

12 May 2021

McCloy Group Pty Ltd  
PO Box 2214  
Dangar NSW 2309

**Attention: Mr Sam Rowe**

Dear Sam,

**RE: 107 HAUSSMAN DRIVE, THORNTON NSW  
SURFACE WATER & SEDIMENT ASSESSMENT**

## **1 INTRODUCTION**

Qualtest Laboratory NSW Pty Ltd (Qualtest) is pleased to present the findings of the surface water and sediment assessment for the site located at 107 Haussman Drive, Thornton NSW (the Site).

Qualtest previously carried out a Preliminary Contamination Assessment (PCA) for the site in 2017 (Ref: NEW17P-0074-AB, dated 29 June 2017). The PCA identified ponds/dams on the site, and recommended that sampling and analysis of the water and sediment in the dams be carried out.

The PCA was submitted to Maitland City Council (MCC) as part of a re-zoning application for the site. Council have subsequently requested that the sampling and analysis recommended in the PCA is completed.

This letter provides the results of the sampling and analysis of surface water and sediment.

## **2 OBJECTIVES**

The objective of the assessment is to assess:

- Whether the surface water and sediments in the dams pose a risk to human health or the environment; and,
- If the surface water and sediments are suitable for re-use/irrigation on site, if the dams are proposed to be backfilled.

## **3 SCOPE OF WORKS**

In order to meet the above objectives, the following scope of works was carried out:

- Collection of surface water and sediment samples;
- Laboratory analysis of samples; and
- Data assessment and preparation of this letter report.

#### 4 FIELD WORK

Field work was carried out on 5 May 2021. At the time of the fieldwork, three dams were observed:

- Dam 1 – located in the central eastern portion of the site. Contained water at the time of sampling;
- Dam 2 - located in the central eastern portion of the site (north of Dam 1). Dry at the time of sampling.

A surface water sample and a sediment sample were collected from Dam 1, and field water quality parameters were recorded. Dam 2 was not accessible, and therefore no sediment sample was collected.

Sediment samples were collected by hand from the edge of the dam, and surface water samples were collected using a dedicated disposable plastic bailer. The samples were placed directly into laboratory supplied jars and bottles with appropriate preservatives for the analysis. Each sample was placed directly into an ice-chilled esky and remained chilled during transportation to the laboratory.

Figure 1, attached, shows the sampling locations. Photographs of the dams are presented below.



Photograph 1 – Showing Dam 1



Photograph 2 – Showing Dam 2 (Dry)

## 5 ANALYTICAL SUITE

The samples were dispatched to NATA-accredited laboratory, Eurofins MGT. The samples were analysed for:

- Heavy Metals (arsenic, cadmium, chromium, copper, lead, nickel, zinc and mercury);
- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethylbenzene, Xylenes (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAH);
- Organochlorine Pesticides (OCP);
- Suspended Solids – water sample only; and
- pH and Electrical Conductivity.

## 6 ASSESSMENT CRITERIA

### 6.2 Sediment

The health and ecological investigation levels for soil, presented in the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013)*, NEPC 2013, Canberra (referred to as ASC NEPM 2013) are generally used in NSW when selecting investigation levels for chemical contaminants in soil.



The purpose of the ASC NEPM (2013) is to *'establish a nationally consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, environmental auditors, landowners, developers and industry'*.

ASC NEPM (2013) provides health and ecological investigation and screening levels for different exposure scenarios based on a proposed land use. Health and ecological investigation and screening levels are applicable to the first stage (Tier 1) of site assessment and are used to assist in the iterative development of a Conceptual Site Model (CSM). They are adopted as concentrations of a contaminant above which either further appropriate investigation and/or evaluation will be required, or development of an appropriate management strategy (including remediation).

Health Investigation Levels (HILs) and Health Screening levels (HSLs) are applicable for assessing human health risk via relevant exposure pathways.

The HILs were developed for a broad range of metals and organic substances. These are generic to all soil types.

The HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via inhalation and direct contact with soil and groundwater. The HSLs depend on specific soil physicochemical properties, building configurations, land use scenarios and the depth that groundwater is encountered.

Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) are applicable for assessing risk to terrestrial ecosystems under residential, open space and commercial/industrial land use scenarios. They apply to the top 2m of soil, which corresponds to the root zone and habitation zone of many species.

The EILs are associated with selected metals and organic compounds. The EILs are site specific and are determined by calculating an Ambient Background Concentration (ABC) and an Added Contaminant Limit (ACL) for the site, which are added together to get the EIL. The EIL's for the site have been calculated using site specific pH, Cation Exchange Capacity (CEC) and clay content values.

The ESLs are associated with petroleum compounds and fractions and are dependent on specific soil physical properties (i.e. coarse and fine-grained soil).

As the proposed development is residential, the investigation levels for HIL/HSL A and EILs/ESLs for urban residential / public open space are considered applicable for the site.

## **6.1 Surface Water**

For assessing surface water quality, it is first necessary to assess the beneficial uses of surface water for the site and down gradient of the investigation area being assessed. Potential beneficial uses are considered to include:

- Aquatic ecosystems – discharge of the dams offsite to the east to an unnamed creek located about 50m east of the eastern site boundary. The unnamed creek is anticipated to sustain freshwater ecosystem; and
- Irrigation – irrigation of the water over the site, if the dams are proposed to be backfilled.

Given the above, the potential beneficial use of surface water is considered to be sustaining aquatic ecosystems, and irrigation.

The applicable guidelines are:

- ANZECC (2000) Australian and New Zealand Guidelines on Fresh and Marine Water Quality (Primary Industries – Irrigation); and,
- ANZG (2018) Australian and New Zealand Guidelines on Fresh and Marine Water Quality.

The Default Guideline Values (DGVs) for freshwater species presented in the ANZG (2018) are considered applicable for the protection of aquatic ecosystems of the receiving waters, as overflow from the onsite dams would discharge to freshwater bodies.

ASC NEPM (2013) has adopted the trigger values for the protection of 95% of aquatic ecosystems, except where contaminants are potentially bio-accumulative in which case the trigger values for protection of 99% of species are used.

## 7 QUALITY ASSURANCE / QUALITY CONTROL

In order to assess field quality assurance / quality control (QA/QC) procedures, one duplicate sample (D-9.4.21), was collected and analysed with primary surface water sample DAM1. The results of the field duplicate sampling are presented in Table LR3 (attached). The RPDs were within the acceptable limit (30%), with the exception of conductivity (56%). This RPD is not considered to affect the data usability as the higher conductivity was reported for the primary sample, and was below the adopted criteria. It is noted that low concentrations exaggerate the percentage differences with respect to small total concentrations, therefore where results for primary and duplicate sample were less than 10 times the LOR, the RPDs have been disregarded.

The laboratory conducted internal quality control using laboratory duplicates, spikes and method blanks. The laboratory internal quality control showed method blank results were recorded below the laboratory limit of reporting, and spike recoveries within control limits. Laboratory duplicates were within laboratory acceptable limits, except for zinc. The laboratory quoted code Q15 which states *"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."*. Based on this the RPD is not considered to affect the data usability.

Based on the review of the QA/QC data, it is considered that the results are likely to be representative of conditions at the sampling locations at the time of sampling and are suitable for use in this assessment.

## 8 RESULTS

### 8.1 Surface water Field Quality Parameters

The surface quality parameters are summarised in Table 8.1 below.

**Table 8.1 –Surface Water Quality Parameters**

Sample Location	DAM 1
Electrical conductivity (µS/cm)	151.1
pH	6.66
Temperature (°C)	15.6
Redox Potential (mV)	61.4
Comments	Brown tinge, no odour

## **8.2 Laboratory Results**

The laboratory results are presented in Table LR1 and LR2 (attached). The laboratory reports are also attached.

The sediment laboratory results were compared to the criteria, as outlined in Section 6.1 above. The results showed:

- Concentrations of metals, PAH's, BTEX, TRH and OCP's were below the adopted criteria;
- pH shows the sediments are neutral; and
- Conductivity shows the sediments are not saline.

The surface water laboratory results were compared to the criteria, as outlined in Section 6.2 above. The results showed:

- Concentrations of chromium were above the adopted criteria for protection of aquatic ecosystems (0.001mg/L) in sample DAM1 (0.003mg/L);
- Concentrations of copper were above the adopted criteria for protection of aquatic ecosystems (0.0014mg/L) in sample DAM1 (0.003mg/L); and,
- Concentrations of zinc were above the adopted criteria for protection of aquatic ecosystems (0.008mg/L) in sample DAM1 (0.026mg/L).

## **9 CONCLUSIONS**

The laboratory results showed that the sediment was suitable for onsite reuse from a contamination perspective.

The surface water contained concentrations of metals (chromium, copper and zinc) above the trigger values for protection of aquatic ecosystems. Adopting the aquatic ecosystem guidelines for onsite surface water is a conservative approach, as the DGVs apply to the receiving waters. No data is available for the receiving waters (unnamed creek located 50m east of the sites eastern boundary). In addition, the surface water would only discharge to the unnamed creek during periods of high rainfall causing overflow. Based on this it is considered that the slightly elevated metals in the surface water are unlikely to have an adverse environmental impact on the unnamed creek, and therefore does not warrant remediation.

The surface water is also suitable for irrigation onsite, should the dam require dewatering for backfilling.

## **10 LIMITATIONS**

The findings presented in the report and used as the basis for recommendations presented herein were obtained using normal, industry accepted practices and standards. To our knowledge, they represent a reasonable interpretation of the general conditions of the site.

Data and opinions contained within the report may not be used in other contexts or for any other purposes without prior review and agreement by Qualtest. If this report is reproduced, it must be in full.

If you have any further questions regarding this report, please do not hesitate to contact the undersigned.

For and on behalf of Qualtest Laboratory (NSW) Pty Ltd.

A handwritten signature in black ink, appearing to read 'E. Coleman'.

Emma Coleman  
Senior Environmental Scientist

**Attachments:**

Figure 1 – Site Location Plan  
Figure 2 - Sample Location Plan  
Table LR1 – Sediment Analytical Results  
Table LR2 – Surface Water Analytical Results  
Table LR3 – Quality Control Results  
Laboratory Reports





Client:	MCCLOY GROUP PTY LTD	Drawing No:	FIGURE 1
Project:	SURFACE WATER & SEDIMENT ASSESSMENT	Project No:	NEW17P-0074A
Location:	107 HAUSSMAN DRIVE THORNTON NSW	Scale:	N.T.S.
Title:	SITE LOCATION PLAN	Date:	11 MAY 2021





Client:	MCCLOY GROUP PTY LTD	Drawing No:	FIGURE 2
Project:	SURFACE WATER & SEDIMENT ASSESSMENT	Project No:	NEW17P-0074A
Location:	107 HAUSSMAN DRIVE THORNTON NSW	Scale:	N.T.S.
Title:	SAMPLE LOCATION PLAN	Date:	11 MAY 2021



					Field ID	DAM1SD
					Date	3/05/2021
Analytes		Units	LOR	HIL-A <sup>1,2</sup>	EIL A/ESL A <sup>3</sup>	
Metals	Arsenic	mg/kg	2	100	100	5.7
	Cadmium	mg/kg	0.4	20		< 0.4
	Chromium	mg/kg	5	100	410*	< 5
	Copper	mg/kg	5	6000	220*	< 5
	Lead	mg/kg	5	300	1100	13
	Mercury	mg/kg	5	40		< 0.1
	Nickel	mg/kg	5	400	170*	< 5
Zinc	mg/kg	5	7400	520*	17	
pH & EC	pH (1:5 Aqueous extract)	ph units	0.1			6.2
	Conductivity	uS/cm	0.05			32
PAHs	Acenaphthene	mg/kg	0.5			< 0.5
	Acenaphthylene	mg/kg	0.5			< 0.5
	Anthracene	mg/kg	0.5			< 0.5
	Benz(a)anthracene	mg/kg	0.5			< 0.5
	Benzo(a)pyrene	mg/kg	0.5		0.7	< 0.5
	Benzo(a)pyrene TEQ	mg/kg	0.6	3		0.6
	Benzo(b&j)fluoranthene	mg/kg	0.5			< 0.5
	Benzo(g,h,i)perylene	mg/kg	0.5			< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5			< 0.5
	Chrysene	mg/kg	0.5			< 0.5
	Dibenz(a,h)anthracene	mg/kg	0.5			< 0.5
	Fluoranthene	mg/kg	0.5			< 0.5
	Fluorene	mg/kg	0.5			< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5			< 0.5
	Naphthalene	mg/kg	0.5		170	< 0.5
	Phenanthrene	mg/kg	0.5			< 0.5
	Pyrene	mg/kg	0.5			< 0.5
	Total PAH	mg/kg	0.5	300		< 0.5
BTEX	Benzene	mg/kg	0.1	0.7	50	< 0.1
	Ethylbenzene	mg/kg	0.1	NL	70	< 0.1
	Toluene	mg/kg	0.1	480	85	< 0.1
	Xylenes	mg/kg	0.3	110	105	< 0.3
TRH	Naphthalene	mg/kg	0.5	5	170	< 0.5
	TRH C6-C10	mg/kg	20		180	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20	50		< 20
	TRH >C10-C16	mg/kg	50		120	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50	280		< 50
	TRH >C16-C34	mg/kg	100		300	< 100
	TRH >C16-C34 (silica Gel)	mg/kg	100			< 100
TRH >C34-C40	mg/kg	100		2800	< 100	
OCPs	4,4'-DDD	mg/kg	0.05	240		< 0.05
	4,4'-DDE	mg/kg	0.05			< 0.05
	4,4'-DDT	mg/kg	0.05		180	< 0.05
	a-BHC	mg/kg	0.05	6		< 0.05
	Aldrin	mg/kg	0.05			< 0.05
	Dieldrin	mg/kg	0.05			< 0.05
	b-BHC	mg/kg	0.05			< 0.05
	Chlordanes - Total	mg/kg	0.1	50		< 0.1
	d-BHC	mg/kg	0.05			< 0.05
	Endosulfan I	mg/kg	0.05	270		< 0.05
	Endosulfan II	mg/kg	0.05			< 0.05
	Endosulfan sulphate	mg/kg	0.05			< 0.05
	Endrin	mg/kg	0.05	10		< 0.05
	Endrin aldehyde	mg/kg	0.05			< 0.05
	Endrin ketone	mg/kg	0.05			< 0.05
	g-BHC (Lindane)	mg/kg	0.05			< 0.05
	Heptachlor	mg/kg	0.05	6		< 0.05
	Heptachlor epoxide	mg/kg	0.05			< 0.05
	Hexachlorobenzene	mg/kg	0.05			< 0.05
	Methoxychlor	mg/kg	0.05	300		< 0.2
	Toxaphene	mg/kg	1	20		< 0.1

## Notes

\* EIL based on pH of 6.2, CEC of 10meq/100ml, and clay content &gt;10%.

NL Non Limiting

Result Concentration exceeds adopted human health criteria (residential)

Result Concentration exceeds adopted ecological investigation levels - Residential

1 ASC NEPM (2013) Health Investigation Levels (Residential)

2 ASC NEPM (2013) Health Screening Levels (Residential, Clay 0-1m)

3 ASC NEPM (2013) Ecological Investigation and Screening Levels (Residential, clays)

				Field ID	DAM1
				Date	3.05.21
Analytes		Units	LOR	Aquatic Ecosystem <sup>1</sup>	Irrigation <sup>2</sup>
pH & TSS	pH (1:5 Aqueous extract)	ph units	0.1	6.5-8.0*	6.8
	Conductivity	uS/cm	10	125-2200	230
	Total Suspended Solids	mg/L	5		12
Metals	Arsenic	mg/L	5	0.013	20
	Cadmium	mg/L	0.1	0.0002	0.05
	Chromium	mg/L	0.05	0.001	1
	Copper	mg/L	0.5	0.0014	5
	Lead	mg/L	0.001	0.0034	5
	Mercury	mg/L	0.001	0.00006	0.002
	Nickel	mg/L	0.001	0.011	2
	Zinc	mg/L	0.005	0.008	5
OCP	4,4'-DDD	mg/L	0.0001		< 0.0001
	4,4'-DDE	mg/L	0.0001		< 0.0001
	4,4'-DDT	mg/L	0.0001	0.006	< 0.0001
	a-BHC	mg/L	0.0001		< 0.0001
	Aldrin	mg/L	0.0001		< 0.0001
	Dieldrin	mg/L	0.0001		< 0.0001
	b-BHC	mg/L	0.0001		< 0.0001
	Chlordanes - Total	mg/L	0.001	0.03	< 0.002
	d-BHC	mg/L	0.0001		< 0.0001
	Endosulfan I	mg/L	0.0001	0.03	< 0.0001
	Endosulfan II	mg/L	0.0001		< 0.0001
	Endosulfan sulphate	mg/L	0.0001		< 0.0001
	Endrin	mg/L	0.0001	0.01	< 0.0001
	Endrin aldehyde	mg/L	0.0001		< 0.0001
	Endrin ketone	mg/L	0.0001		< 0.0001
	g-BHC (Lindane)	mg/L	0.0001	0.2	< 0.0001
	Heptachlor	mg/L	0.0001	0.01	< 0.0001
	Heptachlor epoxide	mg/L	0.0001		< 0.0001
	Hexachlorobenzene	mg/L	0.0001		< 0.0001
	Methoxychlor	mg/L	0.0001		< 0.0002
	Toxaphene	mg/L	0.01	0.1	< 0.001
BTEX	Benzene	mg/L	0.001	0.95	< 0.001
	Toluene	mg/L	0.001	0.180**	< 0.001
	Ethylbenzene	mg/L	0.001	0.080**	< 0.001
	Xylenes	mg/L	0.003	0.075**	< 0.003
TRH	Naphthalene	mg/L	0.01		< 0.01
	TRH C6-C10	mg/L	0.02		< 0.02
	TRH C6-C10 less BTEX (F1)	mg/L	0.02		< 0.02
	TRH >C10-C16	mg/L	0.05		< 0.05
	TRH >C10-C16 less Naphthalene	mg/L	0.05		< 0.05
	TRH >C16-C34	mg/L	0.1		< 0.1
	TRH >C34-C40	mg/L	0.1		< 0.1
PAHs	Acenaphthene	mg/L	0.001		< 0.001
	Acenaphthylene	mg/L	0.001		< 0.001
	Anthracene	mg/L	0.001	0.00001**	< 0.001
	Benz(a)anthracene	mg/L	0.001		< 0.001
	Benzo(a)pyrene	mg/L	0.001	0.0001**	< 0.001
	Benzo(b&j)fluoranthene	mg/L	0.001		< 0.001
	Benzo(g,h,i)perylene	mg/L	0.001		< 0.001
	Benzo(k)fluoranthene	mg/L	0.001		< 0.001
	Chrysene	mg/L	0.001		< 0.001
	Dibenz(a,h)anthracene	mg/L	0.001		< 0.001
	Fluoranthene	mg/L	0.001		< 0.001
	Fluorene	mg/L	0.001		< 0.001
	Indeno(1,2,3-cd)pyrene	mg/L	0.001		< 0.001
	Naphthalene	mg/L	0.001	0.016	< 0.001
	Phenanthrene	mg/L	0.001		< 0.001
	Pyrene	mg/L	0.001		< 0.001
	Total PAH	mg/L	0.001		< 0.001

Notes:

Result Concentration exceeds the Protection of 95-99% of species in Freshwater trigger values

Result Concentration exceeds the Irrigation trigger values

Italics LOR exceeds adopted criteria

^ Bio accumulative contaminants – 99% protection level

\* Criteria from ANZECC (2000) Table 3.3.2, South-east Australia, Freshwater lakes and reservoirs

\*\* Low reliability criteria

a. Conservatively assumes xylene is p-xylene.

1

ANZG (2018) Australian and New Zealand Guidelines on Fresh and Marine Water Quality - Default Guideline Values

2 ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Primary Industries - Irrigation



**Table LR3- Quality Control Results**  
**107 Haussman Drive Thornton NSW**

			Sample ID	DAM1	D3.5.21	RPD%
			Date	3/05/2021	3/05/2021	
			Type	Primary	Duplicate	
Analytes		Units	LOR			
pH& TSS	pH (1:5 Aqueous extract)	ph units	0.1	6.6	6.7	2
	Conductivity	uS/cm	10	230	130	56
Metals	Arsenic	mg/L	<0.001	0.005	0.006	18
	Cadmium	mg/L	< 0.0002	< 0.0002	< 0.0002	0
	Chromium	mg/L	< 0.001	0.003	0.003	0
	Copper	mg/L	< 0.001	0.003	0.003	0
	Lead	mg/L	< 0.001	0.005	0.004	22
	Mercury	mg/L	< 0.0001	< 0.0001	< 0.0001	0
	Nickel	mg/L	< 0.001	0.002	0.003	40
	Zinc	mg/L	0.005	0.026	0.023	12
BTEX	Benzene	mg/L	0.001	< 0.001	< 0.001	0
	Toluene	mg/L	0.001	< 0.001	< 0.001	0
	Ethylbenzene	mg/L	0.001	< 0.001	< 0.001	0
	Xylenes	mg/L	0.003	< 0.003	< 0.003	0
TRH	Naphthalene	mg/L	0.01	< 0.01	< 0.01	0
	TRH C6-C10	mg/L	0.02	< 0.02	< 0.02	0
	TRH C6-C10 less BTEX (F1)	mg/L	0.02	< 0.02	< 0.02	0
	TRH >C10-C16	mg/L	0.05	< 0.05	< 0.05	0
	TRH >C10-C16 less Naphthalene	mg/L	0.05	< 0.05	< 0.05	0
	TRH >C16-C34	mg/L	0.1	< 0.1	< 0.1	0
	TRH >C34-C40	mg/L	0.1	< 0.1	< 0.1	0
PAHs	Acenaphthene	mg/L	0.001	< 0.001	< 0.001	0
	Acenaphthylene	mg/L	0.001	< 0.001	< 0.001	0
	Anthracene	mg/L	0.001	< 0.001	< 0.001	0
	Benz(a)anthracene	mg/L	0.001	< 0.001	< 0.005	0
	Benzo(a)pyrene	mg/L	0.001	< 0.001	< 0.005	0
	Benzo(b&j)fluoranthene	mg/L	0.001	< 0.001	< 0.005	0
	Benzo(g,h,i)perylene	mg/L	0.001	< 0.001	< 0.005	0
	Benzo(k)fluoranthene	mg/L	0.001	< 0.001	< 0.005	0
	Chrysene	mg/L	0.001	< 0.001	< 0.005	0
	Dibenz(a,h)anthracene	mg/L	0.001	< 0.001	< 0.005	0
	Fluoranthene	mg/L	0.001	< 0.001	< 0.001	0
	Fluorene	mg/L	0.001	< 0.001	< 0.001	0
	Indeno(1.2.3-cd)pyrene	mg/L	0.001	< 0.001	< 0.005	0
	Naphthalene	mg/L	0.001	< 0.001	< 0.001	0
	Phenanthrene	mg/L	0.001	< 0.001	< 0.001	0
	Pyrene	mg/L	0.001	< 0.001	< 0.001	0
	Total PAH	mg/L	0.001	< 0.001	< 0.005	0

Notes:

\*RPDs have only been considered where a concentration is greater than 10 times the EQL.

\*\*High RPDs are in bold (Acceptable RPD range is 30% (>10 x EQL))



## Australia

**Melbourne**  
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NATA # 1261  
Site # 1254 & 14271

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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NATA # 1261  
Site # 23736

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NATA # 1261 Site # 25079

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**Christchurch**  
43 Detroit Drive  
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Phone : 0800 856 450  
IANZ # 1290

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

**Company Name:** Qualtest  
**Address:** 2 Murray Dwyer Circuit  
Mayfield West  
NSW 2304  
  
**Project Name:** MCCLOY GROUP THORNTON  
**Project ID:** NEW17P-0074

**Order No.:**  
**Report #:** 792281  
**Phone:** 02 4968 4468  
**Fax:** 02 4960 9775

**Received:** May 3, 2021 3:00 PM  
**Due:** May 10, 2021  
**Priority:** 5 Day  
**Contact Name:** Emma Coleman

**Eurofins Analytical Services Manager : Andrew Black**

Sample Detail						Conductivity (1:5 aqueous extract at 25°C as rec.)	Conductivity (at 25°C)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Organochlorine Pesticides	Moisture Set	Eurofins Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
Mayfield Laboratory - NATA Site # 25079													
External Laboratory													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	DAM1	May 03, 2021		Water	S21-My04152		X		X	X	X		X
2	D3.5.21	May 03, 2021		Water	S21-My04153		X		X				X
3	DAM1 SD	May 03, 2021		Sediment	S21-My04154	X		X			X	X	X
Test Counts						1	2	1	2	1	2	1	3



**Qualtest**  
**2 Murray Dwyer Circuit**  
**Mayfield West**  
**NSW 2304**



**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 and proficiency testing scheme providers  
 reports.

**Attention:** Emma Coleman

**Report** 792281-S  
**Project name** MCCLOY GROUP THORNTON  
**Project ID** NEW17P-0074  
**Received Date** May 03, 2021

<b>Client Sample ID</b>			<b>DAM1 SD</b>
<b>Sample Matrix</b>			<b>Sediment</b>
<b>Eurofins Sample No.</b>			<b>S21-My04154</b>
<b>Date Sampled</b>			<b>May 03, 2021</b>
Test/Reference	LOR	Unit	
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
<b>BTEX</b>			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	58
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>			
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
<b>Polycyclic Aromatic Hydrocarbons</b>			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5

<b>Client Sample ID</b>			<b>DAM1 SD</b>
<b>Sample Matrix</b>			<b>Sediment</b>
<b>Eurofins Sample No.</b>			<b>S21-My04154</b>
<b>Date Sampled</b>			<b>May 03, 2021</b>
Test/Reference	LOR	Unit	
<b>Polycyclic Aromatic Hydrocarbons</b>			
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	95
p-Terphenyl-d14 (surr.)	1	%	99
<b>Organochlorine Pesticides</b>			
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-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
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-BHC (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	0.2	mg/kg	< 0.2
Toxaphene	0.1	mg/kg	< 0.1
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	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2
Dibutylchloroendate (surr.)	1	%	102
Tetrachloro-m-xylene (surr.)	1	%	94
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	32
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	6.2
% Moisture	1	%	25
<b>Heavy Metals</b>			
Arsenic	2	mg/kg	5.7
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	< 5
Copper	5	mg/kg	< 5
Lead	5	mg/kg	13
Mercury	0.1	mg/kg	< 0.1

<b>Client Sample ID</b>			<b>DAM1 SD</b>
<b>Sample Matrix</b>			<b>Sediment</b>
<b>Eurofins Sample No.</b>			<b>S21-My04154</b>
<b>Date Sampled</b>			<b>May 03, 2021</b>
Test/Reference	LOR	Unit	
<b>Heavy Metals</b>			
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	17



## 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
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 06, 2021	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 06, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 06, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 06, 2021	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	May 06, 2021	14 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	May 06, 2021	180 Days
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	May 06, 2021	14 Days
Conductivity (1:5 aqueous extract at 25°C as rec.) - Method: LTM-INO-4030 Conductivity	Sydney	May 06, 2021	7 Days
pH (1:5 Aqueous extract at 25°C as rec.) - Method: LTM-GEN-7090 pH in soil by ISE	Sydney	May 06, 2021	7 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	May 04, 2021	14 Days

## Australia

**Melbourne**  
6 Monterey Road  
Dandenong South VIC 3175  
Phone : +61 3 8564 5000  
NATA # 1261  
Site # 1254 & 14271

**Sydney**  
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16 Mars Road  
Lane Cove West NSW 2066  
Phone : +61 2 9900 8400  
NATA # 1261 Site # 18217

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

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

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

## New Zealand

**Auckland**  
35 O'Rourke Road  
Penrose, Auckland 1061  
Phone : +64 9 526 45 51  
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**Christchurch**  
43 Detroit Drive  
Rolleston, Christchurch 7675  
Phone : 0800 856 450  
IANZ # 1290

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**Company Name:** Qualtest  
**Address:** 2 Murray Dwyer Circuit  
Mayfield West  
NSW 2304  
  
**Project Name:** MCCLOY GROUP THORNTON  
**Project ID:** NEW17P-0074

**Order No.:**  
**Report #:** 792281  
**Phone:** 02 4968 4468  
**Fax:** 02 4960 9775

**Received:** May 3, 2021 3:00 PM  
**Due:** May 10, 2021  
**Priority:** 5 Day  
**Contact Name:** Emma Coleman

**Eurofins Analytical Services Manager : Andrew Black**

Sample Detail						Conductivity (1:5 aqueous extract at 25°C as rec.)	Conductivity (at 25°C)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Organochlorine Pesticides	Moisture Set	Eurofins Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
Mayfield Laboratory - NATA Site # 25079													
External Laboratory													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	DAM1	May 03, 2021		Water	S21-My04152		X		X	X	X		X
2	D3.5.21	May 03, 2021		Water	S21-My04153		X		X				X
3	DAM1 SD	May 03, 2021		Sediment	S21-My04154	X		X			X	X	X
Test Counts						1	2	1	2	1	2	1	3

## Internal Quality Control Review and Glossary

### General

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

### Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

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

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

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

### QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
<b>Method Blank</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
<b>Method Blank</b>							
<b>Organochlorine Pesticides</b>							
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-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	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	



Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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-BHC (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	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 0.1			0.1	Pass	
<b>Method Blank</b>							
Conductivity (1:5 aqueous extract at 25°C as rec.)	uS/cm	< 10			10	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	%	86			70-130	Pass	
TRH C10-C14	%	117			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>BTEX</b>							
Benzene	%	95			70-130	Pass	
Toluene	%	96			70-130	Pass	
Ethylbenzene	%	95			70-130	Pass	
m&p-Xylenes	%	98			70-130	Pass	
o-Xylene	%	93			70-130	Pass	
Xylenes - Total*	%	96			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	%	99			70-130	Pass	
TRH C6-C10	%	82			70-130	Pass	
TRH >C10-C16	%	117			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							
Acenaphthene	%	95			70-130	Pass	
Acenaphthylene	%	91			70-130	Pass	
Anthracene	%	92			70-130	Pass	
Benz(a)anthracene	%	83			70-130	Pass	
Benzo(a)pyrene	%	97			70-130	Pass	
Benzo(b&j)fluoranthene	%	83			70-130	Pass	
Benzo(g,h,i)perylene	%	101			70-130	Pass	
Benzo(k)fluoranthene	%	98			70-130	Pass	
Chrysene	%	92			70-130	Pass	
Dibenz(a,h)anthracene	%	84			70-130	Pass	
Fluoranthene	%	80			70-130	Pass	
Fluorene	%	105			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	85			70-130	Pass	

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Naphthalene				%	87			70-130	Pass	
Phenanthrene				%	84			70-130	Pass	
Pyrene				%	102			70-130	Pass	
LCS - % Recovery										
Organochlorine Pesticides										
Chlordanes - Total				%	79			70-130	Pass	
4,4'-DDD				%	94			70-130	Pass	
4,4'-DDE				%	82			70-130	Pass	
4,4'-DDT				%	75			70-130	Pass	
a-BHC				%	90			70-130	Pass	
Aldrin				%	75			70-130	Pass	
b-BHC				%	110			70-130	Pass	
d-BHC				%	93			70-130	Pass	
Dieldrin				%	93			70-130	Pass	
Endosulfan I				%	110			70-130	Pass	
Endosulfan II				%	86			70-130	Pass	
Endrin				%	107			70-130	Pass	
Endrin aldehyde				%	74			70-130	Pass	
g-BHC (Lindane)				%	115			70-130	Pass	
Heptachlor				%	100			70-130	Pass	
Heptachlor epoxide				%	80			70-130	Pass	
Methoxychlor				%	105			70-130	Pass	
LCS - % Recovery										
Conductivity (1:5 aqueous extract at 25°C as rec.)				%	85			70-130	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	100			80-120	Pass	
Cadmium				%	111			80-120	Pass	
Chromium				%	115			80-120	Pass	
Copper				%	113			80-120	Pass	
Lead				%	116			80-120	Pass	
Mercury				%	120			80-120	Pass	
Nickel				%	111			80-120	Pass	
Zinc				%	111			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Spike - % Recovery										
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					Result 1					
TRH C6-C9	S21-My03124	NCP	%	77			70-130	Pass		
TRH C10-C14	S21-My03114	NCP	%	107			70-130	Pass		
Spike - % Recovery										
BTEX					Result 1					
Benzene	S21-My03124	NCP	%	98			70-130	Pass		
Toluene	S21-My03124	NCP	%	94			70-130	Pass		
Ethylbenzene	S21-My03124	NCP	%	102			70-130	Pass		
m&p-Xylenes	S21-My03124	NCP	%	99			70-130	Pass		
o-Xylene	S21-My03124	NCP	%	98			70-130	Pass		
Xylenes - Total*	S21-My03124	NCP	%	99			70-130	Pass		
Spike - % Recovery										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1					
Naphthalene	S21-My03124	NCP	%	113			70-130	Pass		
TRH C6-C10	S21-My03124	NCP	%	78			70-130	Pass		
TRH >C10-C16	S21-My03114	NCP	%	107			70-130	Pass		
Spike - % Recovery										
Polycyclic Aromatic Hydrocarbons					Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	S21-My01268	NCP	%	118			70-130	Pass	
Acenaphthylene	S21-My01268	NCP	%	92			70-130	Pass	
Anthracene	S21-My01268	NCP	%	124			70-130	Pass	
Benz(a)anthracene	S21-My01268	NCP	%	116			70-130	Pass	
Benzo(a)pyrene	S21-My01268	NCP	%	112			70-130	Pass	
Benzo(b&j)fluoranthene	S21-My01268	NCP	%	107			70-130	Pass	
Benzo(g,h,i)perylene	S21-Ap57264	NCP	%	120			70-130	Pass	
Benzo(k)fluoranthene	S21-My01268	NCP	%	111			70-130	Pass	
Chrysene	S21-My13256	NCP	%	75			70-130	Pass	
Dibenz(a,h)anthracene	S21-My01268	NCP	%	94			70-130	Pass	
Fluoranthene	S21-My01268	NCP	%	119			70-130	Pass	
Fluorene	S21-My01268	NCP	%	121			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S21-My01268	NCP	%	87			70-130	Pass	
Naphthalene	S21-My01268	NCP	%	107			70-130	Pass	
Phenanthrene	S21-My01268	NCP	%	125			70-130	Pass	
Pyrene	S21-My01268	NCP	%	123			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Organochlorine Pesticides</b>				Result 1					
Chlordanes - Total	S21-My13256	NCP	%	71			70-130	Pass	
4,4'-DDD	S21-My13256	NCP	%	70			70-130	Pass	
4,4'-DDE	S21-My13256	NCP	%	74			70-130	Pass	
4,4'-DDT	S21-My13256	NCP	%	87			70-130	Pass	
a-BHC	S21-My13256	NCP	%	73			70-130	Pass	
Aldrin	S21-My13256	NCP	%	70			70-130	Pass	
b-BHC	S21-My13256	NCP	%	89			70-130	Pass	
d-BHC	S21-Ap57264	NCP	%	86			70-130	Pass	
Dieldrin	S21-My13256	NCP	%	76			70-130	Pass	
Endosulfan I	S21-Ap57264	NCP	%	91			70-130	Pass	
Endosulfan II	S21-My13256	NCP	%	72			70-130	Pass	
Endosulfan sulphate	S21-Ap58043	NCP	%	88			70-130	Pass	
Endrin	S21-My13256	NCP	%	91			70-130	Pass	
Endrin ketone	S21-Ap58043	NCP	%	105			70-130	Pass	
g-BHC (Lindane)	S21-My13256	NCP	%	89			70-130	Pass	
Heptachlor	S21-My13256	NCP	%	114			70-130	Pass	
Heptachlor epoxide	S21-My13256	NCP	%	74			70-130	Pass	
Hexachlorobenzene	S21-My13256	NCP	%	72			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic	S21-My04571	NCP	%	112			75-125	Pass	
Cadmium	S21-My04571	NCP	%	119			75-125	Pass	
Chromium	S21-My08210	NCP	%	109			75-125	Pass	
Copper	S21-My08210	NCP	%	109			75-125	Pass	
Lead	S21-My08230	NCP	%	91			75-125	Pass	
Mercury	S21-My08210	NCP	%	114			75-125	Pass	
Nickel	S21-My08210	NCP	%	114			75-125	Pass	
Zinc	S21-My04571	NCP	%	124			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	S21-My08210	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S21-My03113	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-My03113	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-My03113	NCP	mg/kg	< 50	82	76	30%	Fail	Q15

Duplicate								
BTX				Result 1	Result 2	RPD		
Benzene	S21-My08210	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S21-My08210	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S21-My08210	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S21-My08210	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S21-My08210	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total*	S21-My08210	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S21-My08210	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S21-My08210	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S21-My03113	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S21-My03113	NCP	mg/kg	< 100	110	70	30%	Fail Q15
TRH >C34-C40	S21-My03113	NCP	mg/kg	< 100	100	68	30%	Fail Q15
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S21-My04379	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S21-My04379	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S21-My04379	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S21-My04379	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass



Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C as rec.)	S21-My04154	CP	uS/cm	32	27	17	30%	Pass
pH (1:5 Aqueous extract at 25°C as rec.)	S21-My04154	CP	pH Units	6.2	6.2	<1	30%	Pass
% Moisture	S21-My04180	NCP	%	23	21	7.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S21-My04182	NCP	mg/kg	9.3	11	18	30%	Pass
Cadmium	S21-My04182	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S21-My04182	NCP	mg/kg	26	23	11	30%	Pass
Copper	S21-My04182	NCP	mg/kg	38	29	27	30%	Pass
Lead	S21-My04182	NCP	mg/kg	79	94	18	30%	Pass
Mercury	S21-My04182	NCP	mg/kg	0.2	0.2	10	30%	Pass
Nickel	S21-My04182	NCP	mg/kg	17	13	24	30%	Pass
Zinc	S21-My04182	NCP	mg/kg	120	97	25	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
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
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:

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Charl Du Preez	Senior Analyst-Inorganic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)



**Glenn Jackson**  
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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**Qualtest**  
**2 Murray Dwyer Circuit**  
**Mayfield West**  
**NSW 2304**



**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 and proficiency testing scheme providers  
 reports.

**Attention:** Emma Coleman

**Report** 792281-W  
**Project name** MCCLOY GROUP THORNTON  
**Project ID** NEW17P-0074  
**Received Date** May 03, 2021

Client Sample ID			DAM1	D3.5.21
Sample Matrix			Water	Water
Eurofins Sample No.			S21-My04152	S21-My04153
Date Sampled			May 03, 2021	May 03, 2021
Test/Reference	LOR	Unit		
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1
<b>BTEX</b>				
Benzene	0.001	mg/L	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	107	109
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	0.05	mg/L	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1
<b>Polycyclic Aromatic Hydrocarbons</b>				
Acenaphthene	0.001	mg/L	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.005
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.005
Benzo(b&j)fluoranthene <sup>N07</sup>	0.001	mg/L	< 0.001	< 0.005
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.005
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.005
Chrysene	0.001	mg/L	< 0.001	< 0.005
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.005
Fluoranthene	0.001	mg/L	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001

<b>Client Sample ID</b>			<b>DAM1</b>	<b>D3.5.21</b>
<b>Sample Matrix</b>			<b>Water</b>	<b>Water</b>
<b>Eurofins Sample No.</b>			<b>S21-My04152</b>	<b>S21-My04153</b>
<b>Date Sampled</b>			<b>May 03, 2021</b>	<b>May 03, 2021</b>
Test/Reference	LOR	Unit		
<b>Polycyclic Aromatic Hydrocarbons</b>				
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.005
Naphthalene	0.001	mg/L	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.005
2-Fluorobiphenyl (surr.)	1	%	61	95
p-Terphenyl-d14 (surr.)	1	%	62	INT
<b>Organochlorine Pesticides</b>				
Chlordanes - Total	0.002	mg/L	< 0.002	-
4.4'-DDD	0.0001	mg/L	< 0.0001	-
4.4'-DDE	0.0001	mg/L	< 0.0001	-
4.4'-DDT	0.0001	mg/L	< 0.0001	-
a-BHC	0.0001	mg/L	< 0.0001	-
Aldrin	0.0001	mg/L	< 0.0001	-
b-BHC	0.0001	mg/L	< 0.0001	-
d-BHC	0.0001	mg/L	< 0.0001	-
Dieldrin	0.0001	mg/L	< 0.0001	-
Endosulfan I	0.0001	mg/L	< 0.0001	-
Endosulfan II	0.0001	mg/L	< 0.0001	-
Endosulfan sulphate	0.0001	mg/L	< 0.0001	-
Endrin	0.0001	mg/L	< 0.0001	-
Endrin aldehyde	0.0001	mg/L	< 0.0001	-
Endrin ketone	0.0001	mg/L	< 0.0001	-
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	-
Heptachlor	0.0001	mg/L	< 0.0001	-
Heptachlor epoxide	0.0001	mg/L	< 0.0001	-
Hexachlorobenzene	0.0001	mg/L	< 0.0001	-
Methoxychlor	0.0002	mg/L	< 0.0002	-
Toxaphene	0.001	mg/L	< 0.001	-
Aldrin and Dieldrin (Total)*	0.0002	mg/L	< 0.0002	-
DDT + DDE + DDD (Total)*	0.0002	mg/L	< 0.0002	-
Vic EPA IWRG 621 OCP (Total)*	0.002	mg/L	< 0.002	-
Vic EPA IWRG 621 Other OCP (Total)*	0.002	mg/L	< 0.002	-
Dibutylchloroendate (surr.)	1	%	INT	-
Tetrachloro-m-xylene (surr.)	1	%	61	-
Conductivity (at 25°C)	10	uS/cm	230	130
pH (at 25 °C)	0.1	pH Units	6.8	6.7
Total Suspended Solids Dried at 103–105°C	5	mg/L	12	-
<b>Heavy Metals</b>				
Arsenic	0.001	mg/L	0.005	0.006
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.003	0.003
Copper	0.001	mg/L	0.003	0.003
Lead	0.001	mg/L	0.005	0.004
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.003
Zinc	0.005	mg/L	0.026	0.023



## 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
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 04, 2021	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 04, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 04, 2021	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 04, 2021	7 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	May 04, 2021	7 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	May 10, 2021	180 Days
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	May 04, 2021	7 Days
Conductivity (at 25°C) - Method: LTM-INO-4030 Conductivity	Sydney	May 05, 2021	28 Days
pH (at 25 °C) - Method: LTM-GEN-7090 pH in water by ISE	Sydney	May 05, 2021	1 Days
Total Suspended Solids Dried at 103–105°C - Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry	Sydney	May 05, 2021	7 Days

## Australia

**Melbourne**  
6 Monterey Road  
Dandenong South VIC 3175  
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**Company Name:** Qualtest  
**Address:** 2 Murray Dwyer Circuit  
Mayfield West  
NSW 2304  
  
**Project Name:** MCCLOY GROUP THORNTON  
**Project ID:** NEW17P-0074

**Order No.:**  
**Report #:** 792281  
**Phone:** 02 4968 4468  
**Fax:** 02 4960 9775

**Received:** May 3, 2021 3:00 PM  
**Due:** May 10, 2021  
**Priority:** 5 Day  
**Contact Name:** Emma Coleman

**Eurofins Analytical Services Manager : Andrew Black**

Sample Detail						Conductivity (1:5 aqueous extract at 25°C as rec.)	Conductivity (at 25°C)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Organochlorine Pesticides	Moisture Set	Eurofins Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
Mayfield Laboratory - NATA Site # 25079													
External Laboratory													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	DAM1	May 03, 2021		Water	S21-My04152		X		X	X	X		X
2	D3.5.21	May 03, 2021		Water	S21-My04153		X		X				X
3	DAM1 SD	May 03, 2021		Sediment	S21-My04154	X		X			X	X	X
Test Counts						1	2	1	2	1	2	1	3

## Internal Quality Control Review and Glossary

### General

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

### Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

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

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

**org/100mL:** Organisms per 100 millilitres

**NTU:** Nephelometric Turbidity Units

**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

### Terms

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

### QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

### QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
<b>Method Blank</b>							
<b>Organochlorine Pesticides</b>							
Chlordanes - Total	mg/L	< 0.002			0.002	Pass	
4,4'-DDD	mg/L	< 0.0001			0.0001	Pass	
4,4'-DDE	mg/L	< 0.0001			0.0001	Pass	
4,4'-DDT	mg/L	< 0.0001			0.0001	Pass	
a-BHC	mg/L	< 0.0001			0.0001	Pass	
Aldrin	mg/L	< 0.0001			0.0001	Pass	
b-BHC	mg/L	< 0.0001			0.0001	Pass	
d-BHC	mg/L	< 0.0001			0.0001	Pass	
Dieldrin	mg/L	< 0.0001			0.0001	Pass	
Endosulfan I	mg/L	< 0.0001			0.0001	Pass	
Endosulfan II	mg/L	< 0.0001			0.0001	Pass	
Endosulfan sulphate	mg/L	< 0.0001			0.0001	Pass	
Endrin	mg/L	< 0.0001			0.0001	Pass	



Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	mg/L	< 0.0001			0.0001	Pass	
Endrin ketone	mg/L	< 0.0001			0.0001	Pass	
g-BHC (Lindane)	mg/L	< 0.0001			0.0001	Pass	
Heptachlor	mg/L	< 0.0001			0.0001	Pass	
Heptachlor epoxide	mg/L	< 0.0001			0.0001	Pass	
Hexachlorobenzene	mg/L	< 0.0001			0.0001	Pass	
Methoxychlor	mg/L	< 0.0002			0.0002	Pass	
Toxaphene	mg/L	< 0.001			0.001	Pass	
<b>Method Blank</b>							
Conductivity (at 25°C)	uS/cm	< 10			10	Pass	
Total Suspended Solids Dried at 103–105°C	mg/L	< 5			5	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	%	103			70-130	Pass	
TRH C10-C14	%	70			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>BTEX</b>							
Benzene	%	112			70-130	Pass	
Toluene	%	107			70-130	Pass	
Ethylbenzene	%	109			70-130	Pass	
m&p-Xylenes	%	119			70-130	Pass	
o-Xylene	%	112			70-130	Pass	
Xylenes - Total*	%	117			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	%	113			70-130	Pass	
TRH C6-C10	%	105			70-130	Pass	
TRH >C10-C16	%	72			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							
Acenaphthene	%	71			70-130	Pass	
Acenaphthylene	%	75			70-130	Pass	
Anthracene	%	80			70-130	Pass	
Benz(a)anthracene	%	87			70-130	Pass	
Benzo(a)pyrene	%	88			70-130	Pass	
Benzo(b&j)fluoranthene	%	92			70-130	Pass	
Benzo(g,h,i)perylene	%	76			70-130	Pass	
Benzo(k)fluoranthene	%	103			70-130	Pass	
Chrysene	%	87			70-130	Pass	
Dibenz(a,h)anthracene	%	85			70-130	Pass	
Fluoranthene	%	84			70-130	Pass	
Fluorene	%	73			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	72			70-130	Pass	
Naphthalene	%	81			70-130	Pass	

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phenanthrene				%	73			70-130	Pass	
Pyrene				%	85			70-130	Pass	
LCS - % Recovery										
Organochlorine Pesticides										
Chlordanes - Total				%	101			70-130	Pass	
4,4'-DDD				%	102			70-130	Pass	
4,4'-DDE				%	93			70-130	Pass	
4,4'-DDT				%	121			70-130	Pass	
a-BHC				%	95			70-130	Pass	
Aldrin				%	91			70-130	Pass	
b-BHC				%	100			70-130	Pass	
d-BHC				%	97			70-130	Pass	
Dieldrin				%	96			70-130	Pass	
Endosulfan I				%	100			70-130	Pass	
Endosulfan II				%	96			70-130	Pass	
Endosulfan sulphate				%	105			70-130	Pass	
Endrin aldehyde				%	129			70-130	Pass	
Endrin ketone				%	113			70-130	Pass	
g-BHC (Lindane)				%	103			70-130	Pass	
Heptachlor				%	130			70-130	Pass	
Heptachlor epoxide				%	104			70-130	Pass	
Hexachlorobenzene				%	88			70-130	Pass	
Methoxychlor				%	128			70-130	Pass	
LCS - % Recovery										
Conductivity (at 25°C)				%	102			70-130	Pass	
Total Suspended Solids Dried at 103–105°C				%	89			70-130	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	104			80-120	Pass	
Cadmium				%	100			80-120	Pass	
Chromium				%	88			80-120	Pass	
Copper				%	88			80-120	Pass	
Lead				%	90			80-120	Pass	
Mercury				%	92			80-120	Pass	
Nickel				%	89			80-120	Pass	
Zinc				%	94			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Spike - % Recovery										
					Result 1					
Total Suspended Solids Dried at 103–105°C	S21-My11902	NCP	%	85			70-130	Pass		
Spike - % Recovery										
Heavy Metals					Result 1					
Arsenic	S21-My08075	NCP	%	107			75-125	Pass		
Chromium	S21-My08075	NCP	%	94			75-125	Pass		
Copper	S21-My08075	NCP	%	90			75-125	Pass		
Lead	S21-My08075	NCP	%	86			75-125	Pass		
Mercury	S21-My08075	NCP	%	90			75-125	Pass		
Nickel	S21-My08075	NCP	%	94			75-125	Pass		
Zinc	S21-Mv08075	NCP	%	91			75-125	Pass		

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C10-C14	S21-Ap57930	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S21-Ap57930	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S21-Ap57930	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH >C10-C16	S21-Ap57930	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S21-Ap57930	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S21-Ap57930	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	S21-My01628	NCP	uS/cm	310	280	10	30%	Pass	
Total Suspended Solids Dried at 103–105°C	S21-My11902	NCP	mg/L	8.8	8.6	2.0	30%	Pass	
<b>Duplicate</b>									
<b>Heavy Metals</b>				Result 1	Result 2	RPD			
Arsenic	S21-My08074	NCP	mg/L	0.003	0.003	3.0	30%	Pass	
Cadmium	S21-My08074	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S21-My08074	NCP	mg/L	0.027	0.026	3.0	30%	Pass	
Copper	S21-My08074	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	S21-My08074	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	S21-My08074	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S21-My08074	NCP	mg/L	0.002	0.001	65	30%	Fail	Q15
Zinc	S21-My08074	NCP	mg/L	0.030	0.028	6.0	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
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
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:

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Charl Du Preez	Senior Analyst-Inorganic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)



**Glenn Jackson**  
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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