DESA for 29 & 30 Charlesworth Bay Road, Korora

21 June 2024

For: Brian Betts

Authored by: Strider Duerinckx

Ref	Ver	Date	Distribution
2324-181-02	A	6/6/24	Client
	B	21/6/24	Client

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Attached Tables

Figures

Appendices

1 Introduction

Earth Water Consulting Pty Limited (EWC) was engaged by Brian Betts (the "Client") to undertake an Environmental Site Assessment (ESA) of former banana plantation land at 29 & 30 Charlesworth Bay Road, Korora) (the "Site") (Figure 1).

1.1 Objectives

The objective of this investigation was to undertake an assessment of the property to CHCC and NSW EPA (1997) requirements to ensure that potential soil contamination as a result of former banana cultivation would not limit the proposed residential land use.

1.2 Suitability to Undertake Works

Strider Duerinckx has project managed and signs off on this investigation. Strider is an environmental geologist with 25 years experience in contaminated sites investigations including numerous banana plantation assessments. Strider is a CEnvP (Site Contamination Specialist) accredited.

2 Proposed Development

It is understood that it is proposed to develop the two properties comprising 8,276m^2 in area for residential land use, with six (6) new lots between 752m^2 and 900m^2, with associated building envelopes (Figure 2). The Site is the last mainly undeveloped land on the street and represents infill development. All surrounding properties have been developed.

3 Scope of Work

The assessment included:

- A desktop review of aerial photographs and historical ownership records to confirm banana plantation locations and any decommissioned packing sheds, fuel or chemical storage areas;
- Based on NSW EPA (1997) guidelines and a site inspection, composite sampling in a grid across the proposed development area plus discrete sampling of previously developed areas; and
- Presentation of this contamination report including sample descriptions, sample locations, sample analytical results, and conclusions regarding the presence or absence of shallow surface contamination, and recommendations for further investigations or remediation (as required).

4 Site Description

4.1 Site Identification

The Site is a composite of 29 and 30 Charlesworth Bay Road (Table 1 and Figure 1).

Table 1: Property Details

Street Address	Lot	DP	Property Size (m^2)
29 Charlesworth Bay Road, Korora	5	270532	7,321
30 Charlesworth Bay Road, Korora	4	270532	955

4.2 Location and Features

The Site is located on a small community access road at the eastern end of Charlesworth Bay Road and to the south of Charlesworth Bay (Figure 1).

The Site sits on the western side of Diggers Head, which is a steep coastal headland, dropping sharply to the north, east and south and bordered by ocean. Lot 5 covers the majority of the Site and is mostly cleared residential land with the primary residence located at the eastern end. The lots are divided by the access road, with sections situated to the north and south.

The two lots are bordered by C1 National Parks and Nature Reserves zoned area to the north, east and south, and are located within an R2 Low Density Residential area.

Photograph 1 – Looking east from the access road across Lot 5 with the existing dwelling at top left of picture and Proposed Lots 9-11 on the RH side.

4.3 Surrounding Land Use

The surrounding land use includes developed residential land to the south and west and Coffs Coast Regional Park to the east and north.

5 Site History

5.1 Mapped BP Land

A review of the Coffs Harbour City Council LEP mapping indicates that a significant portion of the Site and surrounds to the south and west are mapped as having been under banana cultivation between 1943 and 1994 (Figure 3). The total area of the Site impacted by the historical banana plantation is ~6,800m^2, but of that only 4,000m^2 is proposed to be redeveloped in Lots 8-13.

5.2 Previous Environmental Investigations

No previous environmental investigations are known to have been undertaken on the Site.

The Site is mapped by CHCC as BCL1, which means identified as previous banana cultivation area and not yet sampled or classified.

5.3 Aerial Photographs

A review of aerial photographs from 1954-2010 (Table 2) indicates that the Site was located on a broadacre banana cultivation area. The banana cultivation on the property was present in 1954 and 1973, but not present in 1984 and later. A shed was present to the east of the existing dwelling between 1964 – 1973 (Figure 4), however was located outside the development area and mainly offsite to the east.

Table 2: Historical Photographs

Year	Site Details	Adjacent Properties
1954	Site is cleared with some signs of agricultural development. Banana cultivation is present. No structures are present.	No residential development. Relic native bush to the south, southwest and along the western edge of Charlesworth Bay. Patches of cleared agricultural land to the southwest, west and northwest. Charlesworth Bay Road is not sealed. Diggers Head to the east is mostly cleared.
1964	Dwelling is present on 29 Charlesworth Bay Road. A large portion of the Site is under banana cultivation.	Banana cultivation is evident to the south and west of the target property. Further clearing has occurred to the southwest. An access track is present from the end of Charlesworth Bay Road to Charlesworth Bay and a track is present to the south of the property connecting Diggers Beach to Charlesworth Bay Road. A dwelling is present at the location of what is now Timber Top Drive.
1973	The existing dwelling has been expanded and a shed	Banana cultivation is ongoing to the west and south of the Site. A dam is present west of Charlesworth Bay.

Year	Site Details	Adjacent Properties
	is present to the east of the dwelling. The Site is still under banana cultivation.	Two new dwellings are present along the northern side of Charlesworth Bay Road.
1984	Banana cultivation has ceased at the Site. The shed to the east of the dwelling has been removed.	Banana cultivation is ongoing at the western end of modern-day Timbertops Drive. Paddocks to the south of the Site are fallow. A dirt track is present linking the Site to the end of Diggers Head.
1989	As per 1984.	A residence is present to the west of the Site boundary. No banana cultivation is present. Charlesworth Bay Road and Firman Drive are sealed. Extensive clearing is evident to the northwest, west and southwest of the Site. The Solitary Islands Aquarium has been constructed to the west of the Site and Anuka Beach Resort is present to the south of the Site. Charlesworth Bay Resort is present to the west of Charlesworth Bay.
1994	As per 1989 except with some maturation of landscape vegetation.	As per 1989 except further residential expansion to the south, southwest and west. Diggers Headland Place has been constructed and sealed.
2004	As per 1994.	Further residential expansion to the west, southwest and south. Meadowlands Crescent, Timbertops Drive and Driftwood Close are present to the southwest. Diggers Head has established vegetation.
2010	As per 2004.	As per 2004 except the dwelling at 31 Charlesworth Bay Road to the east of the Site is present.

5.4 NSW EPA Records

A search of the NSW EPA's contaminated land record revealed no investigation or remediation notices have been issued on the Site or adjacent properties for contamination or 'significant risk of harm' under Section 58 of the Contaminated Land Management Act 1997.

A search of the public register under Section 308 of the Protection of the Environment Operations Act indicated that no current and recently surrendered licenses have been held for potentially contaminating activities on the Site or adjacent properties.

5.5 Previous Ownership Records

A search of historical owners was undertaken of the Site. The results are summarised in **Table 3**.

Table 3: Historical Ownership

Date	Detail
10.12.1907 (1907 to 1913)	Betsy McLean (Married Woman)
13.10.1913 (1913 to 1914)	Murdoch McLean (Hotelkeeper) (Transmission Application – not investigated)
23.05.1914 (1914 to 1931)	James Pettit Hammond (Farmer)
26.02.1931 (1931 to 1939)	Frederick Sydney Billyard (Builder)
23.10.1939 (1939 to 1953)	Harold Lochtie Bunny (Farmer)
18.11.1953 (1953 to 1956)	Robert Needham Limbert (Banana Grower)
12.12.1956 (1956 to 1959)	Modern Home Builders Pty Limited
23.06.1959 (1959 to 1966)	Christopher James Humphreys (Poultry Farmer) Mauda Ada Humphreys (Married Woman)
05.04.1966 (1966 to 1972)	Phillip Clive Hogbin (Company Director) Ada Phyllis Hogbin (Married Woman)
22.02.1972 (1972 to 1980)	Clive Hogbin Holdings Pty Ltd
04.05.1980 (1980 to 1997)	Keith Tolhurst Betty May Tolhurst
12.06.1997 (1997 to 2024)	Betty May Tolhurst
06.05.2024 (2024 to date)	# Brian Edward Betts # Leesa Gay Betts

5.6 Summary of Site History

The historical review confirmed that the Site was under banana cultivation between at least 1954 to 1984 and banana cultivation continued on surrounding farms until at least 1989. Little change occurred at the Site between 1984 and present, with the only exception being the construction of the adjacent dwelling at 31 Charlesworth Bay Road prior to 2010.

The Site transferred ownership through various people from 1907 onwards, with “farmers” holding the property from 1914 until 1953, when a banana grower purchased the property. Residential

expansion dominated the surrounding landscape between 1989 and 2004, with all surrounding agricultural activities ceasing prior to 1989.

6 Potential Areas and Contaminants of Concern

Based on the site history and a walkover, Areas of Environmental Concern (AECs) and associated Contaminants of Concern (CoC) were identified for the Site. These are presented in Table 4.

Table 4: Potential AEC and CoC

AEC	Potential Contaminating Activity	CoC	Likelihood of Contamination	Comment
1	Broadscale shallow contamination from banana cultivation	OCP (Aldrin, dieldrin and DDT), heavy metals (arsenic and lead)	Moderate for OCP (dieldrin) and metals (arsenic and lead)	In 1994, the NSW EPA, Department of Agriculture and Coffs Harbour City Council undertook a study of banana plantations in the Coffs Harbour area, and developed a specific set of guidelines to assess these former agricultural properties. A number of typical CoC were identified and contaminant distribution models developed.
2	Shed potential hotspot.	OCP, As and Pb	Moderate	
Notes **OCP = Organochlorine Pesticides**				

7 Investigation Criteria

The soil investigation levels for banana plantation contamination (OCP, arsenic and lead) were adopted from the NSW EPA (1997) Guidelines. These are comparable to health-based investigation levels for residential sites with access to soil for home grown vegetables at less than the 10% of the daily intake, that are provided in NEPM (NEPC 2013) Guidelines. The investigation criteria are shown in the attached Table LR1.

8 Sampling Program

The sampling program was based on the NSW EPA (1997) Guidelines which were developed specifically for former banana plantation properties. Sampling was undertaken on 13 May 2024, and on 11 June 2024, by a trained EWC environmental scientist. In accordance with s2.1.1 for a 6,800m^2 former broadacre plantation area, 28 samples are required at about an 11.9m grid, composited with a maximum of 4 subsamples per composite (C-1 to C-7). Additional sampling was conducted to clear the remainder of the area to be redeveloped at about a 12m grid, despite it not being mapped as former banana plantation, with four samples composited (C-8 and C-9).

In accordance with s2.1.2 further sampling was conducted on the residual Lot around the existing dwelling with 5 discrete samples taken to the west, south and east of the building (D-1 to D-5.

In accordance with s2.2 for potential hotspots around former packing sheds, two samples were collected in a 5m grid around the former shed location at the eastern property boundary for discrete analysis (D-6 and D-7) (Figure 4).

A total of 43 sample locations were collected in a grid and the first 36 samples composited into 9 composites for analysis. The remaining 7 samples were analysed as discrete samples. All composite and discrete samples were analysed for Arsenic (As), Lead (Pb) and OCP pesticides.

9 Results

9.1 Sample Descriptions

The sampling locations are presented in Figure 4, with sample details provided in Table 5.

Table 5: Sample Descriptions

Sample ID	Depth	Description	Composite ID
S-1	0-75mm	Topsoil, grey brown clay loam	C-1
S-2	0-75mm	Topsoil, grey brown clay loam	C-1
S-3	0-75mm	Topsoil, grey brown clay loam	C-1
S-4	0-75mm	Topsoil, grey brown clay loam	C-1
S-5	0-75mm	Topsoil, grey brown clay loam	C-2
S-6	0-75mm	Topsoil, grey brown clay loam	C-2
S-7	0-75mm	Topsoil, grey brown clay loam	C-2
S-8	0-75mm	Topsoil, grey brown clay loam	C-2
S-9	0-75mm	Topsoil, grey brown clay loam	C-3
S-10	0-75mm	Topsoil, grey brown clay loam	C-3
S-11	0-75mm	Topsoil, grey brown clay loam	C-3
S-12	0-75mm	Topsoil, grey brown clay loam	C-3
S-13	0-75mm	Topsoil, grey brown clay loam	C-4
S-14	0-75mm	Topsoil, grey brown clay loam	C-4
S-15	0-75mm	Topsoil, grey brown clay loam	C-4
S-16	0-75mm	Topsoil, grey brown clay loam	C-4

Sample ID	Depth	Description	Composite ID
S-17	0-75mm	Topsoil, grey brown clay loam	C-5
S-18	0-75mm	Topsoil, grey brown clay loam	C-5
S-19	0-75mm	Topsoil, grey brown clay loam	C-5
S-20	0-75mm	Topsoil, grey brown clay loam	C-5
S-21	0-75mm	Topsoil, grey brown clay loam	C-6
S-22	0-75mm	Topsoil, grey brown clay loam	C-6
S-23	0-75mm	Topsoil, grey brown clay loam	C-6
S-24	0-75mm	Topsoil, grey brown clay loam	C-6
S-25	0-75mm	Topsoil, grey brown clay loam	C-7
S-26	0-75mm	Topsoil, grey brown clay loam	C-7
S-27	0-75mm	Topsoil, grey brown clay loam	C-7
S-28	0-75mm	Topsoil, grey brown clay loam	C-7
S-29	0-75mm	Topsoil, grey brown clay loam	C-8
S-30	0-75mm	Topsoil, grey brown clay loam	C-8
S-31	0-75mm	Topsoil, grey brown clay loam	C-8
S-32	0-75mm	Topsoil, grey brown clay loam	C-8
S-33	0-75mm	Topsoil, grey brown clay loam	C-9
S-34	0-75mm	Topsoil, grey brown clay loam	C-9
S-35	0-75mm	Topsoil, grey brown clay loam	C-9
S-36	0-75mm	Topsoil, grey brown clay loam	C-9
D-1	0-75mm	Topsoil, grey brown clay loam	Discrete
D-2	0-75mm	Topsoil, grey brown clay loam	Discrete
D-3	0-75mm	Topsoil, grey brown clay loam	Discrete
D-4	0-75mm	Topsoil, grey brown clay loam	Discrete
D-5	0-75mm	Topsoil, grey brown clay loam	Discrete
D-6	0-75mm	Topsoil, grey brown clay loam	Discrete
D-7	0-75mm	Topsoil, grey brown clay loam	Discrete

10 Analytical Results

Samples were forwarded under Chain of Custody conditions at Eurofins Laboratory for analysis. The laboratory reports are included in Appendix A and the soil analytical results are summarised in the attached Table LR1.

10.1 Soil Analytical Results

Comparison of composite sample results to the investigation criteria indicated that:

- Concentrations of OCP were reported below the laboratory Limit of Reporting (LOR) for all samples analysed; and
- Concentrations of arsenic and lead were reported below the Investigation Criteria for all samples analysed.

Comparison of discrete sample results to the investigation criteria indicated that:

- Concentrations of OCP were reported below the laboratory Limit of Reporting (LOR) for all samples analysed; and
- Concentrations of arsenic and lead were reported below the Investigation Criteria for all samples analysed.

95% Upper Confidence Limits (UCLs) were not required to be calculated as all results were reported to less than the Investigation Criteria.

10.2 Quality Assurance and Quality Control

10.2.1 Field Quality Control

Environmental sampling activities were based on industry accepted standard practices.

The sampling equipment was decontaminated between sampling locations by washing with detergent and rinsing with clean water. A new pair of disposable gloves was used when handling each soil sample. Samples were collected in laboratory supplied jars and shipped in a chilled esky to the laboratory.

10.2.2 Laboratory Quality Control

Primary samples were submitted to Eurofins Laboratory, which is a national laboratory that undertakes analyses to NATA accredited analytical methodologies, and participates in NATA endorsed laboratory round robin analyses. Laboratory Quality Control included testing and reporting of reagent blanks, laboratory control samples (LCS), matrix spikes and surrogates spikes, and laboratory duplicates to assess laboratory quality control.

The laboratory quality assurance results are included within the laboratory reports attached in Appendix A. No exceptions to the laboratory quality control reportable limits were noted.

10.2.3 Data Quality Check

The quality assurance and quality control of the field and laboratory methods is considered sufficiently robust for the investigation undertaken. Given this, it is concluded that the analytical results dataset reliably represents soil concentrations in the field as sampled.

11 Conclusions and Recommendations

The field and analytical results confirm that historical usage of the property as a banana plantation has not resulted in any significant arsenic, lead or OCP contamination across the Site. All results were well below the investigation criteria for residential landuse.

As such the entire Site is considered suitable for the proposed and ongoing residential redevelopment, and no further investigations or remediation of soils is required for the residential use of the Site.

12 References

Coffs Harbour City Council. 2017. Contaminated Land Management Policy

Coffs Harbour City Council. 2018. Contaminated Land Management Procedure

Coffs Harbour City Council Local Environmental Plan 2013.

NEPC. 2013. National Environment Protection (Assessment of Site Contamination) Measure. Schedule B1-Schedule B1 Guideline on Investigation Levels For Soil and Groundwater. National Environment Protection Council.

NSW EPA. 1997. Guidelines for Assessing Banana Plantation Sites. Reprinted 2003.

TABLES

Table LR1: Summary of Soil Analytical Results

Sample ID		LOR	Investigation Criteria				C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	D-1	D-2	D-3	D-4	D-5	D-6	D-7
Date Collected			NSW EPA	NEPM			13/05/2024							11/06/2024								
Type of Sample							Composite									Discrete						
Depth Collected	Units	Eurofins	BP	HIL (A)	EIL	HSL (A)	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75
% Moisture	%	1	-	-	-	-	32	35	26	37	31	33	33	29	21	26	31	28	21	17	28	25
Heavy Metals																						
Arsenic	mg/kg	2	100	100	100	-	17	21	14	18	17	24	21	23	7.1	4.9	22	16	16	8.3	27	16
Lead	mg/kg	5	300	300	1100	-	16	16	17	19	22	21	25	23	22	27	18	19	18	30	18	18
Organochlorine Pesticides																						
4.4'-DDD	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	mg/kg	0.05	50	-	180	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin and Dieldrin (Total)*	mg/kg	0.05	10	6	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chlordanes - Total	mg/kg	0.1	-	50	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
d-BHC	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	mg/kg	0.05	-	240	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	mg/kg	0.05	-	270	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	mg/kg	0.05	-		-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	mg/kg	0.05	-	10	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	mg/kg	0.05	-	6	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	mg/kg	0.05	-	-	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene (HCB)	mg/kg	0.05	-	10	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	mg/kg	0.05	-	300	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	mg/kg	0.1	-	20	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Notes

Indicates sample concentration exceeds investigation criteria

Indicates sample concentration exceeds investigation criteria value by >250%

FIGURES

0 80 120 160

Horizontal Scale (metres) 1:4000

EARTH WATER CONSULTING

LEGEND

- Property Boundary
- Contour (10m)
- Drainage Alignment

TITLE: Site Location			PROJECT: DESA for 29 & 30 Charlesworth Bay Road, Korora		CLIENT: Brian Betts
FIGURE: Figure 1					
SHEET: 1 OF 1	ISSUE: A	AUTHOR: SD	DATE: 04/06/24	SCALE: 1:4000	PROJECT: 2324-181

EACH NEW LOT TO BE BURDENED WITH A COVENANT TO ENSURE OSD IS PROVIDED ON LOT AT DWELLING CONSTRUCTION PHASE. SIZING TO BE CONFIRMED

3 PT TURN TURNING HEAD FOR SERVICE VEHICLE

MAINTAIN EXISTING DRIVEWAY TO ACCESS LOT 3 AND PROPOSED LOT 8

D P 270532

13
895.1m²
14
3337m²
12
884m²
11
752m²
10
753m²
9
755m²
8
900m²

[E]
[D]

Connect existing sewer into receiving manhole 1

AND
ACE
WS

IAD PIT AND PIPE DRAINAGE LINE

FIRMAN DRIVE

1 2 3 4 5 60 61

D P 270532

D P 8 3

0 10 20
Horizontal Scale (metres) 1:500

EARTH WATER CONSULTING

LEGEND
- Property Boundary
- BP Extent
- BP Extent on the Site

TITLE: Proposed Development			FIGURE: Figure 2
			SHEET: 1 OF1 ISSUE: A
PROJECT: DESA for 29 & 30 Charlesworth Bay Road, Korora			CLIENT: Keiley Hunter Town Planning
AUTHOR: SD	DATE: 04/06/24	SCALE: 1:500	PROJECT: 2324-181

0 10 20

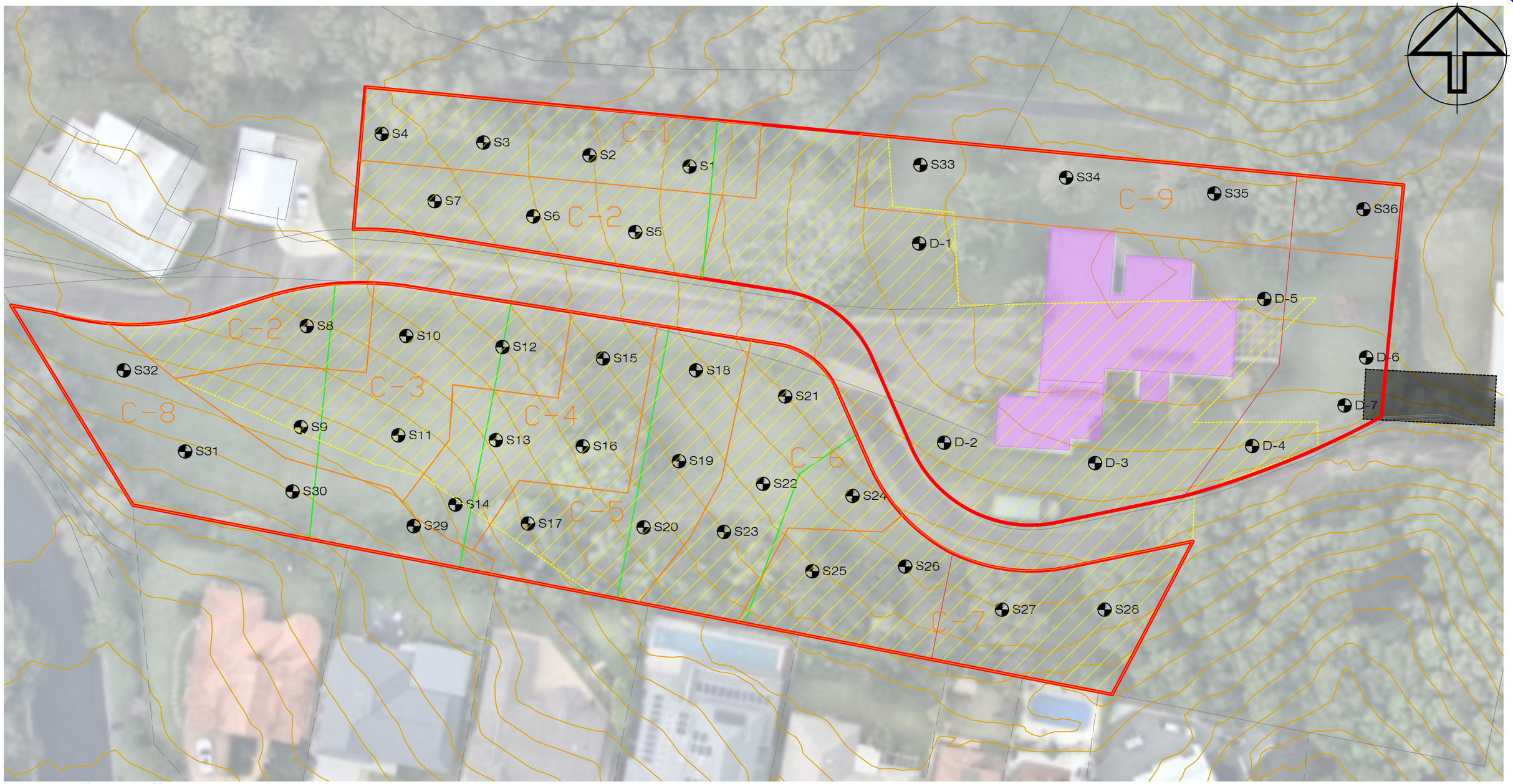
Horizontal Scale (metres) 1:500

EARTH WATER CONSULTING

LEGEND

- Property Boundary
- BP Extent
- BP Extent on the Site

TITLE: Mapped Banana Plantation Extent			FIGURE: Figure 3
			SHEET: 1 OF1 ISSUE: A
PROJECT: DESA for 29 & 30 Charlesworth Bay Road, Korora			CLIENT: Brian Betts
AUTHOR: SD	DATE: 04/06/24	SCALE: 1:500	PROJECT: 2324-181



0 10 20

Horizontal Scale (metres) 1:500

EARTH WATER CONSULTING

LEGEND

- Property Boundary
- Subdivision Boundary
- Contour Line (1m)
- Existing Building
- Former BP Extents
- Demolished Shed
- Sample Location

TITLE: Environmental Sample Locations			FIGURE: Figure 4
			SHEET: 1 OF 1 / ISSUE: A
PROJECT: DESA for 29 & 30 Charlesworth Bay Road, Korora			CLIENT: Brian Betts
AUTHOR: SD	DATE: 19/06/24	SCALE: 1:500	PROJECT: 2324-181

APPENDIX A

Earth Water Consulting Pty Limited
2-16 Lourdes Avenue
Urunga
NSW 2455

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Strider Duerinckx**

Report **1096852-S**
Project name 27+29 CHARLESWORTH BAY RD
Project ID 2324-181
Received Date May 14, 2024

Client Sample ID			**C-1**	**C-2**	**C-3**	**C-4**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S24-My0037667**	**S24-My0037672**	**S24-My0037677**	**S24-My0037682**
Date Sampled			**May 13, 2024**	**May 13, 2024**	**May 13, 2024**	**May 13, 2024**
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	85	80	78	85
Tetrachloro-m-xylene (surr.)	1	%	77	74	75	75
Heavy Metals						
Arsenic	2	mg/kg	17	21	14	18
Lead	5	mg/kg	16	16	17	19
Sample Properties						
% Moisture	1	%	32	35	26	37

Client Sample ID			C-5	C-6	C-7
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S24-My0037687	S24-My0037692	S24-My0037697
Date Sampled			May 13, 2024	May 13, 2024	May 13, 2024
Test/Reference	LOR	Unit			
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	83	81	89
Tetrachloro-m-xylene (surr.)	1	%	77	77	77
Heavy Metals					
Arsenic	2	mg/kg	17	24	21
Lead	5	mg/kg	22	21	25
Sample Properties					
% Moisture	1	%	31	33	33

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Organochlorine Pesticides	Sydney	May 21, 2024	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Heavy Metals	Sydney	May 21, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	May 14, 2024	14 Days
- Method: LTM-GEN-7080 Moisture			

eurofins

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

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

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

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Site# 2370

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Perth ProMicro
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+61 8 6253 4444
NATA# 2561
Site# 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
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Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Earth Water Consulting Pty Limited
Address: 2-16 Lourdes Avenue
Urunga
NSW 2455

Project Name: 27+29 CHARLESWORTH BAY RD
Project ID: 2324-181

Order No.: 2324_181
Report #: 1096852
Phone: 0402 6083 96
Fax:

Received: May 14, 2024 10:01 PM
Due: May 21, 2024
Priority: 5 Day
Contact Name: Strider Duerinckx

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Arsenic	Lead	Organochlorine Pesticides	Moisture Set
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	C-1	May 13, 2024		Soil	S24-My0037667	X	X	X	X
2	C-2	May 13, 2024		Soil	S24-My0037672	X	X	X	X
3	C-3	May 13, 2024		Soil	S24-My0037677	X	X	X	X
4	C-4	May 13, 2024		Soil	S24-My0037682	X	X	X	X
5	C-5	May 13, 2024		Soil	S24-My0037687	X	X	X	X
6	C-6	May 13, 2024		Soil	S24-My0037692	X	X	X	X
7	C-7	May 13, 2024		Soil	S24-My0037697	X	X	X	X
Test Counts						7	7	7	7

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Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

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

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Lead	mg/kg	< 5			5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	107			80-120	Pass	
Lead	%	95			80-120	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	92			70-130	Pass	
4.4'-DDD	%	96			70-130	Pass	
4.4'-DDE	%	94			70-130	Pass	
4.4'-DDT	%	112			70-130	Pass	
a-HCH	%	94			70-130	Pass	
Aldrin	%	93			70-130	Pass	
b-HCH	%	92			70-130	Pass	
d-HCH	%	91			70-130	Pass	
Dieldrin	%	90			70-130	Pass	
Endosulfan I	%	96			70-130	Pass	
Endosulfan II	%	95			70-130	Pass	
Endosulfan sulphate	%	100			70-130	Pass	
Endrin	%	101			70-130	Pass	
Endrin aldehyde	%	87			70-130	Pass	
Endrin ketone	%	99			70-130	Pass	
g-HCH (Lindane)	%	94			70-130	Pass	
Heptachlor	%	92			70-130	Pass	
Heptachlor epoxide	%	85			70-130	Pass	
Hexachlorobenzene	%	92			70-130	Pass	
Methoxychlor	%	103			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S24-My0055678	NCP	%	106			75-125	Pass	
Lead	S24-My0055678	NCP	%	98			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	S24-My0037687	CP	%	31	32	1.9	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S24-My0037697	CP	mg/kg	21	17	20	30%	Pass	
Lead	S24-My0037697	CP	mg/kg	25	21	18	30%	Pass	

Comments

Sample Integrity

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

Authorised by:

Andrew Black	Analytical Services Manager
Mickael Ros	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Sample Properties

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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CHAIN OF CUSTODY RECORD

Eurofins | mgt ABN 50 005 085 521

☑ **Sydney Laboratory** Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066 02 9900 8400 EnviroSampleNSW@eurofins.com

☐ **Brisbane Laboratory** Unit 1 21 Smallwood Place Murarrie QLD 4172 07 3902 4600 EnviroSampleQLD@eurofins.com

☐ **Perth Laboratory** Unit 2 91 Leach Highway Kewdale WA 6105 08 9251 9600 EnviroSampleWA@eurofins.com

☐ **Melbourne Laboratory** 2 Kingston Town Close Oakleigh VIC 3166 03 8564 5000 EnviroSampleVic@eurofins.com

Company	Earth Water Consulting Pty Limited	Project №	~~2325~~ 2324 - 181
Address	Unit 6 / 1A MArina Crescent, Urunga NSW 2455	Project Name	27+29 Clarkson Rd Bay Rd
Contact Name	Strider Duerinckx	Project Manager	Strider Duerinckx
Phone №	0402608396	EDD Format (ESdat, EQuIS etc)	
Special Directions		Sampler(s)	A.S.
Purchase Order	~~2325~~ 2324 - 181	Handed over by	A.S.
Quote ID №	Earth Water Consulting	Email for Invoice	strider@ewcon.com.au
		Email for Results	strider@ewcon.com.au

Analyses (Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing)

Containers (Change container type & size if necessary): 500mL Plastic | 250mL Plastic | 125mL Plastic | 200mL Amber Glass | 40mL Vial | 500mL PFAS PET | Jar (Glass or HDPE)

Required Turnaround Time (Default will be 5 days if not ticked. ♦Surcharge will apply)

☐ Overnight (reporting by 9am)♦ ☐ Same day♦ ☐ 1 day♦ ☐ 2 days♦ ☐ 3 days♦ ☒ 5 days (Standard) ☐ Other( )

№	Client Sample ID	Sampled Date/Time (dd/mm/yy hh:mm)	Matrix Solid (S) Water (W)	Composite	Comp ID	As, Pb	OCP	Sample Comments / Dangerous Goods Hazard Warning
1	S-1	13/5/24	S					
2	S-2				C-1	✓	✓	
3	S-3							
4	S-4							
5	S-5							
6	S-6				C-2	✓	✓	
7	S-7							
8	S-8							
9	S-9							
10	S-10	↓	↓		C-3	✓	✓	
	Total Counts							

Method of Shipment: ☑ Courier (#) ☐ Hand Delivered ☐ Postal Name ART Signature Date 13/5/24 Time

Eurofins | mgt Laboratory Use Only: Received By Brendan SYD | BNE | MEL | PER | ADL | NTL | DRW Signature Date 13/5 Time

Received By SYD | BNE | MEL | PER | ADL | NTL | DRW Signature Date Time

Temperature Seal Intact

Eurofins Environment Testing Australia Pty Ltd trading as Eurofins | mgt

Submission of samples to the laboratory will be deemed as acceptance of Eurofins | mgt Standard Terms and Conditions unless agreed otherwise. A copy of Eurofins | mgt Standard Terms and Conditions is available on request.

10096852

SHEET 1 of 3

CHAIN OF CUSTODY RECORD

Eurofins | mgt ABN 50 005 085 521

- [x] **Sydney Laboratory** Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066 02 9900 8400 EnviroSampleNSW@eurofins.com
- [ ] **Brisbane Laboratory** Unit 1 21 Smallwood Place Murarrie QLD 4172 07 3902 4600 EnviroSampleQLD@eurofins.com
- [ ] **Perth Laboratory** Unit 2 91 Leach Highway Kewdale WA 6105 08 9251 9600 EnviroSampleWA@eurofins.com
- [ ] **Melbourne Laboratory** 2 Kingston Town Close Oakleigh VIC 3166 03 8564 5000 EnviroSampleVic@eurofins.com

Company	Earth Water Consulting Pty Limited
Address	Unit 6 / 1A MArina Crescent, Urunga NSW 2455
Contact Name	Strider Duerinckx
Phone №	0402608396
Special Directions	
Purchase Order	2324 ~~2223~~ - 181
Quote ID №	Earth Water Consulting
Project №	2324 ~~2223~~ - 181
Project Name	27+29 Charlesworth Bay Rd
Project Manager	Strider
EDD Format (ESdat, EQuIS etc)	
Sampler(s)	A.S.
Handed over by	A.S.
Email for Invoice	strider@ewcon.com.au
Email for Results	strider@ewcon.com.au

Analyses: Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing

Containers: Change container type & size if necessary — 500mL Plastic, 250mL Plastic, 125mL Plastic, 200mL Amber Glass, 40mL Vial, 500mL PFAS PET, Jar (Glass or HDPE)

Required Turnaround Time (Default will be 5 days if not ticked. ♦Surcharge will apply)
- [ ] Overnight (reporting by 9am)♦
- [ ] Same day♦
- [ ] 1 day♦
- [ ] 2 days♦
- [ ] 3 days♦
- [x] 5 days (Standard)
- [ ] Other( )

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	Composite	Comp ID	As, Pb	OCP	Sample Comments / Dangerous Goods Hazard Warning
1	S-11	13/5/24	S	⌐ (S-11–S-12)	C-3	✓	✓	
2	S-12	↓	↓	⌐				
3	S-13	↓	↓	⌐ (S-13–S-16)				
4	S-14	↓	↓		C-4	✓	✓	
5	S-15	↓	↓					
6	S-16	↓	↓	⌐				
7	S-17	↓	↓	⌐ (S-17–S-20)				
8	S-18	↓	↓		C-5	✓	✓	
9	S-19	↓	↓					
10	S-20	↓	↓	⌐				
	Total Counts							

Method of Shipment: [x] Courier (#) [ ] Hand Delivered [ ] Postal — Name: ART — Signature: [signature] — Date: 13/5/24 — Time:

Eurofins | mgt Laboratory Use Only
- Received By: SYD | BNE | MEL | PER | ADL | NTL | DRW — Signature — Date — Time — Temperature
- Received By: SYD | BNE | MEL | PER | ADL | NTL | DRW — Signature — Date — Time — Report №

Eurofins Environment Testing Australia Pty Ltd trading as Eurofins | mgt

Submission of samples to the laboratory will be deemed as acceptance of Eurofins | mgt Standard Terms and Conditions unless agreed otherwise. A copy of Eurofins | mgt Standard Terms and Conditions is available on request.

SHEET 2 of 3

CHAIN OF CUSTODY RECORD

Eurofins | mgt ABN 50 005 085 521

☑ **Sydney Laboratory**
Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ **Brisbane Laboratory**
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☐ **Perth Laboratory**
Unit 2 91 Leach Highway Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ **Melbourne Laboratory**
2 Kingston Town Close Oakleigh VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

Company	Earth Water Consulting Pty Limited	Project №	2324 - ~~2225~~ 181	Project Manager	Strider
Address	Unit 6 / 1A MArina Crescent, Urunga NSW 2455	Project Name	27+29 Charlesworth Bay Road	EDD Format (ESdat, EQuIS etc)	
Contact Name	Strider Duerinckx			Sampler(s)	A S.
Phone №	0402608396			Handed over by	A. S.
Special Directions				Email for Invoice	strider@ewcon.com.au
Purchase Order	2324 - ~~2225~~ 181			Email for Results	strider@ewcon.com.au
Quote ID №	Earth Water Consulting				

Analyses — Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S), Water (W)	Composite	Comp. ID	Pb	As, Cr
1	S-21	13/5/24	S				
2	S-22				C6	✓	✓
3	S-23						
4	S-24						
5	S-25						
6	S-26				C7	✓	✓
7	S-27						
8	S-28						
9							
10							
	Total Counts						

Containers — Change container type & size if necessary

500mL Plastic | 250mL Plastic | 125mL Plastic | 200mL Amber Glass | 40mL Vial | 500mL PFAS PET | Jar (Glass or HDPE)

Required Turnaround Time — Default will be 5 days if not ticked.

♦Surcharge will apply
☐ Overnight (reporting by 9am)♦
☐ Same day♦ ☐ 1 day♦
☐ 2 days♦ ☐ 3 days♦
☒ 5 days (Standard)
☐ Other( )

Sample Comments / Dangerous Goods Hazard Warning

Method of Shipment							
☒ Courier (#)	☐ Hand Delivered	☐ Postal	Name	ART	Signature		Date / Time / Time

Eurofins | mgt Laboratory Use Only							
Received By	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date	Time	Temperature		
Received By	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date	Time	Report №		

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Earth Water Consulting Pty Limited
2-16 Lourdes Avenue
Urunga
NSW 2455

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Strider Duerinckx**

Report **1106794-S**
Project name 29+30 CHARLESWORTH BAY
Project ID 2324-181
Received Date Jun 12, 2024

Client Sample ID			**C-8**	**C-9**	**D-1**	**D-2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S24-Jn0026311**	**S24-Jn0026316**	**S24-Jn0026317**	**S24-Jn0026318**
Date Sampled			**Jun 11, 2024**	**Jun 11, 2024**	**Jun 11, 2024**	**Jun 11, 2024**
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	87	95	111	85
Tetrachloro-m-xylene (surr.)	1	%	101	94	95	67
Heavy Metals						
Arsenic	2	mg/kg	23	7.1	4.9	22
Lead	5	mg/kg	23	22	27	18
Sample Properties						
% Moisture	1	%	29	21	26	31

Client Sample ID			D-3	D-4	D-5	D-6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S24-Jn0026319	S24-Jn0026320	S24-Jn0026321	S24-Jn0026322
Date Sampled			Jun 11, 2024	Jun 11, 2024	Jun 11, 2024	Jun 11, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	83	83	96	108
Tetrachloro-m-xylene (surr.)	1	%	67	65	65	100
Heavy Metals						
Arsenic	2	mg/kg	16	16	8.3	27
Lead	5	mg/kg	19	18	30	18
Sample Properties						
% Moisture	1	%	28	21	17	28

Client Sample ID			D-7
Sample Matrix			Soil
Eurofins Sample No.			S24-Jn0026323
Date Sampled			Jun 11, 2024
Test/Reference	LOR	Unit	
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05
a-HCH	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-HCH	0.05	mg/kg	< 0.05
d-HCH	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05

Client Sample ID			D-7
Sample Matrix			**Soil**
Eurofins Sample No.			**S24-Jn0026323**
Date Sampled			**Jun 11, 2024**
Test/Reference	LOR	Unit	
Organochlorine Pesticides			
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05
Toxaphene	0.5	mg/kg	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1
Dibutylchlorendate (surr.)	1	%	86
Tetrachloro-m-xylene (surr.)	1	%	66
Heavy Metals			
Arsenic	2	mg/kg	16
Lead	5	mg/kg	18
Sample Properties			
% Moisture	1	%	25

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Organochlorine Pesticides	Sydney	Jun 13, 2024	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Heavy Metals	Sydney	Jun 13, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Jun 12, 2024	14 Days
- Method: LTM-GEN-7080 Moisture			

eurofins

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

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

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079 & 25289

Eurofins ARL Pty Ltd
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NATA# 2561
Site# 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Earth Water Consulting Pty Limited
Address: 2-16 Lourdes Avenue
Urunga
NSW 2455

Project Name: 29+30 CHARLESWORTH BAY
Project ID: 2324-181

Order No.: 2324-181
Report #: 1106794
Phone: 0402 6083 96
Fax:

Received: Jun 12, 2024 10:55 AM
Due: Jun 19, 2024
Priority: 5 Day
Contact Name: Strider Duerinckx

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Arsenic	Lead	Organochlorine Pesticides	Moisture Set
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	C-8	Jun 11, 2024		Soil	S24-Jn0026311	X	X	X	X
2	C-9	Jun 11, 2024		Soil	S24-Jn0026316	X	X	X	X
3	D-1	Jun 11, 2024		Soil	S24-Jn0026317	X	X	X	X
4	D-2	Jun 11, 2024		Soil	S24-Jn0026318	X	X	X	X
5	D-3	Jun 11, 2024		Soil	S24-Jn0026319	X	X	X	X
6	D-4	Jun 11, 2024		Soil	S24-Jn0026320	X	X	X	X
7	D-5	Jun 11, 2024		Soil	S24-Jn0026321	X	X	X	X
8	D-6	Jun 11, 2024		Soil	S24-Jn0026322	X	X	X	X
9	D-7	Jun 11, 2024		Soil	S24-Jn0026323	X	X	X	X
Test Counts						9	9	9	9

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

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

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Lead	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	80			70-130	Pass	
4.4'-DDD	%	84			70-130	Pass	
4.4'-DDE	%	92			70-130	Pass	
4.4'-DDT	%	91			70-130	Pass	
a-HCH	%	80			70-130	Pass	
Aldrin	%	84			70-130	Pass	
b-HCH	%	91			70-130	Pass	
d-HCH	%	81			70-130	Pass	
Dieldrin	%	91			70-130	Pass	
Endosulfan I	%	88			70-130	Pass	
Endosulfan II	%	85			70-130	Pass	
Endosulfan sulphate	%	81			70-130	Pass	
Endrin	%	124			70-130	Pass	
Endrin aldehyde	%	82			70-130	Pass	
Endrin ketone	%	75			70-130	Pass	
g-HCH (Lindane)	%	91			70-130	Pass	
Heptachlor	%	111			70-130	Pass	
Heptachlor epoxide	%	89			70-130	Pass	
Hexachlorobenzene	%	89			70-130	Pass	
Methoxychlor	%	105			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	99			80-120	Pass	
Lead	%	101			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S24-Jn0026311	CP	%	90			75-125	Pass	
Lead	S24-Jn0026311	CP	%	93			75-125	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S24-Jn0026320	CP	%	77			70-130	Pass	
4.4'-DDD	S24-Jn0026320	CP	%	78			70-130	Pass	
4.4'-DDE	S24-Jn0026320	CP	%	85			70-130	Pass	
4.4'-DDT	S24-Jn0026320	CP	%	81			70-130	Pass	
a-HCH	S24-Jn0026320	CP	%	74			70-130	Pass	
Aldrin	S24-Jn0026320	CP	%	80			70-130	Pass	
b-HCH	S24-Jn0026320	CP	%	70			70-130	Pass	
d-HCH	S24-Jn0026320	CP	%	73			70-130	Pass	
Dieldrin	S24-Jn0026320	CP	%	85			70-130	Pass	
Endosulfan I	S24-Jn0026320	CP	%	86			70-130	Pass	
Endosulfan II	S24-Jn0026320	CP	%	79			70-130	Pass	
Endosulfan sulphate	S24-Jn0026320	CP	%	76			70-130	Pass	
Endrin	S24-Jn0026320	CP	%	127			70-130	Pass	
Endrin aldehyde	S24-Jn0026320	CP	%	90			70-130	Pass	
Endrin ketone	S24-Jn0026320	CP	%	72			70-130	Pass	
g-HCH (Lindane)	S24-Jn0026320	CP	%	87			70-130	Pass	
Heptachlor	S24-Jn0026320	CP	%	101			70-130	Pass	
Heptachlor epoxide	S24-Jn0026320	CP	%	86			70-130	Pass	
Hexachlorobenzene	S24-Jn0026320	CP	%	85			70-130	Pass	
Methoxychlor	S24-Jn0026320	CP	%	102			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S24-Jn0027662	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S24-Jn0027662	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	S24-Jn0027662	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	N24-Jn0024881	NCP	mg/kg	2.0	< 2	80	30%	Fail	Q15
Lead	B24-Jn0024495	NCP	mg/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	S24-Jn0026319	CP	%	28	26	7.8	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Adam Bateup	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Sample Properties

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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CHAIN OF CUSTODY RECORD

Eurofins | mgt ABN 50 005 085 521

☑ **Sydney Laboratory** Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066 02 9900 8400 EnviroSampleNSW@eurofins.com

☐ **Brisbane Laboratory** Unit 1 21 Smallwood Place Murarrie QLD 4172 07 3902 4600 EnviroSampleQLD@eurofins.com

☐ **Perth Laboratory** Unit 2 91 Leach Highway Kewdale WA 6105 08 9251 9600 EnviroSampleWA@eurofins.com

☐ **Melbourne Laboratory** 2 Kingston Town Close Oakleigh VIC 3166 03 8564 5000 EnviroSampleVic@eurofins.com

Company	Earth Water Consulting Pty Limited
Address	Unit 6 / 1A MArina Crescent, Urunga NSW 2455
Contact Name	Strider Duerinckx
Phone №	0402608396
Special Directions	
Purchase Order	~~2223~~ 2324-181
Quote ID №	Earth Water Consulting
Project №	~~2223~~ 2324-181
Project Name	29+30 Charlesworth Bay Rd
Project Manager	S.D.
EDD Format (ESdat, EQuIS etc)	
Sampler(s)	A.S.
Handed over by	A.S.
Email for Invoice	strider@ewcon.com.au
Email for Results	strider@ewcon.com.au

Analyses: Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing.

Containers (Change container type & size if necessary): 500mL Plastic, 250mL Plastic, 125mL Plastic, 200mL Amber Glass, 40mL Vial, 500mL PFAS PET, Jar (Glass or HDPE)

Required Turnaround Time (Default will be 5 days if not ticked) ♦Surcharge will apply

☐ Overnight (reporting by 9am)♦
☐ Same day♦ ☐ 1 day♦
☐ 2 days♦ ☐ 3 days♦
☒ 5 days (Standard)
☐ Other( )

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	Composite	Comp. ID	As, Pb	OCP	Jar (Glass or HDPE)	Sample Comments / Dangerous Goods Hazard Warning
1	S-29	11/6/24	S	⎤				✓	
2	S-30	↓	↓	⎥	C-8	✓	✓	✓	
3	S-31	↓	↓	⎥				✓	
4	S-32	↓	↓	⎦				✓	
5	S-33	↓	↓	⎤				✓	
6	S-34	↓	↓	⎥	C-9	✓	✓	✓	
7	S-35	↓	↓	⎥				✓	
8	S-36	↓	↓	⎦				✓	
9	D-1	↓	↓			✓	✓	✓	
10	D-2	↓	↓			✓	✓	✓	
	Total Counts							10	

Method of Shipment	☒ Courier (#) ☐ Hand Delivered ☐ Postal	Name	ART	Signature	[signature]	Date	11/6/24	Time	
Eurofins | mgt Laboratory Use Only	Received By	Brendanus	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	—	Date	12/6	Time	10:55 Am	Temperature	10.8
	Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date		Time		Report No	1106794

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Modified by: S. Keirl Approved by: C. D. Prinz Approved on: 12 June 2018

SHEET 1 of 2.

CHAIN OF CUSTODY RECORD

Eurofins | mgt ABN 50 005 085 521

☑ Sydney Laboratory — Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066 — 02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory — Unit 1 21 Smallwood Place Murarrie QLD 4172 — 07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory — Unit 2 91 Leach Highway Kewdale WA 6105 — 08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory — 2 Kingston Town Close Oakleigh VIC 3166 — 03 8564 5000 EnviroSampleVic@eurofins.com

Company	Earth Water Consulting Pty Limited
Address	Unit 6 / 1A MArina Crescent, Urunga NSW 2455
Contact Name	Strider Duerinckx
Phone №	0402608396
Special Directions	
Purchase Order	2324 - 181
Quote ID №	Earth Water Consulting
Project №	2324 - 181
Project Name	29+30 Charlesworth Bay Rd
Project Manager	S.D.
EDD Format (ESdat, EQuIS etc)	
Sampler(s)	A.S.
Handed over by	A.S.
Email for Invoice	strider@ewcon.com.au
Email for Results	strider@ewcon.com.au

Analyses (Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing.)

Containers (Change container type & size if necessary): 500mL Plastic; 250mL Plastic; 125mL Plastic; 200mL Amber Glass; 40mL Vial; 500mL PFAS PET; Jar (Glass or HDPE)

Required Turnaround Time (Default will be 5 days if not ticked.) ♦Surcharge will apply
- ☐ Overnight (reporting by 9am)♦
- ☐ Same day♦
- ☐ 1 day♦
- ☐ 2 days♦
- ☐ 3 days♦
- ☒ 5 days (Standard)
- ☐ Other( )

№	Client Sample ID	Sampled Date/Time (dd/mm/yy hh:mm)	Matrix (Solid (S) Water (W))	As, Pb	OCP	500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL Vial	500mL PFAS PET	Jar (Glass or HDPE)	Sample Comments / Dangerous Goods Hazard Warning
1	D-3	11/6/24	S	✓	✓								
2	D-4	↓	↓	✓	✓								
3	D-5	↓	↓	✓	✓								
4	D-6	↓	↓	✓	✓								
5	D-7	↓	↓	✓	✓								
6													
7													
8													
9													
10													
			Total Counts										

Method of Shipment	☒ Courier (#)	☐ Hand Delivered	☐ Postal	Name: ART	Signature: [signature]	Date: 11/6/24	Time:

Eurofins | mgt Laboratory Use Only	Received By	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date	Time	Temperature
	Received By	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date	Time	Report №

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