0	2.1
Zinc, Zn	mg/kg	2	11	9	7	7	6

PARAMETER	UOM	LOR	6 SOIL - 4/12/2024 SE275324.006	7 SOIL - 4/12/2024 SE275324.007	8 SOIL - 4/12/2024 SE275324.008	Duplicate SOIL - 4/12/2024 SE275324.009
Arsenic, As	mg/kg	1	2	5	3	2
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	9.4	20	11	11
Copper, Cu	mg/kg	0.5	2.8	9.2	4.0	4.0
Lead, Pb	mg/kg	1	4	7	6	6
Nickel, Ni	mg/kg	0.5	3.1	8.0	3.3	3.3
Zinc, Zn	mg/kg	2	6	15	8	8

Mercury in Soil [AN312] Tested: 9/12/2024

PARAMETER	UOM	LOR	1 SOIL - 4/12/2024 SE275324.001	2 SOIL - 4/12/2024 SE275324.002	3 SOIL - 4/12/2024 SE275324.003	4 SOIL - 4/12/2024 SE275324.004	5 SOIL - 4/12/2024 SE275324.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	6 SOIL - 4/12/2024 SE275324.006	7 SOIL - 4/12/2024 SE275324.007	8 SOIL - 4/12/2024 SE275324.008	Duplicate SOIL - 4/12/2024 SE275324.009
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 9/12/2024

PARAMETER	UOM	LOR	1 SOIL - 4/12/2024 SE275324.001	2 SOIL - 4/12/2024 SE275324.002	3 SOIL - 4/12/2024 SE275324.003	4 SOIL - 4/12/2024 SE275324.004	5 SOIL - 4/12/2024 SE275324.005
% Moisture	%w/w	0.5	15	10	12	11	9.4

PARAMETER	UOM	LOR	6 SOIL - 4/12/2024 SE275324.006	7 SOIL - 4/12/2024 SE275324.007	8 SOIL - 4/12/2024 SE275324.008	Duplicate SOIL - 4/12/2024 SE275324.009
% Moisture	%w/w	0.5	12	15	11	11

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 10/12/2024

PARAMETER	UOM	LOR	Rinsate WATER - 4/12/2024 SE275324.010
Arsenic	µg/L	1	<1
Cadmium	µg/L	0.1	<0.1
Copper	µg/L	1	<1
Chromium	µg/L	1	<1
Nickel	µg/L	1	<1
Lead	µg/L	1	<1
Zinc	µg/L	5	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 11/12/2024

PARAMETER	UOM	LOR	Rinsate WATER - 4/12/2024 SE275324.010
Mercury	mg/L	0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by AAS or ICP as per USEPA Method 200.8.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid , mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser . Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique,, referenced to USEPA 6020B and USEPA 200.8 (5.4).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
***	Indicates that both * and ** apply.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

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

STATEMENT OF QA/QC PERFORMANCE

SE275324 R0

CLIENT DETAILS

Contact	Admin
Client	DM MCMAHON
Address	6 Jones Street Wagga Wagga PO Box 6118 WAGGA WAGGA NSW 2650
Telephone	61 2 69310510
Facsimile	(Not specified)
Email	admin@dmmcmahon.com.au
Project	**10283 11 farrer Road Boorooma NSW**
Order Number	**10283**
Samples	10

LABORATORY DETAILS

Manager	Shane McDermott
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE275324 R0**
Date Received	05 Dec 2024
Date Reported	12 Dec 2024

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Sample counts by matrix	9 Soil,1 Water	Type of documentation received	COC
Date documentation received	5/12/2024	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	18.7°c
Sample container provider	Other Lab	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes	Number of eskies/boxes received	

HOLDING TIME SUMMARY

SE275324 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate	SE275324.010	LB332861	04 Dec 2024	05 Dec 2024	01 Jan 2025	11 Dec 2024	01 Jan 2025	12 Dec 2024

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
1	SE275324.001	LB332555	04 Dec 2024	05 Dec 2024	01 Jan 2025	09 Dec 2024	01 Jan 2025	10 Dec 2024
2	SE275324.002	LB332555	04 Dec 2024	05 Dec 2024	01 Jan 2025	09 Dec 2024	01 Jan 2025	10 Dec 2024
3	SE275324.003	LB332555	04 Dec 2024	05 Dec 2024	01 Jan 2025	09 Dec 2024	01 Jan 2025	10 Dec 2024
4	SE275324.004	LB332555	04 Dec 2024	05 Dec 2024	01 Jan 2025	09 Dec 2024	01 Jan 2025	10 Dec 2024
5	SE275324.005	LB332555	04 Dec 2024	05 Dec 2024	01 Jan 2025	09 Dec 2024	01 Jan 2025	10 Dec 2024
6	SE275324.006	LB332555	04 Dec 2024	05 Dec 2024	01 Jan 2025	09 Dec 2024	01 Jan 2025	10 Dec 2024
7	SE275324.007	LB332555	04 Dec 2024	05 Dec 2024	01 Jan 2025	09 Dec 2024	01 Jan 2025	10 Dec 2024
8	SE275324.008	LB332555	04 Dec 2024	05 Dec 2024	01 Jan 2025	09 Dec 2024	01 Jan 2025	10 Dec 2024
Duplicate	SE275324.009	LB332555	04 Dec 2024	05 Dec 2024	01 Jan 2025	09 Dec 2024	01 Jan 2025	10 Dec 2024

Moisture Content — Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
1	SE275324.001	LB332553	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	14 Dec 2024	10 Dec 2024
2	SE275324.002	LB332553	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	14 Dec 2024	10 Dec 2024
3	SE275324.003	LB332553	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	14 Dec 2024	10 Dec 2024
4	SE275324.004	LB332553	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	14 Dec 2024	10 Dec 2024
5	SE275324.005	LB332553	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	14 Dec 2024	10 Dec 2024
6	SE275324.006	LB332553	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	14 Dec 2024	10 Dec 2024
7	SE275324.007	LB332553	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	14 Dec 2024	10 Dec 2024
8	SE275324.008	LB332553	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	14 Dec 2024	10 Dec 2024
Duplicate	SE275324.009	LB332553	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	14 Dec 2024	10 Dec 2024

OC Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
1	SE275324.001	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	10 Dec 2024
2	SE275324.002	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	10 Dec 2024
3	SE275324.003	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024
4	SE275324.004	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024
5	SE275324.005	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024
6	SE275324.006	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024
7	SE275324.007	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024
8	SE275324.008	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024

OP Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
1	SE275324.001	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	10 Dec 2024
2	SE275324.002	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	10 Dec 2024
3	SE275324.003	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024
4	SE275324.004	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024
5	SE275324.005	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024
6	SE275324.006	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024
7	SE275324.007	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024
8	SE275324.008	LB332560	04 Dec 2024	05 Dec 2024	18 Dec 2024	09 Dec 2024	18 Jan 2025	12 Dec 2024

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
1	SE275324.001	LB332554	04 Dec 2024	05 Dec 2024	02 Jun 2025	09 Dec 2024	02 Jun 2025	10 Dec 2024
2	SE275324.002	LB332554	04 Dec 2024	05 Dec 2024	02 Jun 2025	09 Dec 2024	02 Jun 2025	10 Dec 2024
3	SE275324.003	LB332554	04 Dec 2024	05 Dec 2024	02 Jun 2025	09 Dec 2024	02 Jun 2025	10 Dec 2024
4	SE275324.004	LB332554	04 Dec 2024	05 Dec 2024	02 Jun 2025	09 Dec 2024	02 Jun 2025	10 Dec 2024
5	SE275324.005	LB332554	04 Dec 2024	05 Dec 2024	02 Jun 2025	09 Dec 2024	02 Jun 2025	10 Dec 2024
6	SE275324.006	LB332554	04 Dec 2024	05 Dec 2024	02 Jun 2025	09 Dec 2024	02 Jun 2025	10 Dec 2024
7	SE275324.007	LB332554	04 Dec 2024	05 Dec 2024	02 Jun 2025	09 Dec 2024	02 Jun 2025	10 Dec 2024
8	SE275324.008	LB332554	04 Dec 2024	05 Dec 2024	02 Jun 2025	09 Dec 2024	02 Jun 2025	10 Dec 2024
Duplicate	SE275324.009	LB332554	04 Dec 2024	05 Dec 2024	02 Jun 2025	09 Dec 2024	02 Jun 2025	10 Dec 2024

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref

HOLDING TIME SUMMARY

SE275324 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate	SE275324.010	LB332713	04 Dec 2024	05 Dec 2024	02 Jun 2025	10 Dec 2024	02 Jun 2025	12 Dec 2024

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	1	SE275324.001	%	60 - 130%	103
	2	SE275324.002	%	60 - 130%	104
	3	SE275324.003	%	60 - 130%	104
	4	SE275324.004	%	60 - 130%	101
	5	SE275324.005	%	60 - 130%	102
	6	SE275324.006	%	60 - 130%	103
	7	SE275324.007	%	60 - 130%	101
	8	SE275324.008	%	60 - 130%	102

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	1	SE275324.001	%	60 - 130%	99
	2	SE275324.002	%	60 - 130%	100
	3	SE275324.003	%	60 - 130%	100
	4	SE275324.004	%	60 - 130%	96
	5	SE275324.005	%	60 - 130%	97
	6	SE275324.006	%	60 - 130%	98
	7	SE275324.007	%	60 - 130%	96
	8	SE275324.008	%	60 - 130%	98
d14-p-terphenyl (Surrogate)	1	SE275324.001	%	60 - 130%	99
	2	SE275324.002	%	60 - 130%	101
	3	SE275324.003	%	60 - 130%	98
	4	SE275324.004	%	60 - 130%	100
	5	SE275324.005	%	60 - 130%	96
	6	SE275324.006	%	60 - 130%	100
	7	SE275324.007	%	60 - 130%	97
	8	SE275324.008	%	60 - 130%	99

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB332861.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB332555.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB332560.001		Alpha BHC	mg/kg	0.1	<0.1
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Lindane (gamma BHC)	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		Chlordane (alpha + gamma chlordane)	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.1	<0.1
		Endrin	mg/kg	0.1	<0.1
		Beta Endosulfan	mg/kg	0.1	<0.1
		p,p'-DDD	mg/kg	0.1	<0.1
		Endrin aldehyde	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endrin ketone	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	111

OP Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB332560.001		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	110
		d14-p-terphenyl (Surrogate)	%	-	106

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB332554.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB332713.001	Arsenic	µg/L	1	<1
	Cadmium	µg/L	0.1	<0.1
	Chromium	µg/L	1	<1
	Copper	µg/L	1	<1
	Lead	µg/L	1	<1
	Nickel	µg/L	1	<1
	Zinc	µg/L	5	<5
LB332713.025	Arsenic	µg/L	1	<1
	Cadmium	µg/L	0.1	<0.1
	Chromium	µg/L	1	<1
	Copper	µg/L	1	<1
	Lead	µg/L	1	<1
	Nickel	µg/L	1	<1
	Zinc	µg/L	5	<5

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275330.017	LB332861.014	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	0
SE275489.021	LB332861.027	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	198

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275324.009	LB332555.013	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275324.001	LB332553.011	% Moisture	%w/w	0.5	15	15	37	0
SE275324.009	LB332553.020	% Moisture	%w/w	0.5	11	12	39	7

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275324.001	LB332560.014		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Chlordane (alpha + gamma chlordane)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total OC Pesticides	mg/kg	0.1	<0.1	<0.1	200	0
			Total OC VIC EPA IWRG621	mg/kg	0.1	<0.1	<0.1	200	0
			Total Other OCP VIC EPA IWRG621	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.52	0.52	30	1

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275324.001	LB332560.014		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	1
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	3

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

OP Pesticides in Soil (continued) — Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275324.008	LB332560.022		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275324.001	LB332554.014	Arsenic, As	mg/kg	1	3	3	62	13
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	12	11	34	7
		Copper, Cu	mg/kg	0.5	4.1	3.9	43	7
		Nickel, Ni	mg/kg	0.5	3.9	3.5	43	13
		Lead, Pb	mg/kg	1	6	6	47	2
		Zinc, Zn	mg/kg	2	11	10	50	9
SE275324.009	LB332554.023	Arsenic, As	mg/kg	1	2	2	71	1
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	11	11	35	3
		Copper, Cu	mg/kg	0.5	4.0	4.1	42	3
		Nickel, Ni	mg/kg	0.5	3.3	3.4	45	4
		Lead, Pb	mg/kg	1	6	6	47	1
		Zinc, Zn	mg/kg	2	8	9	54	3

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE275324.010	LB332713.014	Arsenic	µg/L	1	<1	<1	200	0
		Cadmium	µg/L	0.1	<0.1	<0.1	200	0
		Chromium	µg/L	1	<1	<1	200	0
		Copper	µg/L	1	<1	<1	200	0
		Lead	µg/L	1	<1	<1	200	0
		Nickel	µg/L	1	<1	<1	200	0
		Zinc	µg/L	5	<5	<5	200	0

LABORATORY CONTROL SAMPLES

SE275324 R0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB332555.002	Mercury	mg/kg	0.05	0.22	0.2	80 - 120	110

OC Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB332560.002		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	119
		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	124
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	125
		Dieldrin	mg/kg	0.1	0.2	0.2	60 - 140	122
		Endrin	mg/kg	0.1	0.2	0.2	60 - 140	111
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	99
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.55	0.5	40 - 130	109

OP Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB332560.002		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.4	2	60 - 140	119
		Diazinon (Dimpylate)	mg/kg	0.5	2.3	2	60 - 140	116
		Dichlorvos	mg/kg	0.5	1.9	2	60 - 140	95
		Ethion	mg/kg	0.2	2.0	2	60 - 140	98
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	70 - 130	107
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	70 - 130	107

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB332554.002	Arsenic, As	mg/kg	1	350	318.22	80 - 120	109
	Cadmium, Cd	mg/kg	0.3	4.1	4.81	70 - 130	86
	Chromium, Cr	mg/kg	0.5	41	38.31	80 - 120	106
	Copper, Cu	mg/kg	0.5	310	290	80 - 120	105
	Nickel, Ni	mg/kg	0.5	190	187	80 - 120	100
	Lead, Pb	mg/kg	1	89	89.9	80 - 120	99
	Zinc, Zn	mg/kg	2	270	273	80 - 120	100

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB332713.002	Arsenic	µg/L	1	20	20	80 - 120	100
	Cadmium	µg/L	0.1	22	20	80 - 120	111
	Chromium	µg/L	1	22	20	80 - 120	109
	Copper	µg/L	1	22	20	80 - 120	112
	Lead	µg/L	1	22	20	80 - 120	109
	Nickel	µg/L	1	21	20	80 - 120	105
	Zinc	µg/L	5	22	20	80 - 120	111
LB332713.026	Arsenic	µg/L	1	20	20	80 - 120	100
	Cadmium	µg/L	0.1	23	20	80 - 120	113
	Chromium	µg/L	1	22	20	80 - 120	110
	Copper	µg/L	1	23	20	80 - 120	114
	Lead	µg/L	1	22	20	80 - 120	111
	Nickel	µg/L	1	21	20	80 - 120	107
	Zinc	µg/L	5	23	20	80 - 120	114

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311(Perth)/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE275307.001	LB332861.004	Mercury	mg/L	0.0001	0.0019	-0.038	0.008	96

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE275324.001	LB332555.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	111

OC Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE275242.001	LB332560.004	Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
		Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	-	-
		Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	118
		Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	120
		Aldrin	mg/kg	0.1	0.2	<0.1	0.2	121
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		Chlordane (alpha + gamma chlordane)	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Endosulfan	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Dieldrin	mg/kg	0.1	0.3	<0.1	0.2	116
		Endrin	mg/kg	0.1	0.2	<0.1	0.2	110
		Beta Endosulfan	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
		Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	97
		Endrin ketone	mg/kg	0.1	<0.1	<0.1	-	-
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
		Mirex	mg/kg	0.1	<0.1	<0.1	-	-
		Total OC Pesticides	mg/kg	0.1	1.4	<0.1	-	-
		Total OC VIC EPA IWRG621	mg/kg	0.1	1.4	<0.1	-	-
		Total Other OCP VIC EPA IWRG621	mg/kg	0.1	0.7	<0.1	-	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.49	0.50	-	98

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE275242.001	LB332554.004	Arsenic, As	mg/kg	1	55	<1	50	107
		Cadmium, Cd	mg/kg	0.3	54	0.4	50	107
		Chromium, Cr	mg/kg	0.5	59	5.4	50	108
		Copper, Cu	mg/kg	0.5	73	20	50	106
		Nickel, Ni	mg/kg	0.5	56	3.2	50	105
		Lead, Pb	mg/kg	1	160	98	50	127
		Zinc, Zn	mg/kg	2	200	140	50	117

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE275307.001	LB332713.004	Arsenic	µg/L	1	19	0.14	20	96
		Cadmium	µg/L	0.1	21	0.054	20	107
		Chromium	µg/L	1	21	0.015	20	104
		Copper	µg/L	1	21	0.427	20	105
		Lead	µg/L	1	21	0.138	20	106
		Nickel	µg/L	1	23	3.67	20	98
		Zinc	µg/L	5	33	14.621	20	92

MATRIX SPIKE DUPLICATES

SE275324 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service .
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.