Identified risk	Proposed control measure
Hydrocarbons spills from plant and equipment	<ul> <li>All mining equipment refuelled, serviced and repaired within designated areas outlined for such activity in the mine operations plan.</li> <li>Personnel are trained in the use of spill kits and emergency response procedures.</li> <li>Any soil contaminated by hydrocarbons will be managed and stored appropriately until transport to an appropriate disposal or treatment facility by an authorised transporter.</li> </ul>
Hydrocarbon and chemical leaks and spills from holding storages	<ul> <li>All hydrocarbons will be stored and handled in accordance with the bunding requirements of AS 1940:2004: The storage and handling of combustible and flammable liquids.</li> <li>Spill clean-up procedures developed and implemented.</li> <li>Personnel are trained in the use of spill kits and emergency response procedures.</li> <li>MSDS sheets shall be maintained near storage area. MSDS file shall be clearly identified.</li> <li>Regular inspections of storages, tanks and bulk carriers and the integrity of bunded areas and containment systems maintained.</li> <li>Any soil contaminated by hydrocarbons will be managed and stored appropriately until transport to an appropriate disposal or treatment facility by an authorised transporter.</li> </ul>
Overflows/spills of untreated oily water	<ul> <li>All water from wash-down, workshop and refuelling areas intercepted and channelled to oil/water separators and containment storage.</li> <li>Routine inspections.</li> <li>Operation and maintenance procedure.</li> </ul>
Leaks/failure of magnetite concentrate from pipeline	<ul> <li>Appropriate design (sizing) criteria developed and applied.</li> <li>Routine inspections.</li> <li>Operation and maintenance procedure.</li> </ul>

# 7. Recommendations

#### 7.1 Surface water

Sheetflow is likely to occur within the vicinity of the Explosives Warehouse and Drainage Water Pond in the north-western portions of the site, and along the access road and pipeline corridor within the south eastern portion of the site. No specific drainage lines have been defined in these areas and it is recommended that regularly spaced and appropriately sized culverts be installed across the access road that minimise sheetflow shadow zones.

A preliminary flood risk assessment indicates that the WRF and the Mine Pit may experience flood depths of up to 0.5 m under the 1% and 2% AEP events. Flood depths within the areas of the proposed Drainage Water Pond and Explosives Warehouse were also simulated to be up to 0.3 m. These flood depths are a result of the proximity of the above locations to the WPW.

The linear infrastructure corridor within the south-eastern portion of the mine is simulated to reach flood depths of up to 0.2 m under the same events. Flood depths within the remaining areas of the mine site (Power Station, Guard House, Crusher, Parking, Ore Stockpile, Processing Plant, Fresh Water Pond, Administration, Workshop, DPWF) are simulated to be within 0.2 m for both the 1% and 2% AEP events.

The limitations in the range of detailed elevation data and the preliminary nature of this assessment should be noted and further surveys and assessment will be required to validate these findings.

Given the preliminary nature of the project, it is recommended that, where practical, consideration should be given in the first instance to moving proposed infrastructure to areas that are less prone to flooding. This may be most applicable to the WRF, Drainage Water Pond, and Explosives Warehouse given their locations are traversed by the WPW. Should relocation be unavoidable, the following additional measures are also recommended:

- Suitably designed bunding, rock armour, or other armouring product to protect the WRF,
   Drainage Water Pond, Mine Pit, and Explosives Warehouse, and DPWF; and
- Construction on raised earth platform for the Ore Stockpile, Drainage Water Pond,
   Explosives Warehouse, Processing Plant, Workshop, and Administration infrastructure.

Should further investigation indicate bunding is insufficient to mitigate impacts on the WRF or Mine Pit, diversion of the WPW between the Mine Pit and WRF may also be required.

Sediment sampling was undertaken to characterise sediment quality as a proxy for water quality given the infrequent nature of flow events within the region. During pre-development, it is recommended that the sediment sampling be repeated following the next significant runoff event to assess change in quality due to sediment migration. Ideally, opportunistic water samples should also be retrieved at accessible sites (if possible). An ongoing monitoring plan should be developed upon consolidation of key infrastructure, and implemented during construction and post-development.

## 7.2 Contamination management

In order to better define the potential contamination risks, it is recommended that:

Material characterisation of the waste rock and ore body be undertaken to determine the
presence/absence of PAF material. If PAF material exists within the waste rock, it should
be appropriately disposed in a dedicated facility which is constructed in a way which will
prevent and minimise acid generation. Periodic testing of the waste rock and stockpiled
ore should also be conducted to confirm the presence/absence of PAF material during

This document is in draft form. The contents, including any opinions, conclusions or recommendations contained in, or which may be implied from, this draft document must not be relied upon. GHD reserves the right, at any time, without notice, to modify or retract any part or all of the draft document. To the maximum extent permitted by law, GHD disclaims any responsibility or liability arising from or in connection with this draft document.

- mining operations, and further characterisation of the ore body should be conducted to determine the salinity profiles thereof;
- Targeted sampling of the ambient surface and subsurface properties of proposed sample sites is recommended to confirm the presence / absence of dispersive soils.

To mitigate risks of contamination, it is recommended that where practical, consideration should be given in the first instance to moving proposed infrastructure identified to be impacted by flooding to areas that are less prone to flooding. This may be most applicable to the WRF, Drainage Water Pond, and Explosives Warehouse given their locations are intercepted by the WPW. Where relocation is not possible, alternative mitigation measures are also outlined below.

- Runoff from the WRF, DPWF and ore stockpiles should be contained and directed to appropriately sized sedimentation ponds for managed release to the environment or for reuse around the site:
- Runoff from concentrate stockpiles should be contained and drainage water recovered and recycled for dust suppression or processing purposes;
- The operation of the various water storages should ensure mixing and that any outflow to the environment considers the salinity of discharges;
- The design and construction of linear infrastructure corridors (access corridor, water pipeline) should minimise changes to the hydrology and geomorphology of watercourses, and minimise the risk of exposure of dispersive soils. This should include rock armour protection from scour and erosion along the edges of causeways.

The key control measures for water management should include:

- Preparation of an Erosion and Sediment Control Plan to provide a framework for managing the risk of erosion and release of sediments to receiving environment or the contamination of stormwater (including delineation of runoff separation catchments); and
- Preparation of a Water Management Plan for mine operation with a particular focus on mine affected water to be retained within the mine water system and discharged through controlled release points.

# 8. References

ANZECC (2000) Australian Water Quality Guidelines for Fresh and Marine Waters

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

Beard J S, 2000, Drainage evolution in the Moore-Monger System, Royal Society of Western Australia.

Beecham, B. (2003). Avon Wheatbelt 1 (AW1 - Ancient Drainage subregion). In A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002 (pp. 7-35). Perth: Department of Environment and Conservation.

CSIRO Land and Water. (2017). Atlas of Australian Acid Sulphate Soils. doi:10.4225/08/512E79A0BC589.

(DAWR) Department of Agriculture and Water Resources (2019) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, accessed online http://www.waterquality.gov.au/anz-guidelines/guideline-values/default/sediment-quality-toxicants

Dawson, N.M., Ahern, C.R. 1973. Soils and landscapes of mulga lands with special reference to South Western Queensland. Tropical Grasslands 7 (1), 23-34.

(DER) Department of Environment Regulation (2014) Assessment and management of contaminated sites; Contaminated guidelines, December 2014

(DWER) Department of Water and Environmental Regulation (2018), Retrieved from the online Clearing Permit System, <a href="https://cps.dwer.wa.gov.au/main.html">https://cps.dwer.wa.gov.au/main.html</a>.

(DWER) Department of Water and Environmental Regulation (2019), Water and Information Reporting, accessed online http://wir.water.wa.gov.au/Pages/Water-Information-Reporting.aspx

Desmond, A., & Chant, A. (2003). Yalgoo (YAL). In A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002 (pp. 656-667). Perth: Department of Conservation and Land Management.

Duguid, A., Barnetson, J., Clifford, B., Pavey, C., Albrecht, D., Risler, J. and McNellie, M. (2005). Wetlands in the arid Northern Territory. A report to the Australian Government Department of the Environment and Heritage on the inventory and significance of wetlands in the arid NT. NT Government Department of Natural Resources, Environment and the Arts. Alice Springs.CSIRO Land and Water. (2013, April 18). Atlas of Australian Acid Sulfate Soils. Retrieved from ASRIS: Australian Soil Resource Information System http://www.asris.csiro.au/themes/AcidSulfateSoils.html.

Department of Biodiversity, Conservation and Attractions. (2017). Threatened and Priority Ecological Community buffers in WA. Perth: Department of Biodiversity, Conservation and Attractions.

GHD (2018a – Draft in writing). Yogi – Magnetite Project Flora and Vegetation Assessment.

GHD (2018b – Draft in writing). Yogi – Magnetite Project Fauna Assessment.

GHD (2018c - Draft in writing). Yogi - Hydrogeological Assessment.

Fitzpatrick, R., Powell, B., & Marvanek, S. (2011). Atlas of Australian Sulphate Soils. v2. CSIRO. Data Collection. CSIRO Australia. doi:10.4225/08/512E79A0BC589.

Rhoades, J.D., Kandial, A. and Mashali, A.M. (1992). The use of saline water for crop production, Paper 48, Food and Agricultural Organisation of the United Nations, Rome.

Tongway, D. J., Hindley, N. L. 2004. Landscape Function Analysis: procedures for monitoring and assessing landscapes. CSIRO Sustainable Ecosystems, Canberra.

Winkworth, R.E. 1973. Eco-Physiology of mulga (Acacia aneura). Tropical Grasslands 7 (1), 43-48.

van Vreeswyk, A. M., Leighton, K. A., Payne, A. L., & Hennig, P. (2004). An inventory and condition survey of the Pilbara region, Western Australia [Technical Bulletin 92]. Perth: Department of Agriculture and Food, Western Australia.

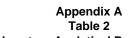




# **Appendices**

# **Appendix A** – Laboratory analytical results







Laboratory Analytical Results - Soil

								icai Results								
				Location ID	SW01	SW02		/03	SW04	SW05	SW06	SW07	SW08	SW09	SW10	SW11
				Sample ID	SW01_S	SW02_S	SW03_S	QA01	SW04_S	SW05_S	SW06_S	SW07_S	SW08_S	SW09_S	SW10_S	SW11_S
				Sample Date	10/10/2018	10/10/2018	10/10/2018	10/10/2018	10/10/2018	10/10/2018	10/10/2018	11/10/2018	10/10/2018	11/10/2018	11/10/2018	11/10/2018
				Lab Report	622708	622708	622708	622708	622708	622708	622708	622708	622708	622708	622708	622708
			ANZECC 2000													
Analyte	Unit	LOR	ISQG-High	ISQG-Low												
1M HCl Extractable Metals																
Arsenic	mg/kg	2	70	20	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Boron	mg/kg	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Cadmium	mg/kg	0.4	10	1.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium (III+VI)	mg/kg	5	370	80	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cobalt	mg/kg	5			<5	6.3	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Copper	mg/kg	5	270	65	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Lead	mg/kg	5	220	50	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Manganese	mg/kg	10			21	470	88	34	22	20	28	74	14	<10	10	15
Mercury	mg/kg	2	1	0.15	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nickel	mg/kg	5	52	21	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Selenium	mg/kg	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc	mg/kg	5	410	200	<5	5.2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Heavy Metals																
Arsenic	mg/kg	2	70	20	5.2	13	11	6.7	<2	15	11	3.2	<2	<2	<2	<2
Beryllium	mg/kg	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Boron	mg/kg	10			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cadmium	mg/kg	0.4	10	1.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium (III+VI)	mg/kg	5	370	80	540	400	1100	750	33	2200	1800	200	26	10	19	31
Cobalt	mg/kg	5			<5	14	<5	<5	<5	<5	6.9	<5	<5	<5	<5	<5
Copper	mg/kg	5	270	65	8.3	44	9.2	8.2	<5	17	38	11	<5	<5	<5	<5
Lead	mg/kg	5	220	50	9.4	11	12	13	7	20	17	8.8	<5	5.8	<5	5
Manganese	mg/kg	5			46	300	100	110	62	130	170	170	31	22	28	39
Mercury	mg/kg	0.1	1	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	5	52	21	13	55	21	16	<5	44	59	8.4	<5	<5	<5	<5
Phosphorus (Total)	mg/kg	5			110	260	99	120	35	150	200	120	45	41	24	39
Selenium	mg/kg	2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc	mg/kg	5	410	200	8.4	41	8	7.3	<5	12	20	12	<5	<5	<5	<5
Major lons	IIIg/ Ng		410	200	0.4	41	0	7.5	\3	12	20	12	\3	\3	\3	\5
Calcium	mg/kg	5			150	1200	170	210	100	200	200	170	120	100	130	230
Magnesium	mg/kg	5			140	1800	180	280	160	270	210	330	140	140	160	250
Potassium	mg/kg	5			170	1600	200	270	180	200	270	390	220	160	210	260
Sodium	mg/kg	5			35	79	43	45	25	14	14	31	12	15	16	15
Nutrients	IIIg/ Ng	)			33	73	43	45	23	14	14	31	12	13	10	13
Ammonia as N	mg/kg	5			<5	<5	<5	<5	<5	5.5	6.2	6.8	12	<5	<5	5.3
Nitrate (as N)	mg/kg	5			<5	<5	<5	<5	<5	<5	5.3	<5	<5	<5	<5	<b>&gt;5.3</b>
Nitrate (as N)	mg/kg	5			<5	<5	<5	<5	<5	<5	<b>&gt;.3</b>	<5	<5	<5	<5	<5
Nitrite (as N)  Nitrogen (Total Oxidised) (as N)	mg/kg	5			<5 <5	<5	<5	<5 <5	<5 <5	<5	5.4	<5 <5	<5 <5	<5	<5	<5 <5
Nitrogen (Total)	mg/kg	10			13	630	<10	32	190	66	100	170	91	21	39	72
		10			13	630	<10	32	190	66	99	170	91	21	39	72
Kjeldahl Nitrogen Total	mg/kg	5			13	630	<10	32	190	60	99	160	79	21	39	67
Nitrogen (Organic) TRH - NEPM 2013 - SG Cleanup	mg/kg	3			13	030	<10	<u> 32</u>	190	ΟU	93	100	/9	21	29	0/
>C10-C16 SG Cleanup	ma/ka	50			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	mg/kg															
>C16-C34 SG Cleanup	mg/kg	100			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C34-C40 SG Cleanup	mg/kg	100			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Inorganics		10			40	40	44	4-	.40	.60	42	-4.0	14.0	44		-4.0
Electrical conductivity (lab)	μS/cm	10			18	19	11	15	<10	<10	12	<10	<10	11	<10	<10
Moisture Content (dried @ 103°C)	%	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
pH (aqueous extract)	pH Units				6.6	6.3	7.4	7.6	7.1	6.5	6.3	6.6	6.8	6.8	6.9	6.5
Total Organic Carbon	%	0.1			<0.1	0.8	<0.1	0.3	<0.1	0.2	0.2	0.7	0.4	0.2	<0.1	0.1



FI Joint Venture Pty Ltd Yogi Magnetite Mine Surface Water Assessment

	_	_	
7	~	~	
ľ	н	-	I D 3
h	-de	-	-

			La	boratory Analy	ytical Results	s - Water			- Sui	rrace water A
								Location ID	SW01	SW03
								Sample Date	10/10/2018	17/10/2018
								Lab Report		623959
				4417500 2000				Lab Report	022701	023939
				ANZECC 2000		ANZECC 2000		ANZECC 2000		
			ANZECC 2000 -	FW 95% & NEPM	ANZECC 2000		ANZECC 2000			
			Stock	2013 Table 1C		<u>Irrigation -</u>	SW Australia	Tropical		
					FW 99%	Long-term		Australia		
			Watering	GILs, Fresh		Trigger Values	Upland River	Upland River		
Analyte	Unit	LOR		Waters				- J		
Inorganics										
Total Dissolved Solids	m = /1	10	F000		I	I			630	420
	mg/L	10	5000							
Total Suspended Solids	mg/L	1							2500	25
Unassigned										
Dissolved Organic Carbon	mg/L	5							15	24
	IIIg/ L	3							15	24
Acidity & Alkalinity										
Alkalinity (Carbonate as CaCO3)	mg/L	20							<20	<20
Alkalinity (Bicarbonate as CaCO3)	mg/L	20							<20	24
Alkalinity (Hydroxide as CaCO3)	mg/L	20							<20	<20
Alkalinity (total as CaCO3)	mg/L	20							<20	31
Hardness as CaCO3	mg/L	5							28	34
	IIIg/L	3							20	34
Major lons										
Calcium	mg/L	0.5	1000						4.5	6.5
		_	_300		<del>                                     </del>	<del>                                     </del>				
Magnesium	mg/L	0.5			-	-			4	4.3
Potassium	mg/L	0.5			<u></u>	<u></u>			5	8.6
Sodium	mg/L	0.5							43	62
					<del>                                     </del>	250				
Chloride	mg/L	1				<u>350</u>			45	100
Sulfate	mg/L	5	1000						8.9	15
Fluoride	mg/L	0.5	2			1			<0.5	<0.5
	'''б/ L	0.5							<b>\U.J</b>	~0.3
Nutrients										
Ammonia as N	mg/L	0.01		0.9	0.32				0.02	0.26
Nitrate (as N)	mg/L	0.02	90	7.2	4.9				3.6	<0.02
				1.2	4.9					
Nitrite (as N)	mg/L	0.02	9.1						0.08	<0.02
Nitrogen (Total Oxidised) (as N)	mg/L	0.05							3.6	<0.05
		_				-	0.45	0.15		
Nitrogen (Total)	mg/L	0.2				<u>5</u>	0.45	0.15	<u>6.2</u>	1.2
Reactive Phosphorus as P	mg/L	0.05					0.01	0.005	<0.05	<0.05
Phosphate total (P)	mg/L	0.05					0.02	0.01	0.24	0.07
							0.02	0.01		
Kjeldahl Nitrogen Total	mg/L	0.2							2.6	1.2
Organic Indicators										
BOD	mg/L	5							<5	-
	IIIg/ L	3								
Metals										
Arsenic	mg/L	0.001	0.5	0.013	0.0008	0.1			0.002	0.002
Arsenic (Filtered)	mg/L	0.001	0.5	0.013	0.0008	0.1			<0.001	0.002
		_	0.5	0.013	0.0008					
Beryllium	mg/L	0.001				<u>0.1</u>			<0.001	<0.001
Beryllium (Filtered)	mg/L	0.001				0.1			<0.001	< 0.001
Boron	mg/L	0.05	5	0.37	0.09	0.5			0.1	0.25
Boron (Filtered)	mg/L	0.05	5	0.37	0.09	<u>0.5</u>			0.1	0.25
Cadmium	mg/L	0.0002	0.01	0.0002	0.00006	0.01			<0.0002	<0.0002
Cadmium (Filtered)	mg/L	0.0002	0.01	0.0002	0.00006	0.01			<0.0002	<0.0002
Chromium (III+VI)	mg/L	0.001	1	0.001	0.00001	<u>0.1</u>			0.073	0.018
Chromium (III+VI) (Filtered)	mg/L	0.001	1	0.001	0.00001	0.1			<0.001	0.003
		_								
Cobalt	mg/L	0.001	1			0.05			0.011	0.002
Cobalt (Filtered)	mg/L	0.001	1		<u></u>	<u>0.05</u>			0.003	0.001
Copper	mg/L	0.001	1	0.0014	0.001	0.2			0.015	0.013
Copper (Filtered)										
	mg/L	0.001	1	0.0014	0.001	0.2			0.004	0.008
Lead	mg/L	0.001	0.1	0.0034	0.001	<u>2</u>			0.006	0.004
Lead (Filtered)	mg/L	0.001	0.1	0.0034	0.001	<u>2</u>			<0.001	0.002
			5.1							
Manganese	mg/L	0.005		1.9	1.2	0.2			<u>0.33</u>	0.08
Manganese (Filtered)	mg/L	0.005		1.9	1.2	<u>0.2</u>			0.15	0.04
Mercury	mg/L	0.0001	0.002	0.0006	0.00006	0.002			<0.0001	<0.0001
·										
Mercury (Filtered)	mg/L	0.0001	0.002	0.0006	0.00006	0.002			<0.0001	<0.0001
Nickel	mg/L	0.001	1	0.011	0.008	<u>0.2</u>			0.02	0.01
Nickel (Filtered)	mg/L	0.001	1	0.011	0.008	0.2			0.003	0.007
Selenium	mg/L	0.001	0.02	0.011	0.005	0.02			<0.001	0.002
Selenium (Filtered)	mg/L	0.001	0.02	0.011	0.005	0.02			<0.001	0.001
Zinc	mg/L	0.005	20	0.008	0.0024	<u>2</u>			0.016	0.011
Zinc (Filtered)	mg/L	0.005	20	0.008	0.0024	<u>2</u>			0.007	<0.005
TRH - NEPM 2013 - SG Cleanup										
>C10-C16 SG Cleanup	μg/L	50							<50	<50
CTO-CTO 3G CIEGIIUD					-	-		<u> </u>		
· · · · · · · · · · · · · · · · · · ·	μg/L	100							<100	<100
>C16-C34 SG Cleanup		100							<100	<100
>C16-C34 SG Cleanup										
>C16-C34 SG Cleanup >C34-C40 SG Cleanup	μg/L	100								1
>C16-C34 SG Cleanup >C34-C40 SG Cleanup TRH - NEPM 1999 - SG Cleanup	μg/L				1	T		1	_	
>C16-C34 SG Cleanup >C34-C40 SG Cleanup		50							<50	<50
>C16-C34 SG Cleanup >C34-C40 SG Cleanup TRH - NEPM 1999 - SG Cleanup C10-C14 SG Cleanup	μg/L μg/L	50								
>C16-C34 SG Cleanup >C34-C40 SG Cleanup  TRH - NEPM 1999 - SG Cleanup  C10-C14 SG Cleanup  C15-C28 SG Cleanup	μg/L μg/L μg/L	50 100							<100	<100
>C16-C34 SG Cleanup >C34-C40 SG Cleanup  TRH - NEPM 1999 - SG Cleanup  C10-C14 SG Cleanup  C15-C28 SG Cleanup  C29-C36 SG Cleanup	μg/L μg/L μg/L μg/L	50 100 100								<100 <100
>C16-C34 SG Cleanup >C34-C40 SG Cleanup  TRH - NEPM 1999 - SG Cleanup  C10-C14 SG Cleanup  C15-C28 SG Cleanup	μg/L μg/L μg/L	50 100							<100	<100
>C16-C34 SG Cleanup >C34-C40 SG Cleanup  TRH - NEPM 1999 - SG Cleanup  C10-C14 SG Cleanup  C15-C28 SG Cleanup  C29-C36 SG Cleanup  C10-C36 (sum) SG Cleanup	μg/L μg/L μg/L μg/L	50 100 100							<100 <100	<100 <100
>C16-C34 SG Cleanup >C34-C40 SG Cleanup  TRH - NEPM 1999 - SG Cleanup  C10-C14 SG Cleanup  C15-C28 SG Cleanup  C29-C36 SG Cleanup  C10-C36 (sum) SG Cleanup  Biological	μg/L μg/L μg/L μg/L μg/L μg/L	50 100 100 100							<100 <100 <100	<100 <100
>C16-C34 SG Cleanup >C34-C40 SG Cleanup  TRH - NEPM 1999 - SG Cleanup  C10-C14 SG Cleanup  C15-C28 SG Cleanup  C29-C36 SG Cleanup	μg/L μg/L μg/L μg/L	50 100 100 100							<100 <100	<100 <100

CHAIN OF CUSTODY RECORE AND ANALYSIS REQUEST		(HI)		GHD Level 1 Perth V	0, 999 Hay S VA 6000	treet		ox 3106 WA 6832													
Project No. (as set up in ESda 513711709	:)	Site Name		Labor	atory:			fins   mgt					Reception	on Ph: 08	5222 8222	2			Pag	e1_	of2
-20,11,03		Yogi		Addre	ess:		2/91	Leach Hwy, Ker	wdale '	WA 6105											
aboratory Quote No.		Turnaround Time		Labor	atory Cont		Robe	ert Johnston (08	9251	9605)				-							
81004GHD		Standard		N.	-	Containe	r						Analyses							_	In
ob Manager (Invoice) & GHD	negoust:			-Soll/	stic K			Yoa,	8	Se, Se,	<u>₹</u> 9 ы			1	T				-		Remarks
Aat Brook	accounts	Email Address (Results shane.woods@ghd.com		trixs	/J-lar/	n > 4		02, 1	(by I	M 20 It Crit Co, (	M13 etals As, E .u, H	5	(C) (F)	arbo	<u>ख</u>	ion Mg	Sieve				1
		miranda.guezingar@gh		Z w	offile/	ative ed/H		S - SF 3, N	Ous	ctab NEP! thou Cd,	als: 3 M 76+ ( Cr, C	ueo	ty (E	ji O	_ <u>:</u>	<u></u>	by:				1
GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix s-soil/ SL-	Type B-Bottle/J-Jar/V. Vial/Bag/G-Glass/P-Plastic	Preservative Unpreserved/ HCI/ H2SO4/HNO3/Othe	S.	Nitrogens - speciated (TKN, NH3, NO2, NO3, Total N, Organic N, NOX)	Phosphorous (by ICP)	HCI Extractable Metals : M13A : NEPM 2013 Metals without C6+ (As, Be, B, Cd, Cc, Cu, Hg, Pb, NI, Mn, Se, Zn)	Total Metals: M13A: NEPM 2013 Metals without Cr6+ (4s, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	pH (1:5 Aqueous Extract)	Conductivity (EC) (1:5 Aqueous Extract)	Total Organic Carbon (TOC)	TRH after Silica Gel Clean-up	Suite B11C: Cation Suite: Na, K, Ca, Mg	Particle Size Distribution by Sieve and Hydrometer				
SW01_S		10/10/2018		S	]	U	2	X	_		5 x ≥ v €		8 €	E E	훈흥	Suit Suit	Part Dist and			HOLD	
SW02_5		10/10/2018		5	<u> </u>	U	2	_	X	X	Х	Х	Х	Х	х	х	х				
5W03_S		10/10/2018		s	1	U	2	X	X	X	Х	Х	Х	Х	х	Х	х				
SW04_S		10/10/2018		s	,	U	-	X	X	Х	Х	Х	Х	х	х	Х	х				
SW05_S		10/10/2018		5	,	_	2	X	Х	Х	Х	х	х	Х	х	х	х				
SW06_S		10/10/2018		S	<u> </u>	U	2	X	Х	х	Х	х	Х	Х	х	х	x				
SW07_S		11/10/2018		S	J	U	2	х	Х	X	Х	Х	х	х	х	х	x				
SW08_S		10/10/2018		-	1	U	2	X	Х	х	Х	Х	х	х	х	х	х	+	-		
SW09_S		11/10/2018		S	J	U	2	х	Х	х	Х	х	х	х	х	Х	х	-	_	1	
SW10_S		11/10/2018		S	J	U	2	X	Х	х	х	х	х	х	х	х	x				
SW11_S	+ +	11/10/2018		S	J	U	2	Х	Х	х	х	х	х	х	х	х	x		+		
QA01	+			S	J	U	2	х	Х	х	Х	х	х	х	х	х	x	_	+	+	
		10/10/2018		S	1	U	2	х	х	x	х	х	х	х	х	х	x		-	+	
	-														_					+	
	+																	-	+	+	
	-												_	-	-			+	+-	$\vdash$	
															$\rightarrow$			-	-	$\vdash$	
													-	-	-				+-	$\vdash$	
									7			-		-	$\rightarrow$	-		+	-		
												-		$\rightarrow$	+	-		+	-		
									+			-		-	-			+			
												-	-	-	_	_					
							_		+			_	-	-	-						
									+			-									
												-	-								
									1			-	-	-	+						
oled by: SW	-											-	_	-	-					_	
				Date/Time			R	Relinquished by:										Det	/T:		
ived by: Rol 5	Date/Time: 16/10/19		Relinquished by:							Date,	Time:										

#622708

## **Robert Johnston**

To: Steven Petts

**Subject:** RE: Samples received today

From: Steven Petts [mailto:Steven.Petts@ghd.com]

Sent: Tuesday, 16 October 2018 9:51 AM

To: Robert Johnston

Subject: RE: Samples received today

Hi Rob,

Attached CoC for soil samples.

Cheers

Steve

From: Robert Johnston < Robert Johnston@eurofins.com >

Sent: Tuesday, 16 October 2018 9:41 AM To: Steven Petts < Steven.Petts@ghd.com>

Subject: Samples received today

Hi Steve,

We have received samples today from you, including the water sample containing soil jars. We only received the COC for the water samples. Can you please provide a COC for the soil samples?

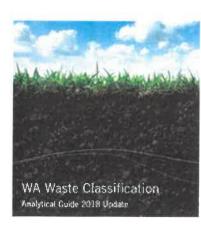
Kind Regards,

Robert Johnston **Analytical Services Manager** 

Eurofins | mgt Unit 2, 91 Leach Highway **KEWDALE WA 6105** AUSTRALIA

+61 (0)8 9251 9605 Phone: +61 (0)4 2357 9286 Mobile:

Email: RobertJohnston@Eurofins.com Website: environment.eurofins.com.au



## Analytical Guide Update

- WA Waste Classification (2018)
- Improved Decision Tree
- Revised Landfill Class Assessment
- NEW Uncontaminated Fill Criteria

Ros Johnston 16/10/18 Eurofinsmgt

Caitlyn Gibson Q Eurofins MET 16/10/18 #622708



#### - Australian Standard sieves

Sample Drop Off: 16 Chilvers Road Tel: 1300 30 40 80 Thornleigh NSW 2120 Fax: 1300 64 46 89 PO Box 357 Em: info@sesl.com.au Mailing Address: Pennant Hills NSW 1715 Web: www.sesl.com.au

Batch N°: 50113 Sample N°: 1 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Client Contact: Eurofins Report Sample Name: SW01\_S/P18-Oc18618

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

Oakleigh VIC 3166

SUMMARY			

No interpretation required.

D VALUES					
D <sub>95</sub> :	2.11				
D <sub>90</sub> :	1.47				
D <sub>85</sub> :	1.15				
D <sub>60</sub> :	0.883				
D <sub>50</sub> :	0.776				
D <sub>15</sub> :	0.431				
D <sub>10</sub> :	0.352				
D <sub>5</sub> :	0.246				

PERFORMANCE FACT	ORS
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	4.20
Coefficient of Uniformity:	2.50
(D <sub>60</sub> /D <sub>10</sub> )	

	PARTICLE SIZE DISTRIBUTI	ON GRAPH	PARTICLE SIZE ANALYSIS				
	60%	54,1%	Sieve (mm)	Fraction	% Retained by mass	% Passing by mass	
			75.0	Cobbles	0	100	
			63.0	Very Coarse Gravel	0	100	
2	40%		37.5	Coarse Gravel	0	100	
% by Mass			26.5	Coarse Gravel	0	100	
P S			19.0	Medium Gravel	0	100	
8	20%	19.2%	13.2	Medium Gravel	0	100	
	9.2	S	9.5	Medium Gravel	1.31	98.69	
		7.5% 5.3%	6.7	Fine Gravel	0	98.69	
	0%	0.4% 1.2% 8 0.8 0.425 0.3 0.15 0.075 0.075	4.75	Fine Gravel	0.34	98.35	
	75.0 63.0 37.5 28.5 19.0 13.2 9.5 6.7 4.75 2.36 1.1: PERCENT RETAINED Sieve Sizes (mm)	2.36	Fine Gravel	1.41	96.94		
	PERCENT RETAINED Sieve Sizes (mm)		1.18	Very Coarse Sand	9.24	87.7	
	100% 100% 100% 100% 100% 100% 98,7%98,7%98,4%98,99		0.6	Medium Sand	54.13	33.57	
		87.7%	0.425	Medium Sand	19.19	14.38	
	90%		0.3	Medium Sand	7.5	6.88	
Mass	80%	\	0.15	Fine Sand	5.27	1.61	
βλ	70%		0.075	Fine Sand	0.37	1.24	
2.5		\					
8	50%	\					
Ē	40%	33.6%					
Cumulative	30%		FINE PA	RTICLES (Hydromete	r calculated)		
0		14.4%	0.02	Very Fine Sand	0	1.18	
1	10%	1.6% 1.2% 1.29	0.002	Silt	1.18	0	
1	75.0 63.0 37.5 26.5 19.0 13.2 9.5 6.7 4.75 2.36 1.1	8 0.6 0.425 0.3 0.15 0.075<0.075	<0.002	Clay	0	N/A	
1	Cumulative Percent Passing Sieve Sizes (mm)						

Consultant: Stephen Cox

Declan McDonald

Authorised Signatory: De Dounlel.



#### - Australian Standard sieves

16 Chilvers Road Sample Drop Off: Tel: 1300 30 40 80 Thornleigh NSW 2120 1300 64 46 89 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au

Web:

www.sesl.com.au

 $(D_{60}/D_{10})$ 

Pennant Hills NSW 1715

Batch N°: 50113 Sample N°: 2 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: SW02\_S/P18-Oc18619 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

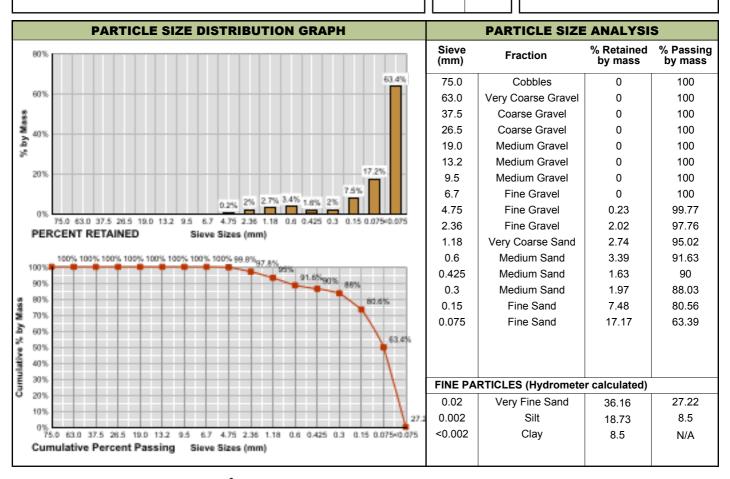
Oakleigh VIC 3166

S	U	N	π	VI.	Α	R	Υ

No interpretation required.

D V	ALUES
D <sub>95</sub> :	1.18
D <sub>90</sub> :	0.425
D <sub>85</sub> :	0.239
D <sub>60</sub> :	0.07
D <sub>50</sub> :	0.055
D <sub>15</sub> :	0.008
D <sub>10</sub> :	0.003
D <sub>5</sub> :	0.001

PERFORMANCE FAC	TORS
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	140.00
Coefficient of Uniformity:	23.00



Consultant: Stephen Cox Stephenlex

Authorised Signatory: De Dour Od. Declan McDonald



#### - Australian Standard sieves

Sample Drop Off: 16 Chilvers Road 1300 30 40 80 Tel: Thornleigh NSW 2120 Fax: 1300 64 46 89 PO Box 357 Mailing Address: Em: info@sesl.com.au Pennant Hills NSW 1715 Web: www.sesl.com.au

Batch N°: 50113 Sample N°: 3 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: SW03\_S/P18-Oc18620 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

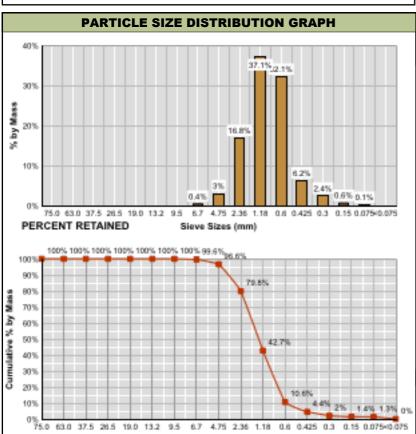
Oakleigh VIC 3166

S	U	N	π	VI.	Α	R	Υ

No interpretation required.

D VALUES					
D <sub>95</sub> :	4.52				
D <sub>90</sub> :	3.81				
D <sub>85</sub> :	3.1				
D <sub>60</sub> :	1.73				
D <sub>50</sub> :	1.41				
D <sub>15</sub> :	0.68				
D <sub>10</sub> :	0.584				
D <sub>5</sub> :	0.443				

PERFORMANCE FACT	TORS
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	6.50
Coefficient of Uniformity:	3.00
(D <sub>60</sub> /D <sub>10</sub> )	



	I AITHGEE GIZE AITAE I GIG							
	Sieve (mm)	Fraction	% Retained by mass	% Passing by mass				
I	75.0	Cobbles	0	100				
ı	63.0	Very Coarse Gravel	0	100				
ı	37.5	Coarse Gravel	0	100				
ı	26.5	Coarse Gravel	0	100				
ı	19.0	Medium Gravel	0	100				
ı	13.2	Medium Gravel	0	100				
ı	9.5	Medium Gravel	0	100				
ı	6.7	Fine Gravel	0.39	99.61				
ı	4.75	Fine Gravel	3	96.61				
ı	2.36	Fine Gravel	16.82	79.79				
ı	1.18	Very Coarse Sand	37.11	42.68				
ı	0.6	Medium Sand	32.11	10.57				
ı	0.425	Medium Sand	6.2	4.37				
ı	0.3	Medium Sand	2.4	1.97				
ı	0.15	Fine Sand	0.56	1.41				
ı	0.075	Fine Sand	0.12	1.28				
ı								
ı								
	FINE PA	r calculated)						
	0.02	Very Fine Sand	0	0				
Ĺ	0.002	Silt	0	0				
	<0.002	Clay	0	N/A				
ı								

**PARTICLE SIZE ANALYSIS** 

Consultant: Stephen Cox Stephenler

Cumulative Percent Passing Sieve Sizes (mm)

Authorised Signatory: Whe Downlot. Declan McDonald



#### - Australian Standard sieves

Sample Drop Off: 16 Chilvers Road 1300 30 40 80 Tel: Thornleigh NSW 2120 Fax: 1300 64 46 89 PO Box 357 Mailing Address: Em: info@sesl.com.au Pennant Hills NSW 1715 Web: www.sesl.com.au

Batch N°: 50113 Sample N°: 4 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: SW04\_S/P18-Oc18621 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

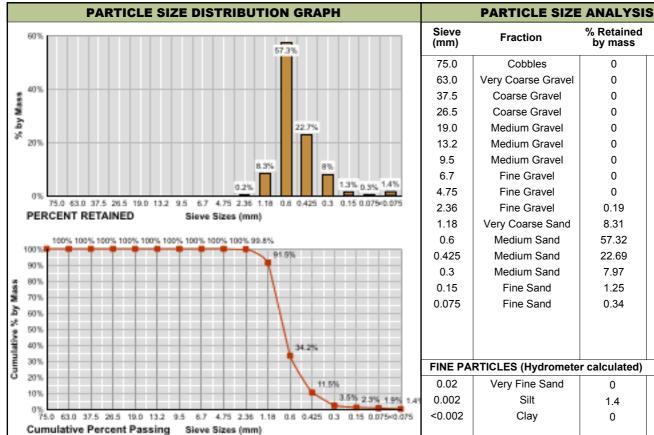
Oakleigh VIC 3166

S	U	N	π	VI.	Α	R	Υ

No interpretation required.

D VALUES					
D <sub>95</sub> :	1.68				
D <sub>90</sub> :	1.16				
D <sub>85</sub> :	1.11				
D <sub>60</sub> :	0.861				
D <sub>50</sub> :	0.76				
D <sub>15</sub> :	0.452				
D <sub>10</sub> :	0.402				
D <sub>5</sub> :	0.323				

PERFORMANCE FACT	<b>FORS</b>
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	2.90
Coefficient of Uniformity:	2.10
$(D_{60}/D_{10})$	



	Sieve (mm)	Fraction	% Retained by mass	% Passing by mass
	75.0	Cobbles	0	100
	63.0	Very Coarse Gravel	0	100
	37.5	Coarse Gravel	0	100
	26.5	Coarse Gravel	0	100
	19.0	Medium Gravel	0	100
	13.2	Medium Gravel	0	100
	9.5	Medium Gravel	0	100
	6.7	Fine Gravel	0	100
	4.75	Fine Gravel	0	100
	2.36	Fine Gravel	0.19	99.81
	1.18	Very Coarse Sand	8.31	91.5
	0.6	Medium Sand	57.32	34.17
	0.425	Medium Sand	22.69	11.48
	0.3	Medium Sand	7.97	3.51
	0.15	Fine Sand	1.25	2.26
	0.075	Fine Sand	0.34	1.93
	FINE PA	RTICLES (Hydromete	r calculated)	
	0.02	Very Fine Sand	0	1.4
1.43	0.002	Silt	1.4	0
75	<0.002	Clay	0	N/A

Consultant: Stephen Cox Stephenler

Authorised Signatory: Whe Downlot. Declan McDonald



#### - Australian Standard sieves

Sample Drop Off: 16 Chilvers Road 1300 30 40 80 Tel: Thornleigh NSW 2120 Fax: 1300 64 46 89 PO Box 357 info@sesl.com.au Mailing Address: Em: Pennant Hills NSW 1715 Web: www.sesl.com.au

Batch N°: 50113 Sample N°: 5 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: SW05\_S/P18-Oc18622 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

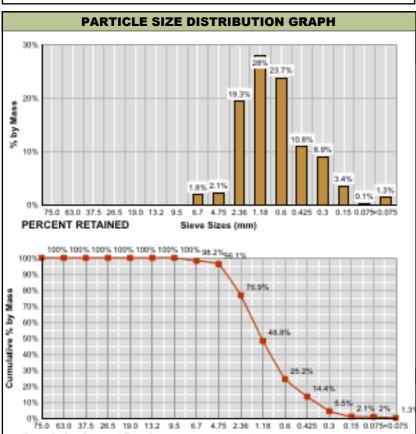
Oakleigh VIC 3166

S	U	N	π	VI.	Α	R	Υ

No interpretation required.

D VALUES					
D <sub>95</sub> :	4.61				
D <sub>90</sub> :	3.99				
D <sub>85</sub> :	3.37				
D <sub>60</sub> :	1.65				
D <sub>50</sub> :	1.23				
D <sub>15</sub> :	0.435				
D <sub>10</sub> :	0.363				
D <sub>5</sub> :	0.277				

PERFORMANCE FAC	TORS
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	11.00
Coefficient of Uniformity:	4.50
$(D_{60}/D_{10})$	



	PARTICLE SIZE ANALYSIS						
	Sieve (mm)	Fraction	% Retained by mass	% Passing by mass			
	75.0	Cobbles	0	100			
	63.0	Very Coarse Gravel	0	100			
١	37.5	Coarse Gravel	0	100			
١	26.5	Coarse Gravel	0	100			
١	19.0	Medium Gravel	0	100			
١	13.2	Medium Gravel	0	100			
١	9.5	Medium Gravel	0	100			
١	6.7	Fine Gravel	1.8	98.2			
١	4.75	Fine Gravel	2.09	96.11			
١	2.36	Fine Gravel	19.26	76.85			
١	1.18	Very Coarse Sand	28.04	48.8			
١	0.6	Medium Sand	23.65	25.15			
١	0.425	Medium Sand	10.75	14.4			
١	0.3	0.3 Medium Sand		5.53			
١	0.15	Fine Sand	3.4	2.13			
١	0.075	0.075 Fine Sand		1.99			
İ	FINE PA	RTICLES (Hydromete	r calculated)				
	0.02	Very Fine Sand	0	1.28			
33	0.002	Silt	1.28	0			
	<0.002	Clay	0	N/A			
		· .					

Consultant: Stephen Cox Stephenler

Cumulative Percent Passing Sieve Sizes (mm)

Authorised Signatory: Whe Downlot. Declan McDonald



#### - Australian Standard sieves

Sample Drop Off: 16 Chilvers Road 1300 30 40 80 Tel: Thornleigh NSW 2120 1300 64 46 89 Fax: PO Box 357 info@sesl.com.au Mailing Address: Em: Pennant Hills NSW 1715 Web: www.sesl.com.au

Batch N°: 50113 Sample N°: 6 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: SW06\_S/P18-Oc18623 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

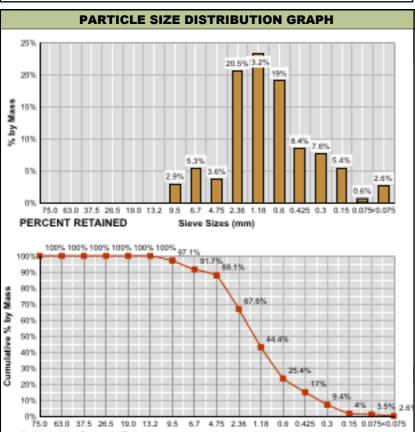
Oakleigh VIC 3166

SUMMARY	

No interpretation required.

D VALUES				
D <sub>95</sub> :	8.42			
D <sub>90</sub> :	5.77			
D <sub>85</sub> :	4.39			
D <sub>60</sub> :	1.97			
D <sub>50</sub> :	1.47			
D <sub>15</sub> :	0.392			
D <sub>10</sub> :	0.309			
D <sub>5</sub> :	0.177			

PERFORMANCE FACTORS					
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	19.00				
Coefficient of Uniformity:	6.40				
$(D_{60}/D_{10})$					



	Sieve (mm)	Fraction	% Retained by mass	% Passing by mass
Ì	75.0	Cobbles	0	100
	63.0	63.0 Very Coarse Gravel		100
	37.5	Coarse Gravel	0	100
	26.5	Coarse Gravel	0	100
	19.0	Medium Gravel	0	100
	13.2	Medium Gravel	0	100
١	9.5	Medium Gravel	2.94	97.06
	6.7	Fine Gravel	5.33	91.73
	4.75	Fine Gravel	3.63	88.1
	2.36	Fine Gravel	20.53	67.57
١	1.18	Very Coarse Sand	23.18	44.4
١	0.6	0.6 Medium Sand		25.41
	0.425 Medium Sand		8.38	17.03
١	0.3 Medium Sand		7.6	9.43
١	0.15	Fine Sand	5.39	4.04
١	0.075	Fine Sand	0.59	3.45
	FINE PA	RTICLES (Hydromete	r calculated)	
	0.02	Very Fine Sand	0	2.59
63	0.002	Silt	1.18	1.41
	<0.002	Clay	1.41	N/A

**PARTICLE SIZE ANALYSIS** 

Consultant: Stephen Cox Stephenler

Cumulative Percent Passing Sieve Sizes (mm)

Authorised Signatory: Whe Downlot. Declan McDonald



#### - Australian Standard sieves

Sample Drop Off: 16 Chilvers Road 1300 30 40 80 Tel: Thornleigh NSW 2120 1300 64 46 89 Fax: PO Box 357 info@sesl.com.au Mailing Address: Em: Pennant Hills NSW 1715 Web: www.sesl.com.au

Batch N°: 50113 Sample N°: 7 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: SW07\_S/P18-Oc18624 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

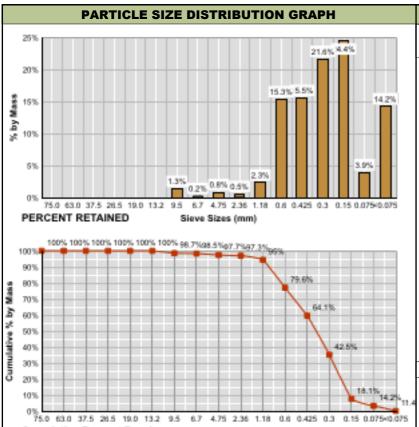
Oakleigh VIC 3166

S	U	N	π	VI.	Α	R	Υ

No interpretation required.

D V	ALUES
D <sub>95</sub> :	1.21
D <sub>90</sub> :	0.992
D <sub>85</sub> :	0.803
D <sub>60</sub> :	0.401
D <sub>50</sub> :	0.344
D <sub>15</sub> :	0.091
D <sub>10</sub> :	0.013
D <sub>5</sub> :	0.001

PERFORMANCE FACT	TORS
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	76.00
Coefficient of Uniformity:	31.00
$(D_{60}/D_{10})$	



		ANALIGN		
	Sieve (mm)	Fraction	% Retained by mass	% Passing by mass
	75.0 Cobbles		0	100
	63.0	Very Coarse Gravel	0	100
	37.5	Coarse Gravel	0	100
	26.5	Coarse Gravel	0	100
	19.0	Medium Gravel	0	100
	13.2	Medium Gravel	0	100
	9.5	Medium Gravel	1.32	98.68
	6.7	Fine Gravel	0.21	98.47
	4.75	Fine Gravel	0.76	97.71
	2.36	Fine Gravel	0.46	97.25
	1.18	Very Coarse Sand	2.3	94.95
	0.6 Medium Sand		15.31	79.64
	0.425 Medium Sand		15.54	64.1
	0.3	Medium Sand	21.63	42.47
	0.15	Fine Sand	24.41	18.06
	0.075 Fine Sand		3.87	14.19
	FINE PA	RTICLES (Hydromete	r calculated)	
	0.02	Very Fine Sand	2.78	11.4
1.4	0.002	Silt	3.48	7.92
	<0.002	Clay	7.92	N/A

**PARTICLE SIZE ANALYSIS** 

Consultant: Stephen Cox Stephenlex

Cumulative Percent Passing Sieve Sizes (mm)

Declan McDonald

Authorised Signatory: De Donnell.



## - Australian Standard sieves

16 Chilvers Road 1300 30 40 80 Sample Drop Off: Tel: Thornleigh NSW 2120 1300 64 46 89 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au

Web:

www.sesl.com.au

Pennant Hills NSW 1715

Batch N°: 50113 Sample N°: 8 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: SW08\_S/P18-Oc18625 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

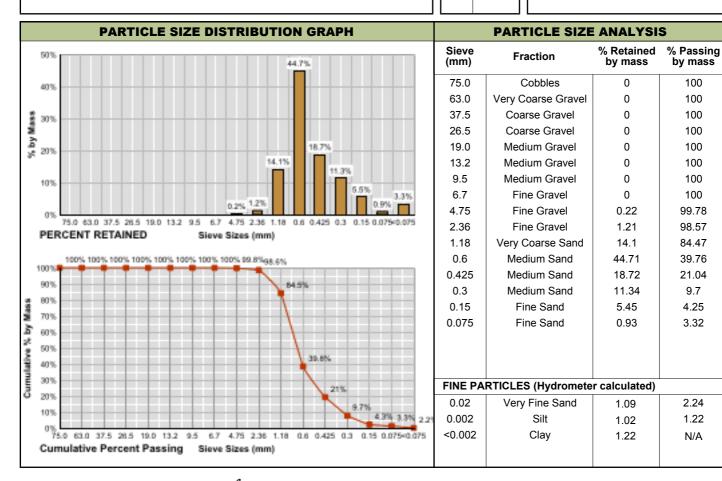
Oakleigh VIC 3166

_	П	W	7 B	 ۱D	v
- 3	u	ш	ш	۱R	

No interpretation required.

D VALUES				
D <sub>95</sub> :	2.06			
D <sub>90</sub> :	1.64			
D <sub>85</sub> :	1.22			
D <sub>60</sub> :	0.863			
D <sub>50</sub> :	0.733			
D <sub>15</sub> :	0.358			
D <sub>10</sub> :	0.303			
D <sub>5</sub> :	0.171			

PERFORMANCE FACTORS					
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	5.40				
Coefficient of Uniformity:	2.80				
(D <sub>60</sub> /D <sub>10</sub> )					



Consultant: Stephen Cox Stephenler

**Authorised Signatory:** Declan McDonald

Dole Doundel.

**Date Report Generated** 29/10/2018

100

100

100

100

100

100

100

100

99.78

98.57

84.47

39.76

21.04

9.7

4.25

3.32

2.24

1.22

N/A



#### - Australian Standard sieves

Sample Drop Off: 16 Chilvers Road 1300 30 40 80 Tel: Thornleigh NSW 2120 Fax: 1300 64 46 89 PO Box 357 info@sesl.com.au Mailing Address: Em: Pennant Hills NSW 1715 Web: www.sesl.com.au

Batch N°: 50113 Sample N°: 9 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: SW09\_S/P18-Oc18626 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

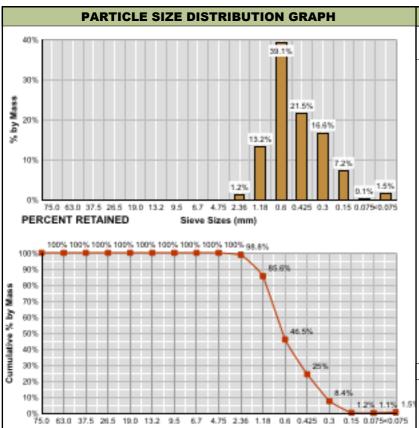
Oakleigh VIC 3166

S	U	N	π	VI.	Α	R	Υ

No interpretation required.

D VALUES					
D <sub>95</sub> :	2.02				
D <sub>90</sub> :	1.57				
D <sub>85</sub> :	1.17				
D <sub>60</sub> :	0.8				
D <sub>50</sub> :	0.652				
D <sub>15</sub> :	0.35				
D <sub>10</sub> :	0.312				
D <sub>5</sub> :	0.229				

PERFORMANCE FACTORS					
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	5.00				
Coefficient of Uniformity:	2.60				
$(D_{60}/D_{10})$					



		PARTICLE SIZE	ANALYSI	5
	Sieve (mm)	Fraction	% Retained by mass	% Passing by mass
	75.0	Cobbles	0	100
	63.0	Very Coarse Gravel	0	100
	37.5	Coarse Gravel	0	100
	26.5	Coarse Gravel	0	100
	19.0	Medium Gravel	0	100
	13.2	Medium Gravel	0	100
	9.5	Medium Gravel	0	100
	6.7	Fine Gravel	0	100
	4.75	Fine Gravel	0	100
	2.36	Fine Gravel	1.2	98.8
	1.18	Very Coarse Sand	13.17	85.63
	0.6	Medium Sand	39.13	46.51
	0.425	Medium Sand	21.48	25.02
	0.3	Medium Sand	16.63	8.39
	0.15	Fine Sand	7.21	1.19
	0.075	Fine Sand	0.13	1.05
	FINE PA	RTICLES (Hydromete	r calculated)	
	0.02	Very Fine Sand	0	1.47
.53	0.002	Silt	1.47	0
5	<0.002	Clay	0	N/A

Consultant: Stephen Cox Stephenlex

Cumulative Percent Passing Sieve Sizes (mm)

Authorised Signatory: Whe Downlot. Declan McDonald



## - Australian Standard sieves

Sample Drop Off: 16 Chilvers Road 1300 30 40 80 Tel: Thornleigh NSW 2120 Fax: 1300 64 46 89 PO Box 357 info@sesl.com.au Mailing Address: Em: Pennant Hills NSW 1715 Web: www.sesl.com.au

Batch N°: 50113 Sample N°: 10 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: SW10\_S/P18-Oc18627 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

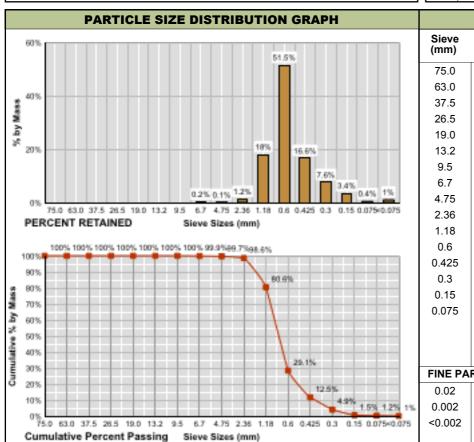
Oakleigh VIC 3166

SUMMARY			

No interpretation required.

D VALUES					
D <sub>95</sub> :	2.13				
D <sub>90</sub> :	1.8				
D <sub>85</sub> :	1.47				
D <sub>60</sub> :	0.948				
D <sub>50</sub> :	0.836				
D <sub>15</sub> :	0.451				
D <sub>10</sub> :	0.384				
D <sub>5</sub> :	0.302				

PERFORMANCE FACTORS					
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	4.70				
Coefficient of Uniformity:	2.50				
$(D_{60}/D_{10})$					



		PARTICLE SIZE	ANALTO	3
	Sieve (mm)	Fraction	% Retained by mass	% Passing by mass
	75.0	Cobbles	0	100
	63.0	Very Coarse Gravel	0	100
	37.5	Coarse Gravel	0	100
	26.5	Coarse Gravel	0	100
	19.0	Medium Gravel	0	100
	13.2	Medium Gravel	0	100
	9.5	Medium Gravel	0	100
	6.7	Fine Gravel	0.15	99.85
	4.75	Fine Gravel	0.11	99.74
	2.36	Fine Gravel	1.18	98.56
	1.18	Very Coarse Sand	17.98	80.58
	0.6	Medium Sand	51.51	29.07
	0.425	Medium Sand	16.59	12.49
	0.3	Medium Sand	7.59	4.9
	0.15	Fine Sand	3.36	1.54
	0.075	Fine Sand	0.36	1.18
	FINE PA	RTICLES (Hydromete	r calculated)	
	0.02	Very Fine Sand	0	1.01
ĸ.	0.002	Silt	0	1.01
	<0.002	Clay	1.01	N/A

PARTICLE SIZE ANALYSIS

Consultant: Stephen Cox Stephenler

Declan McDonald

Authorised Signatory: De Dounlel.



#### - Australian Standard sieves

Sample Drop Off: 16 Chilvers Road 1300 30 40 80 Tel: Thornleigh NSW 2120 1300 64 46 89 Fax: PO Box 357 Mailing Address: Em: info@sesl.com.au

Web:

www.sesl.com.au

Pennant Hills NSW 1715

Batch N°: 50113 Sample N°: 11 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: SW11\_S/P18-Oc18628 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Address: PO Box 276 Test Type: PSA\_AS

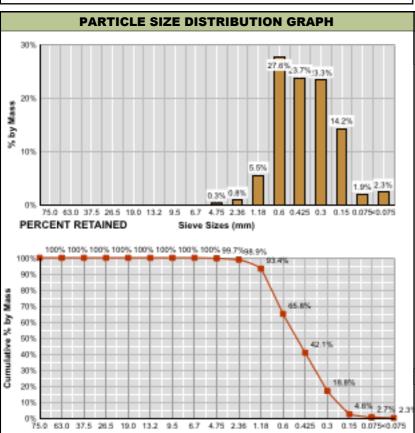
Oakleigh VIC 3166

S	U	N	π	VI.	Α	R	Υ

No interpretation required.

D VALUES					
D <sub>95</sub> :	1.52				
D <sub>90</sub> :	1.11				
D <sub>85</sub> :	1				
D <sub>60</sub> :	0.557				
D <sub>50</sub> :	0.483				
D <sub>15</sub> :	0.26				
D <sub>10</sub> :	0.207				
D <sub>5</sub> :	0.154				

PERFORMANCE FACTORS					
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ):	5.40				
Coefficient of Uniformity:	2.70				
$(D_{60}/D_{10})$					



	Sieve (mm)	Fraction	% Retained by mass	% Passing by mass
	75.0	Cobbles	0	100
	63.0	Very Coarse Gravel	0	100
	37.5	Coarse Gravel	0	100
	26.5	Coarse Gravel	0	100
	19.0	Medium Gravel	0	100
	13.2	Medium Gravel	0	100
	9.5	Medium Gravel	0	100
	6.7	Fine Gravel	0	100
	4.75	Fine Gravel	0.31	99.69
	2.36	Fine Gravel	0.81	98.88
	1.18	Very Coarse Sand	5.47	93.41
	0.6	Medium Sand	27.62	65.79
	0.425	Medium Sand	23.71	42.08
	0.3	Medium Sand	23.27	18.81
	0.15	Fine Sand	14.18	4.63
	0.075	Fine Sand	1.94	2.69
	FINE PA	RTICLES (Hydromete	r calculated)	
	0.02	Very Fine Sand	0	2.34
33	0.002	Silt	1.06	1.28
	<0.002	Clay	1.28	N/A

**PARTICLE SIZE ANALYSIS** 

Consultant: Stephen Cox Stephenler

Cumulative Percent Passing Sieve Sizes (mm)

0.6 0.425 0.3

Authorised Signatory: De Dounlol. Declan McDonald



#### - Australian Standard sieves

Sample Drop Off: 16 Chilvers Road 1300 30 40 80 Tel: Thornleigh NSW 2120 Fax: 1300 64 46 89 PO Box 357 Mailing Address: Em: info@sesl.com.au

Web:

www.sesl.com.au

Pennant Hills NSW 1715

Batch N°: 50113 Sample N°: 12 Date Received: 18/10/18 Report Status: Final

Client Name: **Eurofins - Melbourne** Project Name: REF: 622708

SESL Quote N°:

Sample Name: QA01\_S/P18-Oc18629 Client Contact: Eurofins Report

Client Order N°: 18-042 622708 Description: Soil Test Type: Address: PO Box 276 PSA\_AS

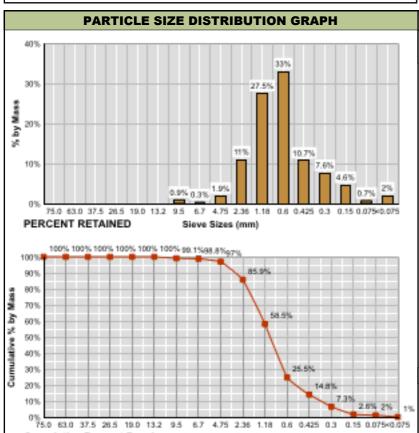
Oakleigh VIC 3166

S	U	N	π	VI.	Α	R	Υ

No interpretation required.

D V	ALUES
D <sub>95</sub> :	4.33
D <sub>90</sub> :	3.24
D <sub>85</sub> :	2.32
D <sub>60</sub> :	1.25
D <sub>50</sub> :	1.03
D <sub>15</sub> :	0.428
D <sub>10</sub> :	0.345
D <sub>5</sub> :	0.227

PERFORMANCE FACT	TORS
Gradation Index (D <sub>90</sub> /D <sub>10</sub> ): Coefficient of Uniformity:	9.40
Coefficient of Uniformity:	3.60
(D <sub>60</sub> /D <sub>10</sub> )	



		PARTICLE SIZE	ANALYSI	S			
	Sieve (mm)	Fraction	% Retained by mass	% Passing by mass			
	75.0	Cobbles	0	100			
	63.0	Very Coarse Gravel	0	100			
	37.5	Coarse Gravel	0	100			
	26.5	Coarse Gravel	0	100			
	19.0	Medium Gravel	0	100			
	13.2	Medium Gravel	0	100			
	9.5	Medium Gravel	0.88	99.12			
	6.7	Fine Gravel	0.32	98.8			
	4.75	Fine Gravel	1.85	96.95			
	2.36	Fine Gravel	11.02	85.93			
	1.18	Very Coarse Sand	27.47	58.46			
	0.6	Medium Sand	32.97	25.49			
	0.425	Medium Sand	10.68	14.81			
	0.3	Medium Sand	7.56	7.25			
	0.15	Fine Sand	4.61	2.63			
	0.075	Fine Sand	0.69	1.95			
	FINE PA	RTICLES (Hydromete	r calculated)				
	0.02	Very Fine Sand	0.98	0.97			
×.	0.002	Silt	0	0.97			
	<0.002	Clay	0.97	N/A			
		-					

Consultant: Stephen Cox Stephenler

Cumulative Percent Passing Sieve Sizes (mm)

Authorised Signatory: De Donnell. Declan McDonald





## Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 23736

WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

GHD Pty Ltd WA 999 Hay Street Perth Perth WA 6004

Attention: Shane Woods

 Report
 622708-S

 Project name
 YOGI

 Project ID
 613711709

 Received Date
 Oct 16, 2018

Client Sample ID			SW01_S	SW02_S	SW03_S	SW04_S
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			P18-Oc18618	P18-Oc18619	P18-Oc18620	P18-Oc1862
Date Sampled			Oct 10, 2018	Oct 10, 2018	Oct 10, 2018	Oct 10, 2018
Test/Reference	LOR	Unit				
TRH - 2013 NEPM Fractions (after silica gel clean-u	p)					
TRH >C10-C16 (after silica gel clean-up)	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34 (after silica gel clean-up)	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40 (after silica gel clean-up)	100	mg/kg	< 100	< 100	< 100	< 100
TRH - 1999 NEPM Fractions (after silica gel clean-u	p)	-				
TRH C10-C36 (Total) (after silica gel clean-up)	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C14 (after silica gel clean-up)	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28 (after silica gel clean-up)	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36 (after silica gel clean-up)	50	mg/kg	< 50	< 50	< 50	< 50
Ammonia (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	18	19	11	< 10
Nitrate & Nitrite (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Nitrate (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Nitrite (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Organic Nitrogen (as N)	5	mg/kg	13	630	< 10	190
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	6.6	6.3	7.4	7.1
Total Kjeldahl Nitrogen (as N)	10	mg/kg	13	630	< 10	190
Total Nitrogen (as N)	10	mg/kg	13	630	< 10	190
Total Organic Carbon	0.1	%	< 0.1	0.8	< 0.1	< 0.1
Phosphorus	5	mg/kg	110	260	99	35
% Moisture	1	%	< 1	< 1	< 1	< 1
Particle Size Distribution by Sieve and Hydrometer			see attached	see attached	see attached	see attache
Heavy Metals (1M HCl Extract)						
Arsenic (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2
Boron (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2
Cadmium (1M HCI extract)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5
Cobalt (1M HCl extract)	5	mg/kg	< 5	6.3	< 5	< 5
Copper (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5
Lead (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5
Manganese (1M HCl extract)	10	mg/kg	21	470	88	22
Mercury (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2
Nickel (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5
Selenium (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2
Zinc (1M HCl extract)	5	mg/kg	< 5	5.2	< 5	< 5



Client Sample ID Sample Matrix			SW01_S Soil	SW02_S Soil	SW03_S Soil	SW04_S Soil
Eurofins   mgt Sample No.			P18-Oc18618	P18-Oc18619	P18-Oc18620	P18-Oc18621
Date Sampled			Oct 10, 2018	Oct 10, 2018	Oct 10, 2018	Oct 10, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	5.2	13	11	< 2
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2
Boron	10	mg/kg	< 10	< 10	< 10	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	540	400	1100	33
Cobalt	5	mg/kg	< 5	14	< 5	< 5
Copper	5	mg/kg	8.3	44	9.2	< 5
Lead	5	mg/kg	9.4	11	12	7.0
Manganese	5	mg/kg	46	300	100	62
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	13	55	21	< 5
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Zinc	5	mg/kg	8.4	41	8.0	< 5
Eurofins   mgt Suite B11C: Na/K/Ca/Mg						
Calcium	5	mg/kg	150	1200	170	100
Magnesium	5	mg/kg	140	1800	180	160
Potassium	5	mg/kg	170	1600	200	180
Sodium	5	mg/kg	35	79	43	25

Client Sample ID			SW05_S	SW06_S	SW07_S	SW08_S
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			P18-Oc18622	P18-Oc18623	P18-Oc18624	P18-Oc18625
Date Sampled			Oct 10, 2018	Oct 10, 2018	Oct 11, 2018	Oct 10, 2018
Test/Reference	LOR	Unit				
TRH - 2013 NEPM Fractions (after silica gel clean-u	ıp)					
TRH >C10-C16 (after silica gel clean-up)	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34 (after silica gel clean-up)	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40 (after silica gel clean-up)	100	mg/kg	< 100	< 100	< 100	< 100
TRH - 1999 NEPM Fractions (after silica gel clean-u	ıp)					
TRH C10-C36 (Total) (after silica gel clean-up)	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C14 (after silica gel clean-up)	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28 (after silica gel clean-up)	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36 (after silica gel clean-up)	50	mg/kg	< 50	< 50	< 50	< 50
Ammonia (as N)	5	mg/kg	5.5	6.2	6.8	12
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	< 10	12	< 10	< 10
Nitrate & Nitrite (as N)	5	mg/kg	< 5	5.4	< 5	< 5
Nitrate (as N)	5	mg/kg	< 5	5.3	< 5	< 5
Nitrite (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Organic Nitrogen (as N)	5	mg/kg	60	93	160	79
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	6.5	6.3	6.6	6.8
Total Kjeldahl Nitrogen (as N)	10	mg/kg	66	99	170	91
Total Nitrogen (as N)	10	mg/kg	66	100	170	91
Total Organic Carbon	0.1	%	0.2	0.2	0.7	0.4
Phosphorus	5	mg/kg	150	200	120	45
% Moisture	1	%	< 1	< 1	< 1	< 1
Particle Size Distribution by Sieve and Hydrometer			see attached	see attached	see attached	see attached



Client Sample ID			SW05_S	SW06_S	SW07_S	SW08_S		
Sample Matrix			Soil	Soil	Soil	Soil		
Eurofins   mgt Sample No.			P18-Oc18622	P18-Oc18623	P18-Oc18624	P18-Oc18625		
Date Sampled			Oct 10, 2018	Oct 10, 2018	Oct 11, 2018	Oct 10, 2018		
Test/Reference	LOR	Unit						
Heavy Metals (1M HCI Extract)	•							
Arsenic (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2		
Boron (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2		
Cadmium (1M HCl extract)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4		
Chromium (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5		
Cobalt (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5		
Copper (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5		
Lead (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5		
Manganese (1M HCl extract)	10	mg/kg	20	28	74	14		
Mercury (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2		
Nickel (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5		
Selenium (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2		
Zinc (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5		
Heavy Metals								
Arsenic	2	mg/kg	15	11	3.2	< 2		
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2		
Boron	10	mg/kg	< 10	< 10	< 10	< 10		
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4		
Chromium	5	mg/kg	2200	1800	200	26		
Cobalt	5	mg/kg	< 5	6.9	< 5	< 5		
Copper	5	mg/kg	17	38	11	< 5		
Lead	5	mg/kg	20	17	8.8	< 5		
Manganese	5	mg/kg	130	170	170	31		
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1		
Nickel	5	mg/kg	44	59	8.4	< 5		
Selenium	2	mg/kg	< 2	< 2	< 2	< 2		
Zinc	5	mg/kg	12	20	12	< 5		
Eurofins   mgt Suite B11C: Na/K/Ca/Mg								
Calcium	5	mg/kg	200	200	170	120		
Magnesium	5	mg/kg	270	210	330	140		
Potassium	5	mg/kg	200	270	390	220		
Sodium	5	mg/kg	14	14	31	12		

Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled			SW09_S Soil P18-Oc18626 Oct 11, 2018	SW10_S Soil P18-Oc18627 Oct 11, 2018	SW11_S Soil P18-Oc18628 Oct 11, 2018	QA01 Soil P18-Oc18629 Oct 10, 2018
Test/Reference	LOR	Unit				
TRH - 2013 NEPM Fractions (after silica gel clean-up	) )	·				
TRH >C10-C16 (after silica gel clean-up)	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34 (after silica gel clean-up)	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40 (after silica gel clean-up)	100	mg/kg	< 100	< 100	< 100	< 100
TRH - 1999 NEPM Fractions (after silica gel clean-up	o)					
TRH C10-C36 (Total) (after silica gel clean-up)	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C14 (after silica gel clean-up)	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28 (after silica gel clean-up) 50		mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36 (after silica gel clean-up)		mg/kg	< 50	< 50	< 50	< 50



Client Sample ID			CWOO C	SW40 S	CW44 C	0.404
Sample Matrix			SW09_S Soil	SW10_S Soil	SW11_S Soil	QA01 Soil
· ·						
Eurofins   mgt Sample No.			P18-Oc18626	P18-Oc18627	P18-Oc18628	P18-Oc18629
Date Sampled	•		Oct 11, 2018	Oct 11, 2018	Oct 11, 2018	Oct 10, 2018
Test/Reference	LOR	Unit				
Ammonia (as N)	5	mg/kg	< 5	< 5	5.3	< 5
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	11	< 10	< 10	15
Nitrate & Nitrite (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Nitrate (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Nitrite (as N)	5	mg/kg	< 5	< 5	< 5	< 5
Organic Nitrogen (as N)	5	mg/kg	21	39	67	32
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units		6.9	6.5	7.6
Total Kjeldahl Nitrogen (as N)	10	mg/kg	21	39	72	32
Total Nitrogen (as N)	10	mg/kg	21	39	72	32
Total Organic Carbon	0.1	%	0.2	< 0.1	0.1	0.3
Phosphorus	5	mg/kg	41	24	39	120
% Moisture	1	%	< 1	< 1	< 1	< 1
Particle Size Distribution by Sieve and Hydrometer	· ·	7.0	see attached	see attached	see attached	see attached
Heavy Metals (1M HCI Extract)						
Arsenic (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2
Boron (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2
Cadmium (1M HCl extract)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5
Cobalt (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5
Copper (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5
Lead (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5
Manganese (1M HCl extract)	10	mg/kg	< 10	10	15	34
Mercury (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2
Nickel (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5
Selenium (1M HCl extract)	2	mg/kg	< 2	< 2	< 2	< 2
Zinc (1M HCl extract)	5	mg/kg	< 5	< 5	< 5	< 5
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	< 2	6.7
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2
Boron	10	mg/kg	< 10	< 10	< 10	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	10	19	31	750
Cobalt	5	mg/kg	< 5	< 5	< 5	< 5
Copper	5	mg/kg	< 5	< 5	< 5	8.2
Lead	5	mg/kg	5.8	< 5	5.0	13
Manganese	5	mg/kg	22	28	39	110
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	16
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Zinc	5	mg/kg	< 5	< 5	< 5	7.3
Eurofins   mgt Suite B11C: Na/K/Ca/Mg						
Calcium	5	mg/kg	100	130	230	210
Magnesium	5	mg/kg	140	160	250	280
Potassium	5	mg/kg	160	210	260	270
Sodium	5	mg/kg	15	16	15	45



#### Sample History

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

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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 Tolly 2000 AND M. F. C.	Testing Site	Extracted	Holding Time
TRH - 2013 NEPM Fractions (after silica gel clean-up)	Melbourne	Oct 19, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40 TRH - 1999 NEPM Fractions (after silica gel clean-up)	Melbourne	Oct 19, 2018	14 Day
- Method: TRH C6-C36 (Silica Gel Cleanup) - MGT 100A	Meibourne	Oct 19, 2010	14 Day
Nitrogens (speciated)			
Ammonia (as N)	Melbourne	Oct 19, 2018	7 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Webbuile	Oct 13, 2010	7 Day
Nitrate & Nitrite (as N)	Melbourne	Oct 19, 2018	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Webbuile	Oct 13, 2010	20 Day
Nitrate (as N)	Melbourne	Oct 19, 2018	28 Day
- Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Woldenie	000 10, 2010	20 Day
Nitrite (as N)	Melbourne	Oct 19, 2018	28 Day
- Method: APHA 4500-NO2 Nitrite Nitrogen by FIA		, , ,	,
Organic Nitrogen (as N)	Melbourne	Oct 16, 2018	7 Day
- Method: APHA 4500 Organic Nitrogen (N)			
Total Kjeldahl Nitrogen (as N)	Melbourne	Oct 19, 2018	28 Day
- Method: LTM-INO-4310 TKN in Waters & Soils by FIA			
Conductivity (1:5 aqueous extract at 25°C as rec.)	Perth	Oct 16, 2018	7 Day
- Method: LTM-INO-4030 Conductivity			
pH (1:5 Aqueous extract at 25°C as rec.)	Perth	Oct 16, 2018	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Total Organic Carbon	Melbourne	Oct 20, 2018	28 Day
- Method: APHA 5310B Total Organic Carbon			
Phosphorus	Melbourne	Oct 19, 2018	180 Day
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Heavy Metals (1M HCI Extract)	Melbourne	Oct 22, 2018	180 Day
- Method: USEPA 6010/6020 Heavy Metals - 1M HCl Extract			
NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Melbourne	Oct 19, 2018	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins   mgt Suite B11C: Na/K/Ca/Mg	Melbourne	Oct 19, 2018	180 Day
- Method: LTM-MET-3010 Alkali Metals by ICP-AES			
% Moisture	Melbourne	Oct 16, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			



ABN- 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Order No.:

Report #:

Phone:

Fax:

Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

622708

08 6222 8222

08 9429 6555

Sydney Unit F3, Building F 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

Received:

**Contact Name:** 

Priority:

Due:

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone: +61 8 9251 9600
NATA # 1261
Site # 23736

Oct 16, 2018 9:51 AM

Oct 23, 2018

Shane Woods

5 Day

Company Name: GHD Pty Ltd WA

Address: 999 Hay Street Perth

Perth

WA 6004

Project Name: YOGI
Project ID: 613711709

Eurofins | mgt Analytical Services Manager : Robert Johnston

																		-	,	,							
	Sample Detail				Arsenic (1M HCl extract)	Boron (1M HCl extract)	Cadmium (1M HCl extract)	Chromium (1M HCl extract)	Cobalt (1M HCl extract)	Conductivity (1:5 aqueous extract at 25°C as rec.)	Copper (1M HCl extract)	Lead (1M HCl extract)	Manganese (1M HCl extract)	Mercury (1M HCl extract)	Nickel (1M HCl extract)	Particle Size Distribution by Sieve and Hydrometer	pH (1:5 Aqueous extract at 25°C as rec.)	Phosphorus	Selenium (1M HCl extract)	Total Organic Carbon	Zinc (1M HCl extract)	Nitrogens (speciated)	TRH (after Silica Gel cleanup)	Moisture Set	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Eurofins   mgt Suite B11C: Na/K/Ca/Mg	
Mel	Melbourne Laboratory - NATA Site # 1254 & 14271			Х	Х	Х	Х	Х		Х	Х	Х	Х	Х			Х	Х	Х	Х	Х	Х	Х	Х	Х		
Syd	Sydney Laboratory - NATA Site # 18217																										
	sbane Laborator																										
	th Laboratory - N										Х							Х							Х		
	ernal Laboratory																Х										
No		Sample Date	Sampling Time	Matrix	LAB ID																						
1	SW01_S	Oct 10, 2018		Soil	P18-Oc18618	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
2	SW02_S	Oct 10, 2018		Soil	P18-Oc18619	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X
3	SW03_S	Oct 10, 2018		Soil	P18-Oc18620	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X
4	SW04_S	Oct 10, 2018		Soil	P18-Oc18621	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
5	SW05_S	Oct 10, 2018		Soil	P18-Oc18622	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
6	SW06_S	Oct 10, 2018		Soil	P18-Oc18623	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
7	SW07_S	Oct 11, 2018		Soil	P18-Oc18624	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
8	SW08_S	Oct 10, 2018		Soil	P18-Oc18625	Х	Х	X	Х	Х	X	Х	Х	Х	Х	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
9	SW09_S	Oct 11, 2018		Soil	P18-Oc18626	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х

Eurofins | mgt 2/91, Leach Highway, Kewdale, WA, Australia, 6105 ABN : 50 005 085 521 Telephone: +61 8 9251 9600 Page 6 of 14



ABN- 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney
Unit F3, Building F
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 2/91 Leach Highway Kewdale WA 6105 Phone: +61 8 9251 9600 NATA # 1261 Site # 23736

Company Name: GHD Pty Ltd WA

Address: 999 Hay Street Perth

Perth

WA 6004

Project Name: YOGI Project ID: 613711709 
 Order No.:
 Received:
 Oct 16, 2018 9:51 AM

 Report #:
 622708
 Due:
 Oct 23, 2018

 Report #:
 622708
 Due:
 Oct 23, 2018

 Phone:
 08 6222 8222
 Priority:
 5 Day

Fax: 08 9429 6555 Contact Name: Shane Woods

#### Eurofins | mgt Analytical Services Manager : Robert Johnston

		Sa	mple Detail			Arsenic (1M HCl extract)	Boron (1M HCl extract)	Cadmium (1M HCl extract)	Chromium (1M HCl extract)	Cobalt (1M HCl extract)	Conductivity (1:5 aqueous extract at 25°C as rec.)	Copper (1M HCl extract)	Lead (1M HCl extract)	Manganese (1M HCl extract)	Mercury (1M HCl extract)	Nickel (1M HCl extract)	Particle Size Distribution by Sieve and Hydrometer	pH (1:5 Aqueous extract at 25°C as rec.)	Phosphorus	Selenium (1M HCl extract)	Total Organic Carbon	Zinc (1M HCl extract)	Nitrogens (speciated)	TRH (after Silica Gel cleanup)	Set	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Eurofins   mgt Suite B11C: Na/K/Ca/Mg
Melk	ourne Laborate	ory - NATA Site	# 1254 & 142	71		Х	Х	Х	Χ	Х		Χ	Χ	Х	Х	Х			Х	Χ	Χ	Х	Х	Х	Х	Х	Χ
Syd	ney Laboratory	- NATA Site # 1	8217																								
Bris	bane Laborator	y - NATA Site #	20794																								
Pert	h Laboratory - N	NATA Site # 237	736								Х							Χ							Х		
10	SW10_S	Oct 11, 2018		Soil	P18-Oc18627	Х	Х	Х	Х	Х	Х	Χ	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Χ
11	SW11_S	Oct 11, 2018		Soil	P18-Oc18628	Х	Х	Х	Х	Х	Х	Χ	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Χ
12	QA01	Oct 10, 2018		Soil	P18-Oc18629	Х	Х	Х	Х	Х	Х	Χ	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Χ
Test	Counts					12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12



#### **Internal Quality Control Review and Glossary**

#### General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil 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. 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**

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting

SPIKE Addition of the analyte to the sample and reported as percentage recovery.

RPD Relative Percent Difference between two Duplicate pieces of analysis.

LCS Laboratory Control Sample - reported as percent recovery.

CRM Certified Reference Material - 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.

Surr - Surrogate The addition of a like compound to the analyte target and reported as percentage recovery

**Duplicate** A second piece of analysis from the same sample and reported in the same units as the result to show comparison.

**USEPA** United States Environmental Protection Agency

APHA American Public Health Association
TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody

SRA Sample Receipt Advice

QSM Quality Systems Manual ver 5.1 US Department of Defense
CP Client Parent - QC was performed on samples pertaining to this report

NCP 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.

TEQ 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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 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.
- 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.

Report Number: 622708-S



## **Quality Control Results**

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank					
TRH - 2013 NEPM Fractions (after silica gel clean-up)					
TRH >C10-C16 (after silica gel clean-up)	mg/kg	< 50	50	Pass	
TRH >C16-C34 (after silica gel clean-up)	mg/kg	< 100	100	Pass	
TRH >C34-C40 (after silica gel clean-up)	mg/kg	< 100	100	Pass	
Method Blank					
TRH - 1999 NEPM Fractions (after silica gel clean-up)					
TRH C10-C14 (after silica gel clean-up)	mg/kg	< 20	20	Pass	
TRH C15-C28 (after silica gel clean-up)	mg/kg	< 50	50	Pass	
TRH C29-C36 (after silica gel clean-up)	mg/kg	< 50	50	Pass	
Method Blank					
Ammonia (as N)	mg/kg	< 5	5	Pass	
Nitrate & Nitrite (as N)	mg/kg	< 5	5	Pass	
Nitrite (as N)	mg/kg	< 5	5	Pass	
Total Organic Carbon	%	< 0.1	0.1	Pass	
Method Blank					
Heavy Metals (1M HCI Extract)					
Arsenic (1M HCl extract)	mg/kg	< 2	2	Pass	
Boron (1M HCl extract)	mg/kg	< 2	2	Pass	
Cadmium (1M HCl extract)	mg/kg	< 0.4	0.4	Pass	
Chromium (1M HCl extract)	mg/kg	< 5	5	Pass	
Cobalt (1M HCl extract)	mg/kg	< 5	5	Pass	
Copper (1M HCl extract)	mg/kg	< 5	5	Pass	
Lead (1M HCl extract)	mg/kg	< 5	5	Pass	
Manganese (1M HCl extract)	mg/kg	< 10	10	Pass	
Nickel (1M HCl extract)	mg/kg	< 5	5	Pass	
Selenium (1M HCl extract)	mg/kg	< 2	2	Pass	
Zinc (1M HCl extract)	mg/kg	< 5	5	Pass	
Method Blank	ing/kg		3	1 433	
Heavy Metals		Т			
Arsenic	mg/kg	< 2	2	Pass	
Beryllium	mg/kg	< 2	2	Pass	
Boron	mg/kg	< 10	10	Pass	
Cadmium	mg/kg	< 0.4	0.4	Pass	
Chromium	mg/kg	< 5	5	Pass	
Cobalt	mg/kg	< 5	5	Pass	
			5	Pass	
Copper Lead	mg/kg	< 5	5	Pass	
Manganese	mg/kg	< 5	5	Pass	
	mg/kg	< 5			
Mercury Nickel	mg/kg	< 0.1	0.1 5	Pass Pass	
	mg/kg	< 5			
Selenium	mg/kg	< 2	2	Pass	
Zinc	mg/kg	< 5	5	Pass	
LCS - % Recovery					
TRH - 2013 NEPM Fractions (after silica gel clean-up)	0,	74	70.400	D	
TRH >C10-C16 (after silica gel clean-up)	%	74	70-130	Pass	
LCS - % Recovery					
TRH - 1999 NEPM Fractions (after silica gel clean-up)					
TRH C10-C14 (after silica gel clean-up)	%	78	70-130	Pass	
LCS - % Recovery		<u> </u>			
Ammonia (as N)	%	109	70-130	Pass	
Nitrate & Nitrite (as N)	%	113	70-130	Pass	1



Test			Units	Result 1	Acceptano Limits	e Pass Limits	Qualifying Code
Nitrate (as N)			%	112	70-130	Pass	
Total Kjeldahl Nitrogen (as N)			%	81	70-130	Pass	
Total Organic Carbon			%	91	70-130	Pass	
LCS - % Recovery							
Heavy Metals (1M HCI Extract)							
Arsenic (1M HCl extract)			%	107	70-130	Pass	
Cadmium (1M HCl extract)			%	96	70-130	Pass	
Chromium (1M HCl extract)			%	106	70-130	Pass	
Cobalt (1M HCl extract)			%	106	70-130	Pass	
Copper (1M HCl extract)			%	95	70-130	Pass	
Lead (1M HCl extract)			%	108	70-130	Pass	
Manganese (1M HCl extract)			%	98	70-130	Pass	
Nickel (1M HCl extract)			%	109	70-130	Pass	
Selenium (1M HCl extract)			%	95	70-130	Pass	
Zinc (1M HCl extract)			%	106	70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic			%	114	80-120	Pass	
Beryllium			%	108	80-120	Pass	
Boron			%	99	80-120	Pass	
Cadmium			%	111	80-120	Pass	
Chromium			%	118	80-120	Pass	
Cobalt			%	116	80-120	Pass	
Copper			%	114	80-120	Pass	
Lead			%	112	80-120	Pass	
Manganese			%	119	80-120	Pass	
Mercury			%	117	75-125	Pass	
Nickel			%	117	80-120	Pass	
Selenium			%	104	80-120	Pass	
Zinc			%	119	80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptano Limits	e Pass Limits	Qualifying Code
Spike - % Recovery							
Heavy Metals				Result 1			
Manganese	M18-Oc20530	NCP	%	112	75-125	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Chromium	S18-Oc20039	NCP	%	101	75-125	Pass	
Spike - % Recovery							
TRH - 2013 NEPM Fractions (after	silica gel clean-up	o)		Result 1			
TRH >C10-C16 (after silica gel clean-up)	P18-Oc18627	СР	%	78	70-130	Pass	
Spike - % Recovery							
TRH - 1999 NEPM Fractions (after	silica gel clean-ur	o)		Result 1			
TRH C10-C14 (after silica gel clean-up)	P18-Oc18627	СР	%	72	70-130	Pass	
Spike - % Recovery							
Heavy Metals		_		Result 1			
Arsenic	P18-Oc18629	CP	%	95	75-125	Pass	
Beryllium	P18-Oc18629	СР	%	107	75-125	Pass	
Boron	P18-Oc18629	CP	%	95	75-125	Pass	
Cadmium	P18-Oc18629	CP	%	94	75-125	Pass	
Cobalt	P18-Oc18629	CP	%	96	75-125	Pass	
Copper	P18-Oc18629	СР	%	104	75-125	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury	P18-Oc18629	CP	%	95			70-130	Pass	
Nickel	P18-Oc18629	CP	%	93			75-125	Pass	
Selenium	P18-Oc18629	CP	%	74			75-125	Fail	Q08
Zinc	P18-Oc18629	CP	%	95			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	P18-Oc18618	СР	uS/cm	18	19	5.0	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	P18-Oc18618	СР	pH Units	6.6	6.6	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	P18-Oc18618	CP	mg/kg	13	13	3.4	30%	Pass	
% Moisture	M18-Oc18693	NCP	%	14	15	3.0	30%	Pass	
Duplicate									
Heavy Metals (1M HCI Extract)				Result 1	Result 2	RPD			
Arsenic (1M HCl extract)	P18-Oc18618	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Boron (1M HCl extract)	P18-Oc18618	СР	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium (1M HCl extract)	P18-Oc18618	СР	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium (1M HCl extract)	P18-Oc18618	СР	mg/kg	< 5	< 5	<1	30%	Pass	
Cobalt (1M HCl extract)	P18-Oc18618	СР	mg/kg	< 5	< 5	<1	30%	Pass	
Copper (1M HCl extract)	P18-Oc18618	СР	mg/kg	< 5	< 5	<1	30%	Pass	
Lead (1M HCl extract)	P18-Oc18618	СР	mg/kg	< 5	< 5	<1	30%	Pass	
Manganese (1M HCl extract)	P18-Oc18618	CP	mg/kg	21	22	2.0	30%	Pass	
Mercury (1M HCl extract)	P18-Oc18618	СР	mg/kg	< 2	< 2	<1	30%	Pass	
Nickel (1M HCl extract)	P18-Oc18618	СР	mg/kg	< 5	< 5	<1	30%	Pass	
Selenium (1M HCl extract)	P18-Oc18618	СР	mg/kg	< 2	< 2	<1	30%	Pass	
Zinc (1M HCl extract)	P18-Oc18618	СР	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Selenium	Z18-Oc19687	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Duplicate									
Heavy Metals (1M HCI Extract)				Result 1	Result 2	RPD			
Arsenic (1M HCl extract)	P18-Oc18619	СР	mg/kg	< 2	< 2	<1	30%	Pass	
Boron (1M HCl extract)	P18-Oc18619	СР	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium (1M HCl extract)	P18-Oc18619	СР	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium (1M HCl extract)	P18-Oc18619	СР	mg/kg	< 5	< 5	<1	30%	Pass	
Cobalt (1M HCl extract)	P18-Oc18619	CP	mg/kg	6.3	11	55	30%	Fail	Q15
Copper (1M HCl extract)	P18-Oc18619	CP	mg/kg	< 5	7.8	52	30%	Fail	Q15
Lead (1M HCl extract)	P18-Oc18619	СР	mg/kg	< 5	5.1	52	30%	Fail	Q15
Mercury (1M HCl extract)	P18-Oc18619	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Nickel (1M HCl extract)	P18-Oc18619	СР	mg/kg	< 5	5.2	50	30%	Fail	Q15
Selenium (1M HCl extract)	P18-Oc18619	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Zinc (1M HCl extract)	P18-Oc18619	CP	mg/kg	5.2	8.8	52	30%	Fail	Q15
Duplicate				D 11.4	D 1/0	DDD	T		
				Result 1	Result 2	RPD	000/		0.1-
Total Organic Carbon	P18-Oc18624	CP	%	0.7	0.3	72	30%	Fail	Q15
Duplicate	-iliaa wal -i			Decilia	Dec. 11 O	DDD			
TRH - 2013 NEPM Fractions (after s TRH >C10-C16 (after silica gel		ĺ		Result 1	Result 2	RPD		_	
clean-up) TRH >C16-C34 (after silica gel	P18-Oc18626	СР	mg/kg	< 50	< 50	<1	30%	Pass	
clean-up) TRH >C34-C40 (after silica gel	P18-Oc18626	CP	mg/kg	< 100	< 100	<1	30%	Pass	
clean-up)	P18-Oc18626	CP	mg/kg	< 100	< 100	<1	30%	Pass	



Duplicate									
TRH - 1999 NEPM Fractions (after s	silica del clean-un	)		Result 1	Result 2	RPD			
TRH C10-C36 (Total) (after silica gel clean-up)	P18-Oc18626	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C10-C14 (after silica gel clean-up)	P18-Oc18626	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28 (after silica gel									
clean-up) TRH C29-C36 (after silica gel	P18-Oc18626	CP	mg/kg	< 50	< 50	<1	30%	Pass	
clean-up)	P18-Oc18626	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD		+ +	
Conductivity (1:5 aqueous extract at 25°C as rec.)	P18-Oc18628	СР	uS/cm	< 10	10	29	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	P18-Oc18628	СР	pH Units	6.5	6.5	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	P18-Oc18628	CP	mg/kg	72	60	18	30%	Pass	
Phosphorus	P18-Oc18628	CP	mg/kg	39	39	1.0	30%	Pass	
Duplicate									
Heavy Metals (1M HCI Extract)				Result 1	Result 2	RPD			
Arsenic (1M HCl extract)	P18-Oc18628	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Boron (1M HCl extract)	P18-Oc18628	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium (1M HCI extract)	P18-Oc18628	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium (1M HCl extract)	P18-Oc18628	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Cobalt (1M HCl extract)	P18-Oc18628	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper (1M HCl extract)	P18-Oc18628	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead (1M HCl extract)	P18-Oc18628	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Manganese (1M HCl extract)	P18-Oc18628	CP	mg/kg	15	11	27	30%	Pass	
Mercury (1M HCl extract)	P18-Oc18628	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Nickel (1M HCl extract)	P18-Oc18628	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Selenium (1M HCl extract)	P18-Oc18628	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Zinc (1M HCl extract)	P18-Oc18628	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Beryllium	P18-Oc18628	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Boron	P18-Oc18628	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Cadmium	P18-Oc18628	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	P18-Oc18628	CP	mg/kg	31	32	3.0	30%	Pass	
Cobalt	P18-Oc18628	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	P18-Oc18628	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	P18-Oc18628	CP	mg/kg	5.0	5.2	5.0	30%	Pass	
Manganese	P18-Oc18628	CP	mg/kg	39	39	1.0	30%	Pass	
Mercury	P18-Oc18628	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	P18-Oc18628	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	P18-Oc18628	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Eurofins   mgt Suite B11C: Na/K/Ca				Result 1	Result 2	RPD			
Calcium	P18-Oc18628	CP	mg/kg	230	230	<1	30%	Pass	
Magnesium	P18-Oc18628	CP	mg/kg	250	250	<1	30%	Pass	
Potassium	P18-Oc18628	CP	mg/kg	260	260	<1	30%	Pass	
Sodium	P18-Oc18628	CP	mg/kg	15	15	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD		<del>                                     </del>	
Phosphorus	P18-Oc18629	CP	mg/kg	120	120	2.0	30%	Pass	



D									
Duplicate Heavy Metals (4M HCI Extract)				Result 1	Result 2	RPD			
Heavy Metals (1M HCl Extract)	D40 O-40000	СР			1		200/	Dana	
Arsenic (1M HCl extract)	P18-Oc18629		mg/kg	< 2	< 2	<1	30%	Pass	
Boron (1M HCl extract)	P18-Oc18629	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium (1M HCl extract)	P18-Oc18629	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium (1M HCl extract)	P18-Oc18629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Cobalt (1M HCl extract)	P18-Oc18629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper (1M HCl extract)	P18-Oc18629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead (1M HCl extract)	P18-Oc18629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Manganese (1M HCl extract)	P18-Oc18629	CP	mg/kg	34	34	2.0	30%	Pass	
Mercury (1M HCl extract)	P18-Oc18629	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Nickel (1M HCl extract)	P18-Oc18629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Selenium (1M HCl extract)	P18-Oc18629	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Zinc (1M HCl extract)	P18-Oc18629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Beryllium	P18-Oc18629	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Boron	P18-Oc18629	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Cadmium	P18-Oc18629	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	P18-Oc18629	CP	mg/kg	750	750	1.0	30%	Pass	
Cobalt	P18-Oc18629	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	P18-Oc18629	CP	mg/kg	8.2	8.1	<1	30%	Pass	
Lead	P18-Oc18629	CP	mg/kg	13	13	<1	30%	Pass	
Manganese	P18-Oc18629	CP	mg/kg	110	110	1.0	30%	Pass	
Mercury	P18-Oc18629	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	P18-Oc18629	СР	mg/kg	16	16	<1	30%	Pass	
Zinc	P18-Oc18629	СР	mg/kg	7.3	8.5	15	30%	Pass	
Duplicate					· '				
Eurofins   mgt Suite B11C: Na/K/	Ca/Mg			Result 1	Result 2	RPD			
Calcium	P18-Oc18629	СР	mg/kg	210	210	2.0	30%	Pass	
Magnesium	P18-Oc18629	CP	mg/kg	280	280	<1	30%	Pass	
Potassium	P18-Oc18629	CP	mg/kg	270	270	<1	30%	Pass	
Sodium	P18-Oc18629	CP	mg/kg	45	46	1.0	30%	Pass	



#### Comments

Particle size distribution analysed by: SESL Australia, report reference 50113

### 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	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	Yes

### **Qualifier Codes/Comments**

Code Description

The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Q08

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

## **Authorised By**

Robert Johnston Analytical Services Manager Chris Bennett Senior Analyst-Metal (VIC) Joseph Edouard Senior Analyst-Organic (VIC) Senior Analyst-Inorganic (VIC) Julie Kav Matthew Deaves Senior Analyst-Inorganic (WA)



### Glenn Jackson

## **National Operations 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.

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST		GHD		GHD Level 10, Perth WA	999 Hay Stre 6000	eet	PO Box Perth W						Recept	ion Ph: 0	8 6222	8222			Pa	ige1_	of1
<b>Project No.</b> (as set up in ESdat	)	Site Name		Laborat				ns   mgt													
613711709		Yogi		Address					Kewdale W												
					ory Contac		Robert	Johnston	(08 9251 96	05)											_
Laboratory Quote No. 181004GHD		Turnaround Time Standard		W-Water/ A-		ontainer		N.		Zn)	T		Analyse	s		Т	T	T			Remarks
Job Manager (Invoice) & GHD Mat Brook	accounts	Email Address (Results shane.woods@ghd.cor miranda.guezingar@gh	m;	/əäpr	/Bag/G-Glass/	ved/ HCI/		: Total N, T Total P,	NEPM 2013 4s, Be, B, Ct Mn, Se, Zn)	13A: NEPM :r6+ (As, Be Ni, Mn, Se,	te : Cl, SO4, OH-, Total	ite : Na, K, (	(тоя)		oon (DOC)		an-up	emand	te #3 :		
GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix S-Soil/ SL-SI	Type B-Bottle/J-Jar/V-Vial/Bag/G-Glass/P Plastic	Preservative Unpreserved/ HCJ/ H2SO4/HNO3/Other	No	Suite B19E: Nutrients: Total N, TKN, NOX, NO2, NO3, NH3, Total P, Reactive P	Total Metals : M13A : NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Dissolved Metals: M13A: NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Suite B11F: Anion Suite: Cl, SO4, Alkalinity (CO3, HCO3, OH-, Total Alkalinity), F	Suite B11D : Cation Suite : Na, K, Ca, Mg + Hardness	Total Dissolved Solids (TDS)	Suspended Solids (SS)	Dissolved Organic Carbon (DOC)	Oil & Grease	TRH after Silica Gel Clean-up	Biochemical Oxygen Demand (BOD5day)	Suite MIC3 : Micro Suite #3 : Coliforms, E.Coli		
SW03		17/10/2018		w	B/G/P	P/UP		X	х	х	X	X	х	х	×	Ť	X	1	-		1
																					Please advise if there is insufficient sample volume to undertake a of the allocated analyses.
																					While the bottles are labelled SW03, please report these as SW03_W for consistency with prior
																					analysis
																					6236239
Sampled by: SW				Date/Tip	ne: 23/10/	2018		Relinquis	ned by:									<u> </u>	Date/Tim	۵.	233065
	Johnsto		time wite		ne: 23/16			Relinquish								_			Date/Tim		



Melbourne

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone: +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Unit F3, Building F 1/21 Smallwood Place 16 Mars Road Murarrie QLD 4172 Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217

Perth Z/91 Leach Highway Kewdale WA 6105 Phone: +61 8 9251 9600 NATA # 1261 Site # 23736

ABN - 50 005 085 521

e.mail: EnviroSales@eurofins.com

web: www.eurofins.com.au

# Sample Receipt Advice

Company name: GHD Pty Ltd WA

Contact name: Shane Woods

YOGI Project name: Project ID: 613711709 COC number: Not provided

Turn around time: 5 Day

Oct 23, 2018 2:45 PM Date/Time received:

Eurofins | mgt reference: 623959

## Sample information

- $\mathbf{V}$ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- $\mathbf{V}$ All samples have been received as described on the above COC.
- $\mathbf{V}$ COC has been completed correctly.
- $\mathbf{V}$ Attempt to chill was evident.
- $\square$ Appropriately preserved sample containers have been used.
- $\mathbf{V}$ All samples were received in good condition.
- $\mathbf{V}$ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- $\mathbf{V}$ Appropriate sample containers have been used.
- $\mathbf{V}$ Sample containers for volatile analysis received with zero headspace.
- $\boxtimes$ Split sample sent to requested external lab.
- $\boxtimes$ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

## Contact notes

If you have any questions with respect to these samples please contact:

Robert Johnston on Phone : or by e.mail: RobertJohnston@eurofins.com

Results will be delivered electronically via e.mail to Shane Woods - Shane.Woods@ghd.com.









## Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 23736

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.



999 Hay Street Perth

Perth WA 6004





WORLD RECOGNISED
ACCREDITATION

Attention: **Shane Woods** 623959-W

Report Project name YOGI Project ID 613711709 Received Date Oct 23, 2018

Client Sample ID			SW03_W
Sample Matrix			Water
Eurofins   mgt Sample No.			P18-Oc27867
Date Sampled			Oct 17, 2018
Test/Reference	LOR	Unit	
TRH - 2013 NEPM Fractions (after silica gel clean-	_	Onit	
TRH >C10-C16 (after silica gel clean-up)	0.05	mg/L	< 0.05
TRH >C16-C34 (after silica gel clean-up)	0.1	mg/L	< 0.1
TRH >C34-C40 (after silica gel clean-up)	0.1	mg/L	< 0.1
TRH - 1999 NEPM Fractions (after silica gel clean-		19. =	
TRH C10-C36 (Total) (after silica gel clean-up)	0.1	mg/L	< 0.1
TRH C10-C14 (after silica gel clean-up)	0.05	mg/L	< 0.05
TRH C15-C28 (after silica gel clean-up)	0.1	mg/L	< 0.1
TRH C29-C36 (after silica gel clean-up)	0.1	mg/L	< 0.1
, , , , , , , , , , , , , , , , , , , ,	•	. <u> </u>	
Ammonia (as N)	0.01	mg/L	0.26
Chloride	1	mg/L	100
Dissolved Organic Carbon	5	mg/L	24
Fluoride	0.5	mg/L	< 0.5
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02
Phosphate total (as P)	0.05	mg/L	0.07
Phosphorus reactive (as P)	0.05	mg/L	< 0.05
Sulphate (as SO4)	5	mg/L	15
Suspended Solids	1	mg/L	25
Total Dissolved Solids	10	mg/L	420
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2
Total Nitrogen (as N)	0.2	mg/L	1.2
Hardness mg equivalent CaCO3/L	5	mg/L	34
Alkalinity (speciated)	1		
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	24
Carbonate Alkalinity (as CaCO3)	20	mg/L	< 20
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20
Total Alkalinity (as CaCO3)	20	mg/L	31
Alkali Metals			
Calcium	0.5	mg/L	6.5
Magnesium	0.5	mg/L	4.3
Potassium	0.5	mg/L	8.6
Sodium	0.5	mg/L	62



Client Sample ID			SW03_W
Sample Matrix			Water
Eurofins   mgt Sample No.			P18-Oc27867
Date Sampled			Oct 17, 2018
Test/Reference	LO	R Unit	
Heavy Metals			
Arsenic	0.00	01 mg/L	0.002
Arsenic (filtered)	0.00	01 mg/L	0.002
Beryllium	0.00	01 mg/L	< 0.001
Beryllium (filtered)	0.00	01 mg/L	< 0.001
Boron	0.0	5 mg/L	0.25
Boron (filtered)	0.0	5 mg/L	0.25
Cadmium	0.00	02 mg/L	< 0.0002
Cadmium (filtered)	0.00	02 mg/L	< 0.0002
Chromium	0.00	01 mg/L	0.018
Chromium (filtered)	0.00	01 mg/L	0.003
Cobalt	0.00	01 mg/L	0.002
Cobalt (filtered)	0.00	01 mg/L	0.001
Copper	0.00	01 mg/L	0.013
Copper (filtered)	0.00	01 mg/L	0.008
Lead	0.00	01 mg/L	0.004
Lead (filtered)	0.00	01 mg/L	0.002
Manganese	0.00	05 mg/L	0.080
Manganese (filtered)	0.00	05 mg/L	0.040
Mercury	0.00	01 mg/L	< 0.0001
Mercury (filtered)	0.00	01 mg/L	< 0.0001
Nickel	0.00	01 mg/L	0.010
Nickel (filtered)	0.00	01 mg/L	0.007
Selenium	0.00	01 mg/L	0.002
Selenium (filtered)	0.00	01 mg/L	0.001
Zinc	0.00	05 mg/L	0.011
Zinc (filtered)	0.00	05 mg/L	< 0.005

Report Number: 623959-W



### Sample History

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

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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.

<b>Description</b> TRH - 2013 NEPM Fractions (after silica gel clean-up)	Testing Site Melbourne	Extracted Oct 27, 2018	Holding Time 7 Day
- Method: LTM-ORG-2010 TRH C6-C40		,	•
TRH - 1999 NEPM Fractions (after silica gel clean-up)	Melbourne	Oct 27, 2018	7 Day
- Method: TRH C6-C36 (Silica Gel Cleanup) - MGT 100A		,	•
Eurofins   mgt Suite B19E: Total N, TKN, NOx, NO2, NO3, NH3, Total P, Reactive	Р		
Ammonia (as N)	Melbourne	Oct 24, 2018	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA		,	•
Nitrate & Nitrite (as N)	Perth	Oct 23, 2018	28 Day
- Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser		,	•
Nitrate (as N)	Perth	Oct 23, 2018	2 Day
- Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser		,	•
Nitrite (as N)	Perth	Oct 23, 2018	2 Day
- Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser		,	•
Phosphate total (as P)	Melbourne	Oct 24, 2018	28 Day
- Method: APHA 4500-P E. Phosphorous		,	•
Phosphorus reactive (as P)	Melbourne	Oct 24, 2018	2 Day
- Method: APHA4500-PO4		,	•
Total Kjeldahl Nitrogen (as N)	Melbourne	Oct 24, 2018	7 Day
- Method: LTM-INO-4040 Phosphate and Nitrogen in waters by Continuous Flow Analysis (CFA)		,	•
Eurofins   mgt Suite B11F: Cl/SO4/Alkalinity/Total F			
Chloride	Melbourne	Oct 24, 2018	28 Day
- Method: LTM-INO-4090 Chloride by Discrete Analyser			·
Fluoride	Melbourne	Oct 24, 2018	28 Day
- Method: APHA 4500 F-C Fluoride by Ion Selective Electrode			•
Sulphate (as SO4)	Melbourne	Oct 24, 2018	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Alkalinity (speciated)	Perth	Oct 23, 2018	14 Day
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Dissolved Organic Carbon	Melbourne	Oct 24, 2018	28 Day
- Method: APHA 5310B Dissolved Organic Carbon			
Suspended Solids	Melbourne	Oct 24, 2018	7 Days
- Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry			
Total Dissolved Solids	Melbourne	Oct 24, 2018	7 Day
- Method: LTM-INO-4170 Total Dissolved Solids in Water			
NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Melbourne	Oct 29, 2018	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
NEPM 2013 Filtered Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Melbourne	Oct 29, 2018	28 Day
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins   mgt Suite B11D: Na/K/Ca/Mg and Hardness			
Hardness mg equivalent CaCO3/L	Melbourne	Oct 24, 2018	28 Day
- Method: APHA 2340B Hardness by Calculation			
Alkali Metals	Melbourne	Oct 24, 2018	180 Day
- Method: LTM-MET-3010 Alkali Metals S Si and P by ICP-AES			



ABN- 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +613 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 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
2/91 Leach Highway
Kewdale WA 6105
Phone: +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WA Order No.: Received: Oct 23, 2018 2:45 PM

 Address:
 999 Hay Street Perth
 Report #:
 623959
 Due:
 Oct 30, 2018

 Perth
 Phone:
 08 6222 8222
 Priority:
 5 Day

 WA 6004
 Fax:
 08 9429 6555
 Contact Name:
 Shane Woods

Project Name: YOGI

Project ID: 613711709

Eurofins | mgt Analytical Services Manager : Robert Johnston

		Sa	mple Detail			Dissolved Organic Carbon	Suspended Solids	Total Dissolved Solids	TRH (after Silica Gel cleanup)	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Eurofins   mgt Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins   mgt Suite B19E: Total N, TKN, NOx, NO2, NO3, NH3, Total P, Reactive P	Eurofins   mgt Suite B11F: Cl/SO4/Alkalinity/Total F	NEPM 2013 Filtered Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn,
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	71		Χ	Х	Х	Х	Х	Х	Х	Х	Х
Sydr	ney Laboratory	- NATA Site # 1	8217											
Brisl	bane Laborator	y - NATA Site #	20794											
Perti	h Laboratory - N	IATA Site # 237	36									Х	Х	
Exte	rnal Laboratory													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID									
1	SW03_W	Oct 17, 2018		Water	P18-Oc27867	Х	Х	Х	Х	Х	Х	Х	Х	Х
Test	Counts					1	1	1	1	1	1	1	1	1

Eurofins | mgt 2/91, Leach Highway, Kewdale, WA, Australia, 6105 ABN : 50 005 085 521 Telephone: +61 8 9251 9600 Page 4 of 10

Date Reported:Oct 30, 2018

Report Number: 623959-W



### **Internal Quality Control Review and Glossary**

#### General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil 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. 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**

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting

SPIKE Addition of the analyte to the sample and reported as percentage recovery.

RPD Relative Percent Difference between two Duplicate pieces of analysis.

LCS Laboratory Control Sample - reported as percent recovery.

CRM Certified Reference Material - 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.

Surr - Surrogate The addition of a like compound to the analyte target and reported as percentage recovery

**Duplicate** A second piece of analysis from the same sample and reported in the same units as the result to show comparison.

**USEPA** United States Environmental Protection Agency

APHA American Public Health Association
TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody

SRA Sample Receipt Advice

QSM Quality Systems Manual ver 5.1 US Department of Defense
CP Client Parent - QC was performed on samples pertaining to this report

NCP 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.

TEQ 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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 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.

Report Number: 623959-W



## **Quality Control Results**

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank					
TRH - 2013 NEPM Fractions (after silica gel clean-up)					
TRH >C10-C16 (after silica gel clean-up)	mg/L	< 0.05	0.05	Pass	
TRH >C16-C34 (after silica gel clean-up)	mg/L	< 0.1	0.1	Pass	
TRH >C34-C40 (after silica gel clean-up)	mg/L	< 0.1	0.1	Pass	
Method Blank					
TRH - 1999 NEPM Fractions (after silica gel clean-up)					
TRH C10-C14 (after silica gel clean-up)	mg/L	< 0.05	0.05	Pass	
TRH C15-C28 (after silica gel clean-up)	mg/L	< 0.1	0.1	Pass	
TRH C29-C36 (after silica gel clean-up)	mg/L	< 0.1	0.1	Pass	
Method Blank					
Ammonia (as N)	mg/L	< 0.01	0.01	Pass	
Chloride	mg/L	< 1	1	Pass	
Fluoride	mg/L	< 0.5	0.5	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05	0.05	Pass	
Nitrate (as N)	mg/L	< 0.02	0.02	Pass	
Nitrite (as N)	mg/L	< 0.02	0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05	0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05	0.05	Pass	
Sulphate (as SO4)	mg/L	< 5	5	Pass	
Suspended Solids	mg/L	< 1	1	Pass	
Total Dissolved Solids	mg/L	< 10	10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2	0.2	Pass	
Method Blank	Ing/L	V 0.2	U.L	1 455	
Alkali Metals					
Calcium	mg/L	< 0.5	0.5	Pass	
Magnesium	mg/L	< 0.5	0.5	Pass	
Potassium	mg/L	< 0.5	0.5	Pass	
Sodium	mg/L	< 0.5	0.5	Pass	
Method Blank	IIIg/L	< 0.5	0.5	Fass	
Heavy Metals		T T			
Arsenic	ma/l	< 0.001	0.001	Pass	
	mg/L				
Arsenic (filtered)	mg/L	< 0.001	0.001	Pass	
Beryllium	mg/L	< 0.001	0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001	0.001	Pass	
Boron	mg/L	< 0.05	0.05	Pass	
Boron (filtered)	mg/L	< 0.05	0.05	Pass	
Cadmium	mg/L	< 0.0002	0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002	0.0002	Pass	
Chromium	mg/L	< 0.001	0.001	Pass	
Chromium (filtered)	mg/L	< 0.001	0.001	Pass	
Cobalt	mg/L	< 0.001	0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001	0.001	Pass	
Copper	mg/L	< 0.001	0.001	Pass	
Copper (filtered)	mg/L	< 0.001	0.001	Pass	
Lead	mg/L	< 0.001	0.001	Pass	
Lead (filtered)	mg/L	< 0.001	0.001	Pass	
Manganese	mg/L	< 0.005	0.005	Pass	
Manganese (filtered)	mg/L	< 0.005	0.005	Pass	
Mercury	mg/L	< 0.0001	0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001	0.0001	Pass	
Nickel	mg/L	< 0.001	0.001	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Nickel (filtered)	mg/L	< 0.001	0.001	Pass	Code
Selenium	mg/L	< 0.001	0.001	Pass	
Selenium (filtered)	mg/L	< 0.001	0.001	Pass	
Zinc	mg/L	< 0.005	0.001	Pass	
Zinc (filtered)	mg/L	< 0.005	0.005	Pass	
LCS - % Recovery		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	0.000	1 455	
TRH - 2013 NEPM Fractions (after silica gel clean-up)					
TRH >C10-C16 (after silica gel clean-up)	%	77	70-130	Pass	
LCS - % Recovery					
TRH - 1999 NEPM Fractions (after silica gel clean-up)					
TRH C10-C14 (after silica gel clean-up)	%	80	70-130	Pass	
LCS - % Recovery					
Ammonia (as N)	%	98	70-130	Pass	
Chloride	%	120	70-130	Pass	
Fluoride	%	89	70-130	Pass	
Nitrate & Nitrite (as N)	%	100	70-130	Pass	
Nitrate (as N)	%	100	70-130	Pass	
Nitrite (as N)	%	104	70-130	Pass	
Phosphate total (as P)	%	97	70-130	Pass	
Phosphorus reactive (as P)	%	115	70-130	Pass	
Sulphate (as SO4)	%	115	70-130	Pass	
Suspended Solids	%	106	70-130	Pass	
Total Dissolved Solids	%	98	70-130	Pass	
Total Bissolved Golids  Total Kjeldahl Nitrogen (as N)	%	99	70-130	Pass	
LCS - % Recovery		33	70-130	1 433	
Alkali Metals					
Calcium	%	119	70-130	Pass	
Magnesium	%	120	70-130	Pass	
Potassium	%	103	70-130	Pass	
Sodium	%	105	70-130	Pass	
LCS - % Recovery	70	100	70 100	1 455	
Heavy Metals					
Arsenic	%	107	80-120	Pass	
Arsenic (filtered)	%	107	80-120	Pass	
Beryllium	%	102	80-120	Pass	
Boron	%	105	80-120	Pass	
Boron (filtered)	%	105	80-120	Pass	
Cadmium	%	100	80-120	Pass	
Cadmium (filtered)	%	100	80-120	Pass	
Chromium	%	101	80-120	Pass	
Chromium (filtered)	%	101	80-120	Pass	
Cobalt	%	107	80-120	Pass	
Cobalt (filtered)	%	107	80-120	Pass	
Copper	%	105	80-120	Pass	
Copper (filtered)	%	105	80-120	Pass	
Lead	%	103	80-120	Pass	
Lead (filtered)	%	103	80-120	Pass	
Manganese	%	112	80-120	Pass	
Manganese (filtered)	%	112	80-120	Pass	
Mercury	%	93	75-125	Pass	
Mercury (filtered)	%	93	70-130	Pass	
Nickel	%	107	80-120	Pass	
Nickel (filtered)	%	107	80-120	Pass	
		. 101 1	00-120	1 433	1



Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Selenium (filtered)			%	106			80-120	Pass	
Zinc			%	108			80-120	Pass	
Zinc (filtered)			%	108			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
	_	, ,		Result 1					
Ammonia (as N)	M18-Oc24926	NCP	%	94			70-130	Pass	
Nitrate & Nitrite (as N)	P18-Oc28681	NCP	%	65			70-130	Fail	Q08
Nitrate (as N)	P18-Oc28681	NCP	%	65			70-130	Fail	Q08
Phosphate total (as P)	M18-Oc27384	NCP	%	110			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M18-Oc27384	NCP	%	74			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Sodium	P18-Oc31167	NCP	%	106			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M18-Oc30804	NCP	%	97			75-125	Pass	
Arsenic (filtered)	M18-Oc30803	NCP	%	93			70-130	Pass	
Beryllium	M18-Oc30804	NCP	%	93			75-125	Pass	
Beryllium (filtered)	M18-Oc30803	NCP	%	92			75-125	Pass	
Boron	M18-Oc30804	NCP	%	127			75-125	Fail	Q08
Boron (filtered)	M18-Oc32993	NCP	%	99			75-125	Pass	
Cadmium	M18-Oc30804	NCP	%	100			75-125	Pass	
Cadmium (filtered)	M18-Oc30803	NCP	%	75			70-130	Pass	
Chromium	M18-Oc30804	NCP	%	98			75-125	Pass	
Chromium (filtered)	M18-Oc30803	NCP	%	91			70-130	Pass	
Cobalt	M18-Oc30804	NCP	%	96			75-125	Pass	
Cobalt (filtered)	M18-Oc30803	NCP	%	99			75-125	Pass	
Copper	M18-Oc30804	NCP	%	96			75-125	Pass	
Copper (filtered)	M18-Oc30803	NCP	%	88			70-130	Pass	
Lead	M18-Oc30804	NCP	%	100			75-125	Pass	
Lead (filtered)	M18-Oc30803	NCP	%	90			70-130	Pass	
Manganese	M18-Oc30804	NCP	%	96			75-125	Pass	
Manganese (filtered)	M18-Oc32993	NCP	%	98			70-130	Pass	
Mercury	M18-Oc30804	NCP	%	93			70-130	Pass	
Mercury (filtered)	M18-Oc30803	NCP	%	81			70-130	Pass	
Nickel	M18-Oc30804	NCP	%	96			75-125	Pass	
Nickel (filtered)	M18-Oc30803	NCP	%	92			70-130	Pass	
Selenium	M18-Oc30804	NCP	%	94			75-125	Pass	
Selenium (filtered)	M18-Oc30803	NCP	%	86			70-130	Pass	
Zinc	M18-Oc30804	NCP	%	106			75-125	Pass	
Zinc (filtered)	M18-Oc30803	NCP	%	106			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate							•		
				Result 1	Result 2	RPD			
Ammonia (as N)	M18-Oc24926	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chloride	M18-Oc30804	NCP	mg/L	110	110	1.0	30%	Pass	
Dissolved Organic Carbon	P18-Oc27867	CP	mg/L	24	23	4.0	30%	Pass	
Fluoride	M18-Oc27419	NCP	mg/L	1.0	1.0	1.6	30%	Pass	
Nitrate & Nitrite (as N)	P18-Oc27867	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	P18-Oc27867	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	P18-Oc27867	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phosphate total (as P)	S18-Oc27795	NCP	mg/L	0.52	0.55	6.0	30%	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	P18-Oc30110	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as SO4)	M18-Oc30804	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Suspended Solids	M18-Oc27292	NCP	mg/L	140	150	2.0	30%	Pass	
Total Dissolved Solids	M18-Oc24803	NCP	mg/L	400	360	12	30%	Pass	
Total Kjeldahl Nitrogen (as N)	S18-Oc27795	NCP	mg/L	1.0	1.0	<1	30%	Pass	
Hardness mg equivalent CaCO3/L	M18-Oc28614	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	P18-Oc27867	CP	mg/L	24	24	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	P18-Oc27867	СР	mg/L	< 20	< 20	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	P18-Oc27867	СР	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	P18-Oc27867	CP	mg/L	31	31	1.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M18-Oc28614	NCP	mg/L	1.1	1.1	2.0	30%	Pass	
Magnesium	M18-Oc28614	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Potassium	M18-Oc28614	NCP	mg/L	1.1	1.1	<1	30%	Pass	
Sodium	P18-Oc31167	NCP	mg/L	110	110	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-Oc30804	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M18-Oc30803	NCP	mg/L	0.003	0.002	2.0	30%	Pass	
Beryllium	M18-Oc30804	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium (filtered)	M18-Oc30803	NCP	mg/L	0.020	0.020	<1	30%	Pass	
Boron	M18-Oc30804	NCP	mg/L	0.61	0.61	2.0	30%	Pass	
Boron (filtered)	M18-Oc30803	NCP	mg/L	0.50	0.50	<1	30%	Pass	
Cadmium	M18-Oc30804	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	M18-Oc30803	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M18-Oc30804	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M18-Oc30803	NCP	mg/L	0.003	0.003	2.0	30%	Pass	
Cobalt	M18-Oc30804	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cobalt (filtered)	M18-Oc30803	NCP	mg/L	0.11	0.11	1.0	30%	Pass	
Copper	M18-Oc30804	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M18-Oc30803	NCP	mg/L	0.078	0.076	2.0	30%	Pass	
Lead	M18-Oc30804	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M18-Oc30803	NCP	mg/L	0.031	0.031	<1	30%	Pass	
Manganese	M18-Oc30804	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	M18-Oc30803	NCP	mg/L	0.43	0.43	1.0	30%	Pass	
Mercury	M18-Oc30804	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M18-Oc30803	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M18-Oc30804	NCP	mg/L	< 0.0001	< 0.001	<1	30%	Pass	
Nickel (filtered)	M18-Oc30804	NCP	mg/L	0.086	0.086	<1	30%	Pass	
Selenium	M18-Oc30803	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M18-Oc30804	NCP	mg/L	0.003	0.003	2.0	30%	Pass	
Colonium (intolou)	M18-Oc30803	NCP	mg/L	< 0.005	< 0.005	<u> </u>	30%	Pass	
Zinc				· · · · · · · · · · · · · · · · · · ·	. <b>.</b> v.vvo	S I	1 JU/0	ו מסס	1



#### 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

The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference Q08

### **Authorised By**

Robert Johnston Analytical Services Manager Chris Bennett Senior Analyst-Metal (VIC) Joseph Edouard Senior Analyst-Organic (VIC) Senior Analyst-Inorganic (VIC) Julie Kay Matthew Deaves Senior Analyst-Inorganic (WA)

### Glenn Jackson

### **National Operations 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.

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Report Number: 623959-W

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST		GHD		Perth WA			PO Box Perth W	/A 6832					Recep	tion Ph: (	08 6222	8222				Page _		of2
Project No. (as set up in ESdat)		Site Name		Laborat				ns   mgt														
613711709		Yogi		Addres					Kewdale W													
Laborator O No.				Laborat	ory Conta		Robert	Johnston	(08 9251 96	05)												
Laboratory Quote No.		Turnaround Time		4		ontainer	_						Analyse	25								Remarks
181004GHD		Standard		ater/			W	, ĕ	l e	m ,o`		Ca, Mg							, š			
Job Manager (Invoice) & GHD	accounts	Email Address (Result	1	- 3	ė			X X	w 'b'	2		3		1	1				P. O.			
Mat Brook	accounts	shane.woods@ghd.comiranda.guezingar@g	<u>m:</u>	SL-S/udge/ V	Bag/G-Glass	ed/ HCI/		Total N, 1 otal P, Re	LEPM 201 s, Be, B, C Se, Zn)	A : NEPM 5, Be, B, C se, Zn)	: Cl, SO4, DH-, Total	7,	(SQ.		Carbon (DOC)		dn-u	nand	#3 : Colif			
GHD Sample ID	Lab Sample ID	Date	Time	Sample Matrix s-soll/ SL-Sludge/ W-Water/ A- Air	Type B-Bottle/J-Jar/V-Vial/Bag/G-Glass/P- Plastic	Preservative Unpreserved/HC/ H2SO4/HNO3/Other	No	<b>Suite B19E</b> : Nutrients: Total N, TKN, NOX, NO2, NO3, NH3, Total P, Reactive P	Total Metals: M13A: NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Dissolved Metals : M13A : NEPM 2013 Metals without Gr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Suite B11F: Anion Suite: Cl, SO4, Alkalinity (CO3, HCO3, OH-, Total Alkalinity), F	Suite B11D : Cation Suite : Na, + Hardness	Total Dissolved Solids (TDS)	Suspended Solids (SS)	Dissolved Organic Carbo	Oil & Grease	TRH after Silica Gel Clean-up	Biochemical Oxygen Demand (BOD5day)	Suite MIC3 : Micro Suite #3 : Coliforms, E.Coli		НОГР	
SW01_W		10/10/2018		w	B/G/P	P/UP		Х	х	х	X	X	х	X	X		x	Х	X			Nata, Camples from
		27/25/25			Бусуг	ryur		^	^	^	^	X		X			X	X	X			Note: Samples from both amber bottles have been placed into soil jars. Original bottle labels have been appended to the soil jars
				-																		
																			_	_	_	
	+		-	-									-	_							_	
	1			1									_						-		$\rightarrow$	
	_																				_	
																		$\Box$			$\neg$	
							_											$\rightarrow$	-		$\rightarrow$	
	_			$\vdash$																		
														_	_	_			$\rightarrow$	-	$\rightarrow$	
	+		-	$\vdash$			_						_		_			$\rightarrow$			_	
																				ı		
															_	_		-	-	_	$\rightarrow$	
	+					-												$\rightarrow$			_	
																					$\dashv$	
						-											-	$\rightarrow$	-	$\rightarrow$	+	
	+					$\rightarrow$									_		_		_	_	$\rightarrow$	
	-			-			$\rightarrow$															
Sampled by: SW					ne: 10/10/			Relinquish										- 1	Date/Ti	me:		
Received by: 25				Date/Tin	ne: 16h	0/18		Relinquish	ed by:									Г	Date/Ti	me:		



Melbourne

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone: +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

**Sydney** Unit F3, Building F Tit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217

Brishane Histoane
1/21 Smallwood Place
Murarrie QLD 4172
Phone: +61 7 3902 4600
NATA # 1261 Site # 20794 Perth Z/91 Leach Highway Kewdale WA 6105 Phone: +61 8 9251 9600 NATA # 1261 Site # 23736

ABN - 50 005 085 521

e.mail: EnviroSales@eurofins.com web: www.eurofins.com.au

# Sample Receipt Advice

Company name: GHD Pty Ltd WA

Contact name: Shane Woods

YOGI Project name: Project ID: 613711709 COC number: Not provided

Turn around time: 5 Day

Oct 16, 2018 9:11 AM Date/Time received:

Eurofins | mgt reference: 622701

## Sample information

- $\mathbf{V}$ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- $\mathbf{V}$ All samples have been received as described on the above COC.
- $\mathbf{V}$ COC has been completed correctly.
- $\square$ Attempt to chill was evident.
- $\mathbf{V}$ Appropriately preserved sample containers have been used.
- $\mathbf{V}$ All samples were received in good condition.
- $\boxtimes$ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- $\mathbf{V}$ Appropriate sample containers have been used.
- $\mathbf{V}$ Sample containers for volatile analysis received with zero headspace.
- $\boxtimes$ Split sample sent to requested external lab.
- $\boxtimes$ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

## Contact notes

If you have any questions with respect to these samples please contact:

Robert Johnston on Phone : or by e.mail: RobertJohnston@eurofins.com

Results will be delivered electronically via e.mail to Shane Woods - Shane.Woods@ghd.com.









## Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 23736 & 14271

WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.





 Report
 622701-W

 Project name
 YOGI

 Project ID
 613711709

 Received Date
 Oct 16, 2018

Client Sample ID			SW01_W
Sample Matrix			Water
Eurofins   mgt Sample No.			P18-Oc18567
Date Sampled			Oct 10, 2018
Test/Reference	LOR	Unit	, , ,
TRH - 2013 NEPM Fractions (after silica gel clean		O me	
TRH >C10-C16 (after silica gel clean-up)	0.05	mg/L	< 0.05
TRH >C16-C34 (after silica gel clean-up)	0.1	mg/L	< 0.1
TRH >C34-C40 (after silica gel clean-up)	0.1	mg/L	< 0.1
TRH - 1999 NEPM Fractions (after silica gel clean		19. =	
TRH C10-C36 (Total) (after silica gel clean-up)	0.1	mg/L	< 0.1
TRH C10-C14 (after silica gel clean-up)	0.05	mg/L	< 0.05
TRH C15-C28 (after silica gel clean-up)	0.1	mg/L	< 0.1
TRH C29-C36 (after silica gel clean-up)	0.1	mg/L	< 0.1
, ,	'		
Ammonia (as N)	0.01	mg/L	0.02
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5
Chloride	1	mg/L	45
Dissolved Organic Carbon	5	mg/L	15
Fluoride	0.5	mg/L	< 0.5
Nitrate & Nitrite (as N)	0.05	mg/L	3.6
Nitrate (as N)	0.02	mg/L	3.6
Nitrite (as N)	0.02	mg/L	0.08
Phosphate total (as P)	0.05	mg/L	0.24
Phosphorus reactive (as P)	0.05	mg/L	< 0.05
Sulphate (as SO4)	5	mg/L	8.9
Suspended Solids	1	mg/L	2500
Total Dissolved Solids	10	mg/L	630
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.6
Total Nitrogen (as N)	0.2	mg/L	6.2
Hardness mg equivalent CaCO3/L	5	mg/L	28
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20
Carbonate Alkalinity (as CaCO3)	20	mg/L	< 20
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20
Total Alkalinity (as CaCO3)	20	mg/L	< 20
Alkali Metals			
Calcium	0.5	mg/L	4.5
Magnesium	0.5	mg/L	4.0
Potassium	0.5	mg/L	5.0
Sodium	0.5	mg/L	43



Client Sample ID			SW01_W
Sample Matrix			Water
Eurofins   mgt Sample No.			P18-Oc18567
Date Sampled			Oct 10, 2018
Test/Reference	LOR	Unit	
Heavy Metals	 -		
Arsenic	0.001	mg/L	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001
Beryllium	0.001	mg/L	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001
Boron	0.05	mg/L	0.10
Boron (filtered)	0.05	mg/L	0.10
Cadmium	0.0002	mg/L	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	0.073
Chromium (filtered)	0.001	mg/L	< 0.001
Cobalt	0.001	mg/L	0.011
Cobalt (filtered)	0.001	mg/L	0.003
Copper	0.001	mg/L	0.015
Copper (filtered)	0.001	mg/L	0.004
Lead	0.001	mg/L	0.006
Lead (filtered)	0.001	mg/L	< 0.001
Manganese	0.005	mg/L	0.33
Manganese (filtered)	0.005	mg/L	0.15
Mercury	0.0001	mg/L	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.020
Nickel (filtered)	0.001	mg/L	0.003
Selenium	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	0.016
Zinc (filtered)	0.005	mg/L	0.007
Eurofins   mgt Micro Suite 3			
Comments			M01
E.coli	1	MPN/100mL	240
Total Coliforms	1	MPN/100mL	3300

Report Number: 622701-W



### Sample History

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

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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 TRU 2010 NEDM F	Testing Site	Extracted	Holding Time
TRH - 2013 NEPM Fractions (after silica gel clean-up)	Melbourne	Oct 18, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40		0	7.5
TRH - 1999 NEPM Fractions (after silica gel clean-up)	Melbourne	Oct 18, 2018	7 Day
- Method: TRH C6-C36 (Silica Gel Cleanup) - MGT 100A	-		
Eurofins   mgt Suite B19E: Total N, TKN, NOx, NO2, NO3, NH3, Total P, Reactive		0	00.5
Ammonia (as N)	Melbourne	Oct 18, 2018	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	5. 4	0	00.5
Nitrate & Nitrite (as N)	Perth	Oct 16, 2018	28 Day
- Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser	<b>5</b>	0	
Nitrate (as N)	Perth	Oct 16, 2018	2 Day
- Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser	Doub	0-140-0040	0.0
Nitrite (as N)	Perth	Oct 16, 2018	2 Day
- Method: LTM-INO-4350 Aqueous Inorganic Analytes by Discrete Analyser		0	00.5
Phosphate total (as P)	Melbourne	Oct 18, 2018	28 Day
- Method: APHA 4500-P E. Phosphorous		0	0.5
Phosphorus reactive (as P)	Melbourne	Oct 18, 2018	2 Day
- Method: APHA4500-PO4		0	7.5
Total Kjeldahl Nitrogen (as N)	Melbourne	Oct 18, 2018	7 Day
- Method: LTM-INO-4040 Phosphate and Nitrogen in waters by Continuous Flow Analysis (CFA)		0	0.5
Biochemical Oxygen Demand (BOD-5 Day)	Melbourne	Oct 18, 2018	2 Day
- Method: LTM-INO-4010 Biochemical Oxygen Demand (BOD5) in Water		0	00.5
Dissolved Organic Carbon	Melbourne	Oct 19, 2018	28 Day
- Method: APHA 5310B Dissolved Organic Carbon		0	7.5
Suspended Solids	Melbourne	Oct 18, 2018	7 Days
- Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry		0	7.5
Total Dissolved Solids	Melbourne	Oct 19, 2018	7 Day
- Method: LTM-INO-4170 Total Dissolved Solids in Water			
NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Melbourne	Oct 18, 2018	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
NEPM 2013 Filtered Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Melbourne	Oct 18, 2018	28 Day
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins   mgt Micro Suite 3	Melbourne	Oct 19, 2018	24 Hour
- Method: LTM-MIC-6621 E Coli and Total Coliforms by the MPN			
Eurofins   mgt Suite B11F: Cl/SO4/Alkalinity/Total F			
Chloride	Melbourne	Oct 18, 2018	28 Day
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Fluoride	Melbourne	Oct 18, 2018	28 Day
- Method: APHA 4500 F-C Fluoride by Ion Selective Electrode			
Sulphate (as SO4)	Melbourne	Oct 18, 2018	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Alkalinity (speciated)	Perth	Oct 16, 2018	14 Day
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Eurofins   mgt Suite B11D: Na/K/Ca/Mg and Hardness			
Hardness mg equivalent CaCO3/L	Melbourne	Oct 18, 2018	28 Day
- Method: APHA 2340B Hardness by Calculation			
Alkali Metals	Melbourne	Oct 18, 2018	180 Day
- Method: LTM-MET-3010 Alkali Metals S Si and P by ICP-AES			

Report Number: 622701-W



YOGI

**Project Name:** 

ABN- 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 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
2/91 Leach Highway
Kewdale WA 6105
Phone: +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WA Order No.: Received: Oct 16, 2018 9:11 AM

 Address:
 999 Hay Street Perth
 Report #:
 622701
 Due:
 Oct 23, 2018

 Perth
 Phone:
 08 6222 8222
 Priority:
 5 Day

WA 6004 Fax: 08 9429 6555 Contact Name: Shane Woods

Project ID: 613711709

Eurofins | mgt Analytical Services Manager : Robert Johnston

Sample Detail					Biochemical Oxygen Demand (BOD-5 Day)	Dissolved Organic Carbon	Suspended Solids	Total Dissolved Solids	Eurofins   mgt Micro Suite 3	TRH (after Silica Gel cleanup)	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Eurofins   mgt Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins   mgt Suite B19E: Total N, TKN, NOx, NO2, NO3, NH3, Total P, Reactive P	mgt Suite B11F: \lkalinity/Total F	NEPM 2013 Filtered Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn,	
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	271		Χ	Χ	Х	Х	Х	Х	Χ	Х	Х	Х	Х
Sydr	ey Laboratory	- NATA Site # 1	8217													
Brisk	oane Laboratory	y - NATA Site #	20794													
Perti	Laboratory - N	IATA Site # 237	36											Х	Х	
Exte	External Laboratory															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID											
1	SW01_W	Oct 10, 2018		Water	P18-Oc18567	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Test	Counts					1	1	1	1	1	1	1	1	1	1	1

Eurofins | mgt 2/91, Leach Highway, Kewdale, WA, Australia, 6105 ABN : 50 005 085 521 Telephone: +61 8 9251 9600 Page 4 of 10

Date Reported:Oct 23, 2018



#### **Internal Quality Control Review and Glossary**

#### General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil 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. 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

org/100mL: Organisms per 100 millilitres NTU: Nephelometric Turbidity Units MPN/100mL: Most Probable Number of organisms per 100 millilitres

#### **Terms**

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting

SPIKE Addition of the analyte to the sample and reported as percentage recovery RPD Relative Percent Difference between two Duplicate pieces of analysis.

LCS Laboratory Control Sample - reported as percent recovery.

CRM Certified Reference Material - 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.

**Surr - Surrogate** The addition of a like compound to the analyte target and reported as percentage recovery.

**Duplicate** A second piece of analysis from the same sample and reported in the same units as the result to show comparison.

**USEPA** United States Environmental Protection Agency

APHA American Public Health Association
TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody

SRA Sample Receipt Advice

QSM Quality Systems Manual ver 5.1 US Department of Defense
CP Client Parent - QC was performed on samples pertaining to this report

NCP 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.

TEQ 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 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 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.

Report Number: 622701-W



## **Quality Control Results**

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank					
Ammonia (as N)	mg/L	< 0.01	0.01	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	mg/L	< 5	5	Pass	
Chloride	mg/L	< 1	1	Pass	
Fluoride	mg/L	< 0.5	0.5	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05	0.05	Pass	
Nitrate (as N)	mg/L	< 0.02	0.02	Pass	
Nitrite (as N)	mg/L	< 0.02	0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05	0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05	0.05	Pass	
Sulphate (as SO4)	mg/L	< 5	5	Pass	
Suspended Solids	mg/L	< 1	1	Pass	
Total Dissolved Solids	mg/L	< 10	10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2	0.2	Pass	
Method Blank	19/=	, ,,,,			
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 20	20	Pass	
Carbonate Alkalinity (as CaCO3)	mg/L	< 20	20	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 20	20	Pass	
Total Alkalinity (as CaCO3)	mg/L	< 20	20	Pass	
Method Blank	IIIg/L	< 20	20	Fass	
Alkali Metals		Τ	T	I	
	ma/l	4 O F	0.5	Door	
Calcium	mg/L	< 0.5	0.5	Pass	
Magnesium	mg/L	< 0.5	0.5	Pass	
Potassium	mg/L	< 0.5	0.5	Pass	
Sodium	mg/L	< 0.5	0.5	Pass	
Method Blank		T T	<u> </u>	I	
Heavy Metals				_	
Arsenic	mg/L	< 0.001	0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001	0.001	Pass	
Beryllium	mg/L	< 0.001	0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001	0.001	Pass	
Boron	mg/L	< 0.05	0.05	Pass	
Boron (filtered)	mg/L	< 0.05	0.05	Pass	
Cadmium	mg/L	< 0.0002	0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002	0.0002	Pass	
Chromium	mg/L	< 0.001	0.001	Pass	
Chromium (filtered)	mg/L	< 0.001	0.001	Pass	
Cobalt	mg/L	< 0.001	0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001	0.001	Pass	
Copper	mg/L	< 0.001	0.001	Pass	
Copper (filtered)	mg/L	< 0.001	0.001	Pass	
Lead	mg/L	< 0.001	0.001	Pass	
Lead (filtered)	mg/L	< 0.001	0.001	Pass	
Manganese	mg/L	< 0.005	0.005	Pass	
Manganese (filtered)	mg/L	< 0.005	0.005	Pass	
Mercury	mg/L	< 0.0001	0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001	0.0001	Pass	
Nickel	mg/L	< 0.001	0.001	Pass	
Nickel (filtered)	mg/L	< 0.001	0.001	Pass	
Selenium	mg/L	< 0.001	0.001	Pass	
Selenium (filtered)	mg/L	< 0.001	0.001	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/L	< 0.005	0.005	Pass	550.5
Zinc (filtered)	mg/L	< 0.005	0.005	Pass	
LCS - % Recovery	, ,				
Ammonia (as N)	%	105	70-130	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	%	103	70-130	Pass	
Chloride	%	103	70-130	Pass	
Fluoride	%	114	70-130	Pass	
Nitrite (as N)	%	102	70-130	Pass	
Phosphate total (as P)	%	99	70-130	Pass	
Phosphorus reactive (as P)	%	100	70-130	Pass	
Sulphate (as SO4)	%	106	70-130	Pass	
Suspended Solids	%	101	70-130	Pass	
Total Dissolved Solids	%	107	70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	103	70-130	Pass	
LCS - % Recovery	1 /0	100	70 130	1 433	
Alkalinity (speciated)					
Total Alkalinity (as CaCO3)	%	105	70-130	Pass	
LCS - % Recovery	70	103	70-130	1 033	
Alkali Metals					
Calcium	%	107	70-130	Pass	
	%	110	70-130	Pass	
Magnesium		96			
Potassium Sodium	%		70-130	Pass	
	%	114	70-130	Pass	
LCS - % Recovery				Ι	
Heavy Metals	0/	05	00.400	Dana	
Arsenic	%	95	80-120	Pass	
Arsenic (filtered)	%	95	80-120	Pass	
Beryllium	%	93	80-120	Pass	
Boron	%	112	80-120	Pass	
Boron (filtered)	%	112	80-120	Pass	
Cadmium	%	95	80-120	Pass	
Cadmium (filtered)	%	95	80-120	Pass	
Chromium	%	96	80-120	Pass	
Chromium (filtered)	%	96	80-120	Pass	
Cobalt	%	95	80-120	Pass	
Cobalt (filtered)	%	95	80-120	Pass	
Copper	%	95	80-120	Pass	
Copper (filtered)	%	95	80-120	Pass	
Lead	%	99	80-120	Pass	
Lead (filtered)	%	99	80-120	Pass	
Manganese	%	96	80-120	Pass	
Manganese (filtered)	%	96	80-120	Pass	
Mercury	%	96	75-125	Pass	
Mercury (filtered)	%	96	70-130	Pass	
Nickel	%	94	80-120	Pass	
Nickel (filtered)	%	94	80-120	Pass	
Selenium	%	96	80-120	Pass	
Selenium (filtered)	%	96	80-120	Pass	
Zinc	%	94	80-120	Pass	
Zinc (filtered)	%	94	80-120	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	B18-Oc19341	NCP	%	103			70-130	Pass	
Phosphate total (as P)	M18-Oc21863	NCP	%	103			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M18-Oc19450	NCP	%	72			70-130	Pass	
Spike - % Recovery					1				
Alkalinity (speciated)				Result 1					
Total Alkalinity (as CaCO3)	P18-Oc19274	NCP	%	98			70-130	Pass	
Spike - % Recovery				T	1				
Alkali Metals				Result 1					
Calcium	P18-Oc15293	NCP	%	115			70-130	Pass	
Magnesium	P18-Oc15293	NCP	%	106			70-130	Pass	
Potassium	P18-Oc15293	NCP	%	101			70-130	Pass	
Sodium	B18-Oc15392	NCP	%	115			70-130	Pass	
Spike - % Recovery				<u> </u>			T		
Heavy Metals	T			Result 1					
Arsenic	M18-Oc20338	NCP	%	93			75-125	Pass	
Arsenic (filtered)	M18-Oc16549	NCP	%	93			70-130	Pass	
Beryllium	M18-Oc20338	NCP	%	88			75-125	Pass	
Beryllium (filtered)	M18-Oc16549	NCP	%	88			75-125	Pass	
Boron	M18-Oc20338	NCP	%	86			75-125	Pass	
Cadmium	M18-Oc20338	NCP	%	96			75-125	Pass	
Cadmium (filtered)	M18-Oc16549	NCP	%	85			70-130	Pass	
Chromium	M18-Oc20338	NCP	%	95			75-125	Pass	
Chromium (filtered)	M18-Oc16549	NCP	%	89			70-130	Pass	
Cobalt	M18-Oc20338	NCP	%	94			75-125	Pass	
Cobalt (filtered)	M18-Oc16549	NCP	%	87			75-125	Pass	
Copper	M18-Oc20338	NCP	%	96			75-125	Pass	
Copper (filtered)	M18-Oc16549	NCP	%	84			70-130	Pass	
Lead	M18-Oc20338	NCP	%	98			75-125	Pass	
Lead (filtered)	M18-Oc16549	NCP	%	88			70-130	Pass	
Manganese	M18-Oc20338	NCP	%	94			75-125	Pass	
Manganese (filtered)	M18-Oc16549	NCP	%	95			70-130	Pass	
Mercury	M18-Oc20338	NCP	%	100			70-130	Pass	
Mercury (filtered)	M18-Oc16549	NCP	%	89			70-130	Pass	
Nickel	M18-Oc20338	NCP	%	93			75-125	Pass	
Nickel (filtered)	M18-Oc16549	NCP	%	85			70-130	Pass	
Selenium	M18-Oc20338	NCP	%	92			75-125	Pass	
Selenium (filtered)	M18-Oc16549	NCP	%	97			70-130	Pass	
Zinc	M18-Oc20338	NCP	%	100			75-125	Pass	
Zinc (filtered)  Test	M18-Oc16549  Lab Sample ID	NCP QA	% Units	Result 1			70-130	Pass Pass	Qualifying
Duplicate	-	Source					Limits	Limits	Code
Барлошо				Result 1	Result 2	RPD			
Ammonia (as N)	B18-Oc19341	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	M18-Oc19784	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Chloride	M18-Oc14454	NCP	mg/L	62	61	1.7	30%	Pass	
Dissolved Organic Carbon	P18-Oc18567	CP	mg/L	15	14	2.0	30%	Pass	
Fluoride	P18-Oc18567	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Nitrate & Nitrite (as N)	P18-Oc18567	CP	mg/L	3.6	3.6	1.0	30%	Pass	
Nitrate (as N)	P18-Oc18567	CP	mg/L	3.6	3.5	1.0	30%	Pass	
Nitrite (as N)	P18-Oc18567	CP	mg/L	0.08	0.08	8.0	30%	Pass	
Phosphate total (as P)	M18-Oc22873	NCP	mg/L	0.15	0.12	21	30%	Pass	1



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	P18-Oc18567	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as SO4)	M18-Oc22145	NCP	mg/L	2400	2400	<1	30%	Pass	
Suspended Solids	B18-Oc20438	NCP	mg/L	39	32	18	30%	Pass	
Total Dissolved Solids	M18-Oc22529	NCP	mg/L	39000	30000	27	30%	Pass	
Total Kjeldahl Nitrogen (as N)	B18-Oc19342	NCP	mg/L	2.4	2.4	2.0	30%	Pass	
Hardness mg equivalent CaCO3/L	M18-Oc15930	NCP	mg/L	3400	3500	1.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	P18-Oc18567	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	P18-Oc18567	CP	mg/L	< 20	< 20	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	P18-Oc18567	CP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	P18-Oc18567	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									· · · · · · · · · · · · · · · · · · ·
Alkali Metals				Result 1	Result 2	RPD			
Calcium	B18-Oc15392	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Magnesium	B18-Oc15392	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Potassium	B18-Oc15392	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Sodium	S18-Oc17260	NCP	mg/L	2.9	rerun	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-Oc20338	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M18-Oc16549	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium	M18-Oc20338	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium (filtered)	M18-Oc16549	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Boron	M18-Oc20338	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Cadmium	M18-Oc20338	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	M18-Oc16549	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M18-Oc20338	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M18-Oc16549	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cobalt	M18-Oc20338	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cobalt (filtered)	M18-Oc16549	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M18-Oc20338	NCP	mg/L	0.026	0.026	<1	30%	Pass	
Copper (filtered)	M18-Oc16549	NCP	mg/L	0.011	0.011	2.0	30%	Pass	
Lead	M18-Oc20338	NCP	mg/L	0.007	0.007	1.0	30%	Pass	
Lead (filtered)	M18-Oc16549	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M18-Oc20338	NCP	mg/L	0.026	0.027	1.0	30%	Pass	
Manganese (filtered)	M18-Oc16549	NCP	mg/L	0.17	0.17	1.0	30%	Pass	
Mercury	M18-Oc20338	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M18-Oc16549	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M18-Oc20338	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	M18-Oc16549	NCP	mg/L	0.021	0.020	4.0	30%	Pass	
Selenium	M18-Oc20338	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M18-Oc16549	NCP	mg/L	0.001	0.001	25	30%	Pass	
Zinc	M18-Oc20338	NCP	mg/L	0.15	0.16	1.0	30%	Pass	
Zinc (filtered)	M18-Oc16549	NCP	mg/L	0.031	0.031	1.0	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	No
Some samples have been subcontracted	No

## **Qualifier Codes/Comments**

Code Description

M01 Microbiological Testing performed outside the recommended holding time

### **Authorised By**

Robert Johnston Analytical Services Manager
Chris Bennett Senior Analyst-Metal (VIC)
Joseph Edouard Senior Analyst-Organic (VIC)
Julie Kay Senior Analyst-Inorganic (VIC)
Matthew Deaves Senior Analyst-Inorganic (WA)
Nandhini Uthayakumaran Senior Analyst-Microbiology (VIC)



### Glenn Jackson

### National Operations 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.

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Report Number: 622701-W





### GHD

GHD, 999 Hay Street, Perth, WA 6000 P.O. Box 3106, Perth WA 6832

T: 61 8 6222 8222 F: 61 8 6222 8555 E: permail@ghd.com.au

## © GHD 2019

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

https://projects.ghd.com/oc/WesternAustralia1/yogimagnetiteproject/Delivery/Documents/61371170 9-REP-A\_SurfaceWaterAssessment.docx

### **Document Status**

Revision	Author	Reviewer		Approved for Issue				
	Name Signat		Signature	Name	Signature	Date		
A	M. K. Hunt Guezingar A. Gilfoyle S. Woods N. Deeks			D. Farrar		20/03/19		

This document is in draft form. The contents, including any opinions, conclusions or recommendations contained in, or which may be implied from, this draft document must not be relied upon. GHD reserves the right, at any time, without notice, to modify or retract any part or all of the draft document. To the maximum extent permitted by law, GHD disclaims any responsibility or liability arising from or in connection with this draft document.

www.ghd.com

