Annual Review 2022/23

Redirect Recycling Wetherill Park

24 Davis Road, Wetherill Park NSW

Redirect Recycling

19 December 2023

Revision History

Rev No.	Revision Date	Author / Position	Details	Authorised	
				Name / Position	Signature
1	19/12/2023	James Sutton Environmental Manager	For submission to DPE	James Sutton Environmental Manager	

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Annual Review Title Block

Name of operation	Redirect Recycling
Name of operator	Redirect Recycling
Development consent / project approval #	SSD 7401
Name of holder of development consent / project approval	Bettergrow Pty Ltd
Mining lease #	N/A
Name of holder of mining lease	N/A
Water Access Licence #	N/A
Name of holder of water licence	N/A
MOP/RMP start date	N/A
MOP/RMP end date	N/A

I, James Sutton, certify that this audit report is a true and accurate record of the compliance status of Borg Manufacturing Oberon for the period 1st May 2021 to 30th April 2022 and that I am authorised to make this statement on behalf of Borg Panels Pty Ltd

Note.

a) *The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.*

b) *The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment, $22,000, or both.)*

Name of authorised reporting officer	James Sutton
Title of authorised reporting officer	Environment Manager
Signature of authorised reporting officer	
Date	19/12/2023

1 Introduction

1.1 Scope

This Annual Review has been prepared for the Redirect Recycling Pty Ltd (reDirect) Wetherill Park site and covers the twelve-month reporting period from 23 August 2022 to 22 August 2023. This Annual Review has been prepared to satisfy condition C9 of Development Consent SSD 7401 issued by the Minister for Planning on 11 October 2017.

The reDirect facility is located at 24 Davis Road, Wetherill Park NSW and consists of a resource recovery facility purpose built for washing and processing of construction and liquid waste.

This Annual Review is submitted to NSW Department of Planning and Environment (DPE), NSW Environment Protection Authority (EPA) and Fairfiled City Council to ensure all interested parties are kept informed of the environmental performance of the Development. The Annual Review is also made available on the reDirect website:

Redirect Recycling

reDirect maintained compliance with all necessary approvals and licenses (EPL 21092 & SSD-7401) during the reporting period recording nil non-compliance items.

Table 1 Compliance

Relevant approval	Condition	Condition description (summary)	Compliance status	Comment	Where addressed in Annual Review
SSD 7401	C9	Annual review	Compliant	Nil	1.4 Annual Review Requirements
EPL 21092	L3.1	Noise	Compliant	Nil	Section 4.5 Noise
EPL 21092	O3.1	Air Quality	Compliant	Nil	Section 4.2 Air Quality
EPL 21092	O5	Water Quality	Compliant	Nil	4.3 Surface Water & 4.4 Groundwater

1.2 Background

Consent for State Significant Development 7401 (SSD-7401) was initially granted by the NSW Department of Planning and Environment (DPE) on 22 December 2017. The facility was commissioned in August 2022 and shortly after the licence was transferred to reDirect (a Borg Company) who currently operate the site (see Figure 1).

Figure 1 Regional Context

The development has been staged with only the wash plant operational at this time. The landscape supplies food and garden organics approvals are not operational. Stage 1 includes the wash plant processing area only. Facilities covered under Stage 1 include:

- A main administration building, office and carpark constructed at the fore of the property. Site amenities, including toilets and kitchen, contained in the main administration building.
- Partially enclosed shed space, containing:
  - Two tier ground levels with external ramp to the west of the shed.
  - Four hydro-tips, and one dry feed hopper.
  - One weighbridge located west of the shed for the weighing of trucks on entry and prior to departure from the facility.
  - Screening walls.
  - Drill mud processing plant and equipment.
  - Drill mud machinery control rooms and internal office space.
- An inground sand filter located under the hardstand on the lower level of the site, adjacent to the south-western corner of the existing approved shed, to be used for stormwater retention and treatment.
- Rainwater / raw water storage tanks.
- Main thoroughfare, including:
  - A combined ingress/egress access driveway, providing a 12.5 m width at the western property boundary and facilitating connectivity between the off-street parking and internal heavy vehicle circulation areas.
  - Off-street parking spaces designed in accordance with AS2890.1 and AS2890.6.

- A combined ingress / egress driveway, providing a 5.5 m width adjacent to the eastern property boundary facilitating service access to the office complex and emergency access for Fire NSW.
- Internal hardstand areas and roadways.

The main waste types and materials accepted at the site include:

- Hydro-excavation and drill muds;
- Concrete slurry;
- Stormwater;
- Street sweepings; and
- General solid waste (soils that meet EPL conditions).

1.3 Consent

Consent for State Significant Development 7401 (SSD-7401) was initially granted by the then NSW Department of Planning and Environment (DPE) on 22 December 2017. Consent for Modification 1 of SSD-7401 (SSD-7401-MOD-1) was approved by the NSW Department of Planning, Industry and Environment (DPIE) on 21 April 2021, with consent for Modification 2 (SSD-7401-MOD-2) granted on 30 November 2021. Consent for Modification 3 (SSD-7401-MOD-3) was granted by DPE (name reverted from DPIE) on 1 April 2022.

Approval for SSD-7401 permitted the construction and operation of a resource recovery facility to process up to 160,000 tonnes per year of waste comprising of:

- 60,000 tonnes per annum (tpa) of hydro-excavation, drill muds and fluids.
- 70,000 tpa of food and garden organics.
- 30,000 tpa of packaged and bulk food and liquids.

In addition, the approval for SSD-7401 allowed for the operation of a landscaping material supplies facility for the storage and sale of up to 40,000 tpa of landscaping supplies.

Approval of SSD-7401-MOD-1 allowed for the increase of processing capacity to 350,000 tpa in conjunction with the following:

- Introduction of additional waste streams.
- Demolition of existing structures.
- Construction of a partially enclosed shed.

SSD-7401-MOD-2 included the replacement of the 30, 000 L sediment basin and associated bioretention basin, located within the southwest corner of the subject site. In lieu of the detention and bioretention basins it was proposed to utilise an existing inground concrete pit that remains onsite as part of a decommissioned weighbridge. This pit was modified and improved to include a sand filter to treat onsite stormwater.

SSD-7401-MOD-3 included the following:

- Replacement of the five (5) approved weighbridges with one (1) 25 m by 4.2 m weighbridge located approximately 55 m from the Facility intersection with Davis Road.
- To facilitate weighbridge installation and improve site safety, vehicle parking spaces were reconfigured:
    - Five (5) parking spaces immediately east of the existing site office.
    - Two (2) parking spaces located north of the inground sand filter, abutting the western façade of the drill muds processing shed.
    - Five (5) parking spaces located on the hardstand area immediately north of the western parcel of retained Cumberland Plain Woodland.

    - Remaining parking spaces were not altered.
- Relocation of proposed humeceptor water treatment device to the north-western corner of the central portion of Cumberland Plain Woodland onsite.
- Relocation of the 5,000 L rainwater tank to inside drill muds processing shed next to the control room. Rainwater from the existing office will now be captured via the Facility stormwater network.

This Annual Review covers facility operations conducted under Stage 1 of SSD-7401 (including modifications). Stage 2 (bulk landscape area and the organics processing area) is not operational, therefore assessment of conditions specific to Stage 2have not been triggered or included within this report.

A summary of development consents including modifications currently held by Bettergrow Pty limited (original applicant) is presented in Table 2.

Table 2 Development Consents

Consent Description	Approval Date	Approval Authority	Approved Development
Development Consent SSD 7401	22 December 2017	NSW Minister for Planning	The construction and operation of a resource recovery facility to process up to 160,000 tonnes per year of waste comprising of: • 60,000 tpa of hydro-excavation, drill muds and fluids; • 70,000 tpa of food and garden organics; and • 30,000 tpa of packaged and bulk food and liquids. The operation of a landscaping material supplies facility for the storage and sale of up to 40,000 tpa of landscaping supplies.
Development Consent SSD 7401 MOD 1	21 April 2021	NSW Minister for Planning	Increase the processing capacity to 350,000 tpa of waste; introduce additional waste streams; demolish existing structures; construct a partially enclosed shed; and increase the hours of operation to 24/7.
Development Consent SSD 7401 MOD 2	30 November 2021	NSW Minister for Planning	Amend the stormwater management system to include the use of an in-ground concrete pit with sand filter.
Development Consent SSD 7401 MOD 3	31 March 2022	NSW Minister for Planning	Amend the carparking configuration, replace the five on-site weighbridges with one weighbridge, relocate the 5 kilolitre underground rainwater tank to an above ground tank inside the drill muds processing shed and replace and relocate the Humeceptor with an Ecoceptor.

1.4 Annual Review Requirements

In accordance with condition C9 of Development Consent SSD 7401, annual review requirements and the sections within this review where these are addressed have been summarised in Table 3.

Table 3 Annual Review Requirements

Development Consent SSD 7401 – Condition C9	Section of Annual Review
Each year, the Applicant must review the environmental performance of the Development to the satisfaction of the Planning Secretary. This review must:	This Report
(a) describe the development that was carried out in the previous calendar year, and the Development that is proposed to be carried out over the next year;	Section 2 Section 8
(b) include a comprehensive review of the monitoring results and complaints records of the Development over the previous reporting period, which includes a comparison of these results against the: i. the relevant statutory requirements, limits or performance measures/criteria; ii. requirements of any plan or program required under this consent; iii. the monitoring results of previous years; and iv. the relevant predictions in the EIS;	Section 4 Section 5
(c) identify any non-compliance during the reporting period, and describe what actions were (or are being) taken to ensure compliance;	Section 4 Section 7
(d) identify any trends in the monitoring data over the life of the Development;	Section 4
(e) identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and	Section 4
(f) describe what measures will be implemented over the next reporting period to improve the environmental performance of the Development.	Section 8

1.5 Environment Protection Licence

reDirect operates in accordance with Environment Protection Licence 21092 (EPL 21092), issued by the NSW Environment Protection Authority (EPA) under Section 55 of the *Protection of the Environment Operations Act 1997*. The current Licence version date is 01 June 2023.

The EPL was varied and updated during this reporting period to include additional waste streams including concrete slurry, stormwater, and street sweepings.

1.6 Water Licences

reDirect does not hold any water licences.

1.7 Trade Waste Licence

reDirect's Trade Waste Service Contract with Sydney Water for the discharge of liquid trade waste into Sydney Water's sewerage system was initially approved on 01 August 2022 prior to the site's operational start date (22 August 2022). Following an initial period of sampling every 8 days or on the day the trade waste was discharged thereafter, reDirect was able to demonstrate compliance in accordance with the Consent to Discharge Trade Wastewater. Subsequently, an updated Consent to Discharge Trade Wastewater was issued by Sydney Water, outlining sampling to be conducted every 60 days from 09 July 2023 or on the day the

tradewaste was discharged thereafter. Additionally, Sydney Water also advised the substance characteristics to be analysed were limited to:

- Biochemical Oxygen Demand
- Ammonia (As N)
- Sulphate
- Suspended Solids
- Total Dissolved Solids

1.8 Environmental Management Plans

As per Schedule 2 Part C of SSD 7401, the existing development is carried out in accordance with the Operational Environmental Management Plan (OEMP) and associated sub-plans.

In accordance with C8 Revision of Strategies, Plans and Programs, environmental management plans are required to be reviewed within three months of completion of an audit under C14 and/or approval of an annual report review under C9. Redirect have recently received correspondence from DPE (dated 8 December 2023) determining the recently completed Independent Environmental Audit to generally satisfy the reporting requirements of the consent and the NSW Planning *Independent Audit Post Approval Requirements* (2020). Redirect will update all management plans accordingly. Further updates to management plans will also be reviewed following assessment of this annual review. No previous reviews of plans had occurred within the audit period. The following management plans will be reviewed and updated where necessary.

- Operational Environmental Management Plan
- Air Quality and Odour Management Plan
- Stormwater Management Plan
- Operational Waste Management Plan
- Flood Emergency Plan
- Water Management Plan
- Emergency Plan
- Operational Traffic Management Plan
- Conceptual Decomisssioning management Plan

1.9 Contacts

Table 4 outlines the contact details for site personnel responsible for managing environmental operations the reDirect facility.

Table 4 Site Personnel

Name	Title	Contact Details
Neale Hogarth	Manager	0498 692 443
James Sutton	Environmental Manager	0414 987 168

1.10 Actions Required from Previous Annual Review

No previous reporting period has preceded the current 2022/2023 reporting period. Therefore, no comparison of activities and results / outcomes has been included in this annual review. Table 5 represents where any proposed activities and outcomes would normally be represented.

Table 5 Proposed Activities in 2022/23 Reporting Period

Activities Proposed in Reporting Period	Results achieved in Reporting Period
N/A	N/A

2 Operations during the Reporting Period

2.1 Production

Development Consent SSD 7401 allows for the receival and processing of upto 350,000 tonnes of waste per year, including 100,000 tonnes of liquid waste and 150,000 tonnes of general solid waste. During the reporting period reDirect received and processed a total of 46,858 tonnes of combined liquid and general solid waste. A total of 28,126 tonnes were recovered and beneficially reused under applicable resource recovery orders. 32.34 tonnes were sent to landfill for lawful disposal, comprising of trash and light organics.

2.2 Facility Improvements

The following improvements were made to site infrastructure, plant and/or equipment during the reporting period:

- Complete installation of blind sumps within concrete slab of bunded area to reduce surface water on shed floor from processed product stockpiles;
- Upgrade of pumps allowing more efficient removal of water and silt from strip drains and sumps;
- Installation of additional wash hoses and pump for 250,000 L concrete overflow pit; and
- Installation of side walls on conveyor belts to stop spillages during processing.

See **Figure 2** for location of site infrastructure.

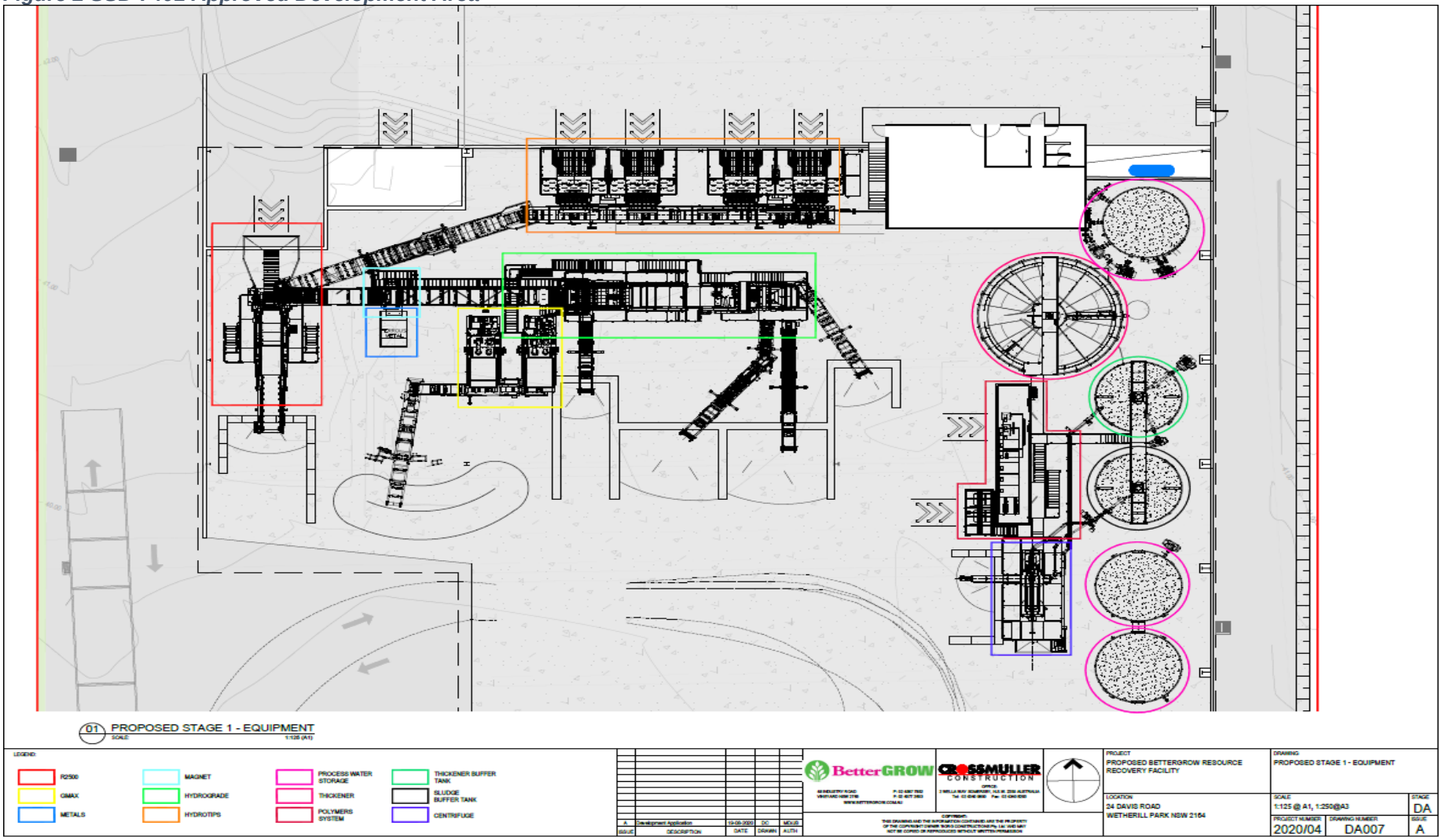
2.3 Site Activities

Environmental commitments and management/mitigation measures that were applied during the reporting period include the following:

- operational works undertaken in accordance with the Operational Environmental Management Plan and sub-plans;
- Surface water sampling events;
- background groundwater quality sampling events;
- site environmental inspections; and
- site wide communication of environmental requirements via inductions and Toolbox Talks.

No activities associated with additional construction were undertaken within the reporting period.

Figure 2 SSD 7401 Approved Development Area



3 Waste Management

Waste generated at the reDirect site is managed in accordance with the Waste Management Plan that has been developed for the facility. The management process incorporates a system of recycling and reuse of waste materials where possible. Waste that cannot be incorporated into this system is removed from site and taken to landfill for lawful disposal.

3.1 Solid Waste

A summary of waste and resource recovery materials removed from reDirect Wetherill Park during the reporting period is provided in Table 6.

Table 6 Waste Management 2022/23

Month	Destination		
	Tonnes	Waste	Reuse / Disposal
August 2022	162.1	Washed sand	Resource recovery material
September 2022	17.62	Recovered aggregate 5-20mm	Resource recovery material
	1123.1	Treated drill mud	
	543.9	Washed sand	
October 2022	180.04	Recovered aggregate 5-20mm	Resource recovery material
	24.08	Recovered aggregate 20-40mm	
	1995.21	Treated drill mud	
	689.86	Washed sand	
November 2022	224.26	Recovered aggregate 5-20mm	Resource recovery material
	14.84	Recovered aggregate 20-40mm	
	1807.88	Treated drill mud	
	923.12	Washed sand	
December 2022	160.64	Recovered aggregate 5-20mm	Resource recovery material
	1660.7	Washed sand	
January 2023	779.64	Recovered aggregate 5-20mm	Resource recovery material
	72.34	Recovered aggregate 20-40mm	
	307.66	Treated drill mud	
	278.82	Washed sand	
February 2023	325.9	Recovered aggregate 5-20mm	Resource recovery material
	36.36	Recovered aggregate 20-40mm	
	1070.3	Treated drill mud	
	769.8	Washed sand	
March 2023	961.28	Recovered aggregate 5-20mm	Resource recovery material
	72.26	Recovered aggregate 20-40mm	

	356.46	Treated drill mud	
	1145.24	Washed sand	
April 2023	953.94	Recovered aggregate 5-20mm	Resource recovery material
	38.08	Recovered aggregate 20-40mm	
	10.46	Recovered aggregate 40-80mm	
	197.32	Treated drill mud	
	807.92	Washed sand	
May 2022	32.34	Organics / light trash	Wanless Waste Management – Kemps Creek
	1023.84	Recovered aggregate 5-20mm	Resource recovery material
	267.06	Recovered aggregate 20-40mm	
	56.14	Recovered aggregate 40-80mm	
	792.84	Treated drill mud	
	606.54	Washed sand	
June 2022	565.36	Recovered aggregate 5-20mm	Resource recovery material
	105.58	Recovered aggregate 20-40mm	
	201.96	Recovered aggregate 40-80mm	
	1445.2	Treated drill mud	
	959.94	Washed sand	
July 2022	347.5	Recovered aggregate 5-20mm	Resource recovery material
	37.2	Recovered aggregate 20-40mm	
	25.44	Recovered aggregate 40-80mm	
	1474.3	Treated drill mud	
	1086.7	Washed sand	
August 2023	278.8	Recovered aggregate 5-20mm	Resource recovery material
	906.94	Treated drill mud	
	843.74	Washed sand	
TOTAL	**32.34**	**Organics / light trash**	**Wanless Waste Management Kemps Creek**
	5818.82	**Recovered Aggregate 05–20mm**	**Resource recovery material**
	643.72	**Recovered Aggregate 20–40mm**	**Resource recovery material**
	318.08	**Recovered Aggregate 40–80mm**	**Resource recovery material**
	11477.21	**Treated Drilling Mud**	**Resource recovery material**
	10478.38	**Washed Sand**	**Resource recovery material**

Waste types in Table 6 are further described as:

- **Organics and Light Trash:** General waste including a mix of organics such as sticks, leaf litter and other organic matter mixed with light film plastic and other small anthropogenic inclusions.
- **Resource Recovery Material:** Material meeting a general or site-specific resource recovery order made under clause 93 of the 2014 Waste Regulation.

There was no trackable waste generated during this reporting period.

3.2 Trade Waste

Redirect's current trade waste agreement (Consent no: 51950) allows for the following discharge rates to Sydney Water's wastewater system:

- Instantaneous maximum rate of pumped discharge 8,000 litres per second
- Maximum daily discharge 320 kilolitres
- Average daily discharge 200 kilolitres

The last sampling event conducted during the reporting period was completed on 02 August 2023, 20 days prior to the end of the reporting period. A total of 106 kilolitres were discharged during the sampling event, well below the average and maximum daily discharge limits. Additionally, sampling completed since the commencement of the agreement confirmed a total of 28487 kilolitres had been disposed as trade waste up to this date, equating to a daily average of 82.6 kilolitres.

4 Environmental Monitoring and Performance

4.1 Environmental Management System

ReDirect operates in accordance with the Operational Environmental Management Plan (OEMP) as documented in Section 1.8. This OEMP aims to ensure adequate management, monitoring and mitigation systems are in place to protect the surrounding environment. Similarly, construction activities are undertaken in accordance with the Construction Environmental Management Plan (CEMP).

Environmental performance and management are conducted in accordance with the requirements of SSD 7401, its subsequent modifications (MOD1, MOD2 & MOD3), and EPL 21092. Environmental performance and monitoring are an integral part of environmental management system. The measurement and evaluation of monitoring results allows for the assessment of performance against quantitative and qualitative standards and assists in the identification of any non-conformances or areas that may require additional attention.

4.2 Air Quality

Air quality is monitored in accordance with the reDirect's Operational Air Quality and Odour Management Plan (AQOMP). Condition O3.1 of EPL 21092 states that:

"*The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises."*

Additionally, Condition L5.1 of EPL 21092 states that:

"The licensee must not cause or permit the emission of offensive odour beyond the boundary of the premises."

EPL 21092 does not specify dust monitoring be undertaken, the AQOMP assessed material handling and processing in the drill mud processing plant to have minimal fugitive dust emissions due to the high moisture content of waste received and retained within recovered processed materials. Additionally, road surfaces at the Site are sealed and processing is undertaken within the partially enclosed shed, currently no other activities approved under SSD-7401 are undertaken as part of the development. All current dust management procedures undertaken as part of the AQOMP and OEMP are currently deemed suitable and effective.

As Stage 1 operations only involves the drill mud processing plant, dust emissions have been identified as the only air quality impact associated with these operations. Therefore, no management of odour generating activities was required during the reporting period.

4.3 Surface Water

Surface water is considered any water other than process water, leachate or wastewater being defined as:

- Process water is water used in the processing of drill muds.
- Leachate is water generated typically through the action of rain coming into contact with soil stockpiles. Leachate is not anticipated to be generated onsite during Stage 1 of operations due to bulk storage bays being underneath the main processing shed.
- Wastewater is water generated through the processing of drill muds that require disposal or have no further use on site.

Surface water is, thus, principally stormwater runoff from building roofs and areas outside waste processing or handling areas.

Surface water discharges from operational areas of the site and areas with potential to discharge off-site are summarised in the following table. Surface water may also discharge from other areas of the site, but these areas are away from operational areas.

Table 7 Surface Water Sources and Management

Site Feature	Purpose	Runoff Water Sources	Management
Entrance Driveway	Site access	The driveway receives runoff from paved areas near the weighbridge and entrance areas.	Management under the surface water management plan – though this is considered a low risk of impact.
Drill Mud Processing Shed	Rainwater re-use	A portion of roof water runoff from the drill mud processing shed is to be directed by downpipes to an above-ground rainwater harvesting tank which has been sized to meet the facility's reuse demand for non-potable water of 5 kL. The harvested volume from the shed roof is reused internally through the amenities connections with tank overflows being diverted directly to the stormwater system. The remainder of the roof water collected is to be directed to the stormwater system.	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly. Regularly check the structural integrity of the tanks. Check for any accumulated litter, sediment, or debris on or within the tanks.

Stormwater System	Collection, treatment and transportation of stormwater from the site.	Runoff from majority of sealed surfaces on the site, all roof areas not connected to the rainwater tank system and rainwater tank overflow will be diverted into the stormwater system.	Management under the stormwater management plan (Eclipse 2021) and the WMP. Remove deposited sediment and debris from the sand filter bed/detention pit and Ecoceptor inlet/outlet areas. Regularly check the structural integrity of hydraulic structures.

In accordance with the reDirect Water Management Plan, six-monthly (following a rainfall event) sampling of two sampling points on-site (SW1 in the sand filter and SW2 in the ecoceptor outflow sampling point) was undertaken during this reporting period.

A summary of the results is presented in Table 8 and Table 9.

Table 8 Surface Water Observations and Geotechnical Requirements

Event/Location	Dissolved Oxygen (mg/L)	Electrical Conductivity (µs/cm)	pH	Redox (Eh) (mV)	Temperature (°C)	Observations
February – SW01	4.23	196	7.5	220	21.8	light brown, no odour, no sheen, moderately turbid
August – SW01	8.55	719	8.4	81	14.0	light brown, no odour, no sheen, moderately turbid
February – SW02	3.85	366	7.0	215	22.2	pale brown, no odour, no sheen, moderately turbid
August – SW02	8.45	650	8.9	62	12.8	white, no odour, no sheen, slightly turbid

Table 9 Surface Water Analytical Summary

Analyte / Value	Screening Criteria Exceedances			Comment
	Health-Risk	Ecological Risk	Aesthetics	
Heavy metals and metalloids	None identified	Heavy metal concentrations were reported at low levels less than relevant screening criteria for highly disturbed environments with the exceptions of: • Copper (at SW1, and SW2 in February 2023). • Zinc (SW2 in August 2023). The average concentration (0.012 mg/L) was less than the criterion.	-	Metals concentrations were generally less than or similar to relevant screening criteria for disturbed ecosystems consistent with the WMP. Copper concentrations reported were slightly elevated above screening criteria at SW1 – this represents water prior to on-site treatment via the sand filter. The average concentration at SW2 (Ecoceptor outflow point) (0.002 mg/L) was lower and equivalent to the criterion (0.0018 mg/L). The reported zinc concentration at SW2 in August 2023 was elevated (an order of magnitude) above other sample results – the cause for this is unclear and quality should be reviewed following further monitoring under the WMP.
Nutrients	None identified	No exceedances for toxicants. Exceedances of conservative physical stressor values for total oxidised nitrogen (as N), TN and TP.	-	Concentrations are similar or less than median values for TN (1.7 mg/L) and TP (0.31 mg/L) in stormwater runoff in urban or commercial/ industrial areas in east coast Australia reported by Drapper et al (2022) and Fletcher et al (2004).
Organic CoPC	None identified	None identified	-	TRH, BTEX, PAHs were not detected in water samples.
Physico-chemical Parameters	None identified	None identified	None identified	TSS ranged from 39 to 238 mg/L.

There are indications that concentrations of key parameters (TN, TP TSS) are lower at SW2 (downstream of treatment train) than SW1 (upstream of system). However, further monitoring as required by the WMP is needed to assess the performance of the treatment system(s) – this should be evaluated in the next annual report. The water, sediment and erosion controls in the WMP should continue to be followed to minimise the migration of sediments and fines into the stormwater system.

A copy of the *Surface Water Monitoring report – Annual 2023* (Senversa, 2023) has been included in Appendix A.

4.4 Groundwater

In accordance with the reDirect Water Management Plan, A new monitoring network was established, including the installation of 6 shallow groundwater monitoring wells that intersect the water table located within the shale bedrock.

These new wells were installed as part of the site infrastructure upgrades. Senversa (engaged by reDirect) designed a groundwater monitoring network that seeks to characterise groundwater both hydraulically up-gradient and down-gradient of the site. The location of the groundwater monitoring wells is presented on **Figure 3**. The groundwater monitoring network comprises:

- One well (MW06) that captures the quality of background groundwater migrating onto the site from the north.
- Five wells (MW01, MW02, MW03, MW04, MW05) placed in targeted locations with the following rationale.
- MW01 – Down gradient of the stormwater treatment sand filter box.
- MW02 – Down gradient of the Ecoceptor.
- MW03 – Western site boundary down gradient of neighbouring property.
- MW04 – Down gradient of the drill mud processing facility on eastern boundary.
- MW05 – Middle level of site in the vicinity of the historic aboveground storage tanks (ASTs).

The wells target the shallow groundwater as this is most susceptible to impact.

Figure 3 Groundwater Monitoring Locations

A baseline monitoring event is required, with ongoing groundwater monitoring conducted on a periodic basis. Additional monitoring will likely be required - triggered as a response to changes in site activities such as the commencement of Stage 2 operations. The monitoring locations, and sampling, analytical and reporting schedules are provided in the following Table 10.

Table 10 Groundwater Monitoring Frequency

Type	Frequency	Monitoring Aspect	Locations	Analytical Schedule	Reporting Schedule
Baseline	Sampling every 6 months for a two year period	Gauging, sampling and analysis	MW01, MW02, MW03, MW04, MW05, MW06	Field: pH, electrical conductivity (EC), dissolved oxygen (DO) and redox potential. Laboratory: Ammonia (as N), nitrate, TN, TP, dissolved metals, TPH, BTEX, PAH.	Interpretive baseline report
Periodic	Annual, then reviewed after three years	Gauging, sampling and analysis	MW01, MW02, MW03, MW04, MW05, MW06	Field: pH, EC, DO and redox potential. Laboratory: TRH, TN, TP and dissolved metals. Additional contaminants based on the findings of the baseline assessment.	Annual data report, then 3-year interpretative report
Event	Triggered	Sampling and analysis*	As required*	As required*	Reporting as above

All sampling was undertaken by a suitably qualified and experienced person consistent with guidance in:

- DEC (2004). Approved Methods for Sampling and Analysis of Water Pollutants in NSW. March 2004.
- AS/NZS 5667.1:1998, Water Quality – Sampling series.
- NEPC (2013). Schedule B (2) Guideline on Site Characterisation.

Appropriate data QA/QC procedures consistent with the above guidance were implemented and assessed as part of the program.

All analyses was conducted by a NATA accredited laboratory.

Groundwater management reporting requirements are outlined in Table 11.

Table 11 Groundwater Reporting Requirements

Report Type	Content
Baseline Groundwater Assessment Report (following completion of sampling)	• Details of monitoring scope and methods, and any non-conformances with this WMP. • Digitisation and analysis of historic groundwater monitoring results. • A plan showing monitoring locations. • A plan showing groundwater elevations and inferred flow. • Field records, calibration certificates and laboratory analytical certificates. • Combined results for the first four monitoring events, including summary tables of gauging, field measurements and analytical data. • Comparison of analytical results against performance criteria and historic results. • Review of QA/QC. • Statistical analysis of historical data for key chemicals of concern, including the mean, minimum, maximum, 80th percentile of site background groundwater quality (MW06) and baseline groundwater quality (at newly installed wells) to allow future comparison to monitoring data. • Reporting shall be conducted in accordance with NSW EPA made or approved guidance.
Data Report (annual)	• Details of monitoring scope and methods, and any non-conformances with this WMP. • A plan showing monitoring locations. • Field records, calibration certificates and laboratory analytical certificates. • Tabulated results (gauging, field measurements and analytical data). • Comparison of analytical results against performance criteria and baseline.

Condition L1 of the EPL states that the licensee must comply with section 120 of the POEO Act, which prohibits the pollution of waters. Assessment of groundwater quality will principally be via comparison against baseline and site background conditions. Table 12 below summarises the groundwater quality criteria to be adopted to assess whether pollution of waters may have occurred.

Table 12 Groundwater Reporting Requirements

Receptor	Adopted Assessment Criteria
Change to baseline / background conditions	No statistically significant increasing trend or 20% increase over baseline / background concentrations or field parameters.
Human Health	Relevant criteria in NEPC (2013) for the commercial/industrial land use setting should be adopted as a screening levels. This includes: • Direct contact criteria have also been considered due to the relatively shallow depth to groundwater in some locations. The presence of concrete and asphalt hardstand however indicates that groundwater will be predominantly inaccessible to humans. Drinking water guidelines will not be considered, given the site geology, land use and provision of a reticulated drinking water supply. • Health Screening Level (HSL) for commercial/industrial land use (HSL-D) for vapour intrusion, sand aquifer, 2-<4 m based on the presence of fill and clay in the subsurface the most conservative soil type of sand has been selected. • No gross aesthetic impacts such as non-aqueous phase liquids.
Ecological	Groundwater may migrate and discharge into Prospect Creek, which is the nearest surface water body down gradient of the site, though the ultimate receiving environment is the George's River and Botany Bay (marine). Northrop Pty Ltd (2017) indicate the local receiving waterways are heavily disturbed. The relevant ecological guidelines for toxicants, are therefore, the fresh water default guidelines values for heavily disturbed environments from ANZG (2018). • ANZG (2018) notes that exceedance of a DGV does not necessarily imply that there is an inherent risk, rather that further assessment and monitoring may be required prior to implementing appropriate management actions. These values should be used as 'triggers' for further assessment. These may be applied for screening purposes for groundwater that has the potential to migrate from the site.

Tabulated groundwater monitoring results have been provided in Appendix B. The results for both the February and August sampling events are broadly similar. There are exceedances of ecological assessment criteria for certain metals and conservative human health criteria for manganese and nickel. Organic compounds (such as petroleum hydrocarbons) were reported below the limit of reporting. A baseline report will be completed and accompany the 2023/2024 annual report.

4.5 Noise

In accordance with EPL 21092, noise from the premises must not exceed the limits noted in Table 13. In accordance with Development Consent SSD-7401 all construction activities related to the development must also comply with the limits in Table 13.

Table 13 Noise Limits dB(A)

Location	Day $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$	Night $L_{Aeq(15\ minute)}$	Night $L_{Aeq(1\ minute)}$
All sensitive receivers	35	35	35	45

Note: *Day* – The period from 7:00am to 6:00pm
Evening – The period from 6:00pm to 10:00pm
Night – The period from 10:00pm to 7:00am
L_{Aeq} means the equivalent continuous noise level – the level of noise equivalent the energy-average of noise levels occurring over a measurement period.

4.5.1 Operational Noise

EPL 21092 stipulates that noise monitoring is to be carried out upon the request of an authorised NSW EPA officer. If requested, noise monitoring must be undertaken in accordance with *Australian Standard AS 1055: 2018 Acoustics - Description and measurement of environmental noise*, and the compliance monitoring guidance provided in the NSW *Noise Policy for Industry* (EPA 2017).

During the 2022/23 reporting period, reDirect was not requested to complete any noise monitoring.

5 Community Relations

5.1 Environmental Complaints

No community complaints were received during the 2022/23 reporting period.

5.2 Community Liaison

5.2.1 Information Exchange

In accordance with EPL 21092 condition M3.1 and M3.2, reDirect operate a telephone complaints line for the purpose of receiving any complaints from the members of the public in relation to activities conducted at the premises or by any vehicle or mobile plant. The complaints line is published on the reDirect recycling website, so the public know how to contact reDirect should a scenario trigger a complaint.

6 Independent Audit

Development Consent SSD 7401 condition C13 sets out requirements for independent environmental audits of the Development. reDirect commissioned environmental consultants RPS AAP Consulting Pty Ltd (RPS) to conduct an Independent Environmental Audit (IEA) of the site for operations audit period 23 August 2022 to 14 September 2023 (site inspection date) and construction period preceding operation of the site.

RPS noted good environmental management practices occurring at Redirect Recycling Wetherill Park. reDirect's compliance management consists of daily site inspection checklists, inspection of incoming loads and staff training. Overall, reDirect's general environmental management was commended. Appropriate shed layout, bunding and storage of materials, regular cleaning of the shed floor and other environmental management processes contribute to effective minimisation of the development's environmental impacts. The IEA concluded that the Development was undertaken generally in accordance with SSD 7016, the EIS and RTS, development layout plans and drawings, management and mitigation measures, and documents and drawings of the Existing Development.

There were 2 non-compliances (items) with 2 associated corrective actions raised. Corrective actions associated with Condition A27 have been completed by reDirect and required the provision of existing dilapidation to DPE. Corrective actions associated with Condition B14 will not be triggered until further construction is planned and/or determined, due to the nature of specific detail required to be incorporated into the Construction and Demolition Waste Management Plan.

The IEA Report was submitted to DPIE on 17 October 2023.

In accordance with SSD 7401 condition C13 the next IEA is scheduled for 2026.

7 Environmental Incidents & Non-compliances

Environmental incidents are managed through reDirect's Pollution Incident Response Management Plan (PIRMP) and are logged in DataStation, reDirect's incident management system. Each incident report details the issue, the corrective and preventative actions taken, and the responsibilities and timing for completion of the actions. The report also includes any additional comments relevant to the incident and the completion date of corrective actions.

7.1 Incidents

A pollution incident that requires notification is defined in section 147 of the Protection of the Environment Operations Act 1997 as:

(a) Harm to the environment is material if:
    i. It involves actual of potential harm to the health or safety of human beings or the ecosystems that is not trivial, or
    ii. If results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations),
    and
(b) Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

During this reporting period, there were no reportable environmental pollution incidents at the reDirect facility.

7.2 Non-conformances

reDirect recycling have not been issued with any non-conformance or breach of licence correspondence from NSW DPE or NSW EPA, respectively. Additionally, reDirect have not determined any non-compliances regarding operation of the site except for those detailed within Section 6 Independent Audit, therefore not repeated in this section. It should be noted that neither of the non-compliance items raised warranted reporting to the NSW DPE.

8 Activities Proposed for the next Annual Review Period

reDirect will endeavour to carry out the activities listed in Table 14 during the 2022/23 reporting period to assist with improving the environmental performance of the existing development and the project.

Table 14 Proposed activities for 2023/2024 reporting period

Ongoing implementation of Environmental Management Plans for the existing development and the project.
Complete installation of new centrifuge to increase efficiency in material processing.
Attain new site-specific resource recovery order and exemption (SSRRO/E) for processed materials allowing new uses and increased efficiency for resource recovery activities.
Continue erosion and sediment control inspections and rectification works as necessary to manage stormwater discharge.
Update current operational management plans to reflect recommendations from audit and findings from annual review.

APPENDICIES

Appendix A – Surface Water Monitoring Report

senversa

Surface Water Monitoring Report – Annual 2023

ReDirect Resource Recovery Facility, 24 Davis Road, Wetherill Park, NSW

21 September 2023

Document Information

Surface Water Monitoring Report – Annual 2023
ReDirect Resource Recovery Facility, 24 Davis Road, Wetherill Park, NSW

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Revision	Date	Author	Reviewed	Approved	Detail
0	21/09/2023	BC	AW	AW	Final

Project Manager: Bec Chapple

Project Director: Emma Walsh

Disclaimer and Limitations:

Senversa acknowledges the traditional custodians of the land on which this work was created and pay our respect to Elders past and present.

Contents

Tables in Text

Appendices

List of Acronyms

Acronym	Definition
ALS	Australian Laboratory Services
ASC	Assessment of Site Contamination
BOM	Bureau of Meteorology
COA	Conditions of Approval
CoPC	Contaminant of Potential Concern
DO	Dissolved Oxygen
DQI	Data Quality Indicators
DQO	Data Quality Objectives
EC	Electrical Conductivity
EPA	Environment Protection Authority
EPL	Environmental Protection Licence
FCC	Fairfield City Council
IFM	Oil/Water Interface Meter
LOR	Limit of Reporting
m AHD	Metres Australian Height Datum
m bgl	Metres Below Ground Level
m btoc	Metres Below Top of Casing
mg/L	Milligrams per Litre
NATA	National Association of Testing Authorities

Acronym	Definition
NSW	New South Wales
PAH	Polycyclic Aromatic Hydrocarbons
POEO Act	Protection of the Environment Operations Act 1997
QA	Quality Assurance
QC	Quality Control
RPD	Relative Percent Difference
SSD	State Significant Development
SWL	Standing Water Level
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
TN	Total nitrogen
TP	Total phosphorus
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
µg/L	Micrograms per Litre
WME	Surface Water Monitoring Event
WMP	Water Management Plan
WQM	Water Quality Meter

1.0 Introduction and Objectives

Senversa Pty Ltd (Senversa) was engaged by reDirect Recycling Pty Ltd (reDirect) to conduct four bi-annual groundwater and surface water monitoring events (WME), along with associated reporting, over a two-year period at the reDirect Resource Recovery Facility located at 24 Davis Road, Wetherill Park, New South Wales (NSW) (the site). The site location and layout are presented on **Figure 1**.

This report documents surface water monitoring conducted in February and August 2023.

1.1 Background

A Water Management Plan (WMP) has previously been prepared for the site[1] and is currently being implemented in accordance with the operational environmental protection licence (EPL) 21092 issued by the NSW Environment Protection Authority (EPA). The facility commenced operation under EPL 21092 in August 2022.

The WMP outlines the initial requirement for six-monthly (bi-annual) monitoring of surface water and groundwater across and under the site for a two-year period following commencement of operations. The requirements for subsequent on-going monitoring will be determined based on the results from the initial two-year period.

The purpose of the two-year period of surface water monitoring is to assess the quality of stormwater collected on-site prior to treatment, as well as being discharged to the Council stormwater system, to assess whether the stormwater controls across the site are meeting their performance targets.

The existing monitoring network comprises six groundwater monitoring wells and two surface water sampling locations, as defined in the WMP.

The WMP requires annual reporting of surface water monitoring. This report represents the first annual surface water monitoring report under the WMP.

1.2 Objectives

The objectives of surface water monitoring are to:

- Verify whether surface water/stormwater controls are adequately maintained and performing to meet the performance targets set out in the SSD COA and FCC (2017) *Stormwater Management Policy*.
- Assess surface water/stormwater quality with respect to Condition L1.1 of EPL 21092.

1.3 Scope of Work

The scope of work was in accordance with the WMP and included the following:

- Ongoing inspections by redirect of the site areas outside of the covered and controlled processing areas (e.g. driveway, car park area, ramp) and all surface water sampling points and subsurface drains.
- Six-monthly (following a rainfall event) sampling of two sampling points on-site (SW1 in the sand filter and SW2 in the Ecoceptor outflow sampling point).
- Preparation of this report.

[1] *Senversa, 2022. Water Management Plan, reDirect Resource Recovery Facility – 24 Davis Road, Wetherill Park, NSW.*

2.0 Monitoring Rationale and Methodology

2.1 Monitoring Locations

Monitoring locations included the following (refer **Figure 1**):

- General site areas outside of covered and controlled processing areas (e.g. driveway, car park area, ramp) (inspection only).
- Sand filter bed inflow sampling point (to assess quality of surface water across the site prior to treatment) – SW1.
- Ecoceptor outflow sampling point (to assess quality of surface water across the site following treatment and prior to discharge from site) – SW2.

2.2 Surface Water Monitoring Methodology

The surface water assessment methodology is summarised below.

Table 2-1: Monitoring Methodology

Activity	Details
Inspection	Each week, ReDirect were responsible for conducting a site inspection in which they observed the general site areas outside of covered and controlled processing areas (e.g. driveway, car park area, ramp). These records are presented in **Appendix A.** A quarterly inspection of all surface water sampling points and subsurface drain pits was conducted in December 2022, March 2023, June 2023 and September 2023. This included the following methodologies: • Removal of the grate and inspection of the internal walls and base. • Removal of any collected sediment, debris, litter and vegetation • Inspection and ensuring the grate was clear following any removal of objects. • Ensuring there was a flush placement of the grate upon refitment. • Drainage structures were inspected noting any dilapidation, with repairs been carried out if necessary. • Rainwater tanks were checked for evidence of litter and pests and the structural integrity of the tank was assessed. • The sediment chamber for the Ecoceptor was checked and cleaned, with any damages repaired. These records are also presented in **Appendix A.**
Sampling	Sampling commenced after a period of rainfall, to ensure there was enough water to sample from the sampling locations. Rainfall data was monitored prior to each surface water sampling event. The rainfall data was collected from the Australian Bureau of Meteorology (BOM), measured from Prospect Reservoir (station 067019) 1 km north of the site. Sampling was completed on the following dates: • 10 February 2023. • 14 August 2023. Laboratory prepared and supplied bottles/vials were filled directly from the sampling location using an extendable sampling poll. A sub-sample was filtered using a 0.45 um filter in the field prior to placing into sample container for dissolved metals analysis. Vials and bottles were filled to minimise headspace and placed into an insulated cooler containing crushed ice. A separate aliquot of water was collected for field measurement of general water quality parameters[2]. A new pair of nitrile gloves were worn for each sample collection event. Sampling field records are presented in **Appendix B.** Calibration certificates for the equipment used during the field program at presented in **Appendix C.**

[2] pH, electrical conductivity (EC), dissolved oxygen (DO), redox potential and temperature.

Activity	Details
Sample Analytical Schedule	Samples were analysed at laboratories by methods endorsed by the National Association of Testing Authorities (NATA), including: • ALS Environmental (ALS): analysis of primary surface water samples. • Envirolab: Analysis of February inter-laboratory duplicate sample. • Eurofins: Analysis of August interlaboratory duplicate sample. Surface water samples were analysed for constituents required by the WMP: pH, total dissolved solids (TDS), total suspended solids (TSS), total nitrogen (TN), total phosphorus (TP), dissolved metals, total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH) and phenols.
Quality assurance and quality control	Data quality assurance (QA) and quality control (QC) procedures consistent with the guidance in the WMP were implemented including (refer **Appendix D**): • Field QA procedures: Inspections were conducted by suitably experienced persons familiar with the site operations; water sampling was conducted by suitable trained and experienced persons; dedicated sampling equipment was used; field and equipment calibration records were retained. • Field QC samples: One rinsate, one trip-blank and one trip spike were analysed per sampling event. The surface water and groundwater monitoring were undertaken during the one mobilisation in each event. As such, the QA/QC samples including one intra-laboratory duplicate and one inter-laboratory duplicate from each event were sampled from a primary groundwater sample (reported separately). • Laboratory QA/QC procedures and controls were implemented – refer **Appendix D**. The data validation process involved checking both the analytical procedure compliance, as well as the accuracy and precision of the sampling methods used throughout the sampling program (refer **Appendix D**).

2.3 Water Quality Assessment Criteria

Condition L1 of the EPL states that the licensee must comply with section 120 of the POEO Act, which prohibits the pollution of waters. Stormwater quality should also meet FCC stormwater quality, discharge requirements or approval conditions.

In the absence of any EPL or FCC criteria, the WMP adopted site-specific risk-based screening criteria from NSW EPA made or approved guidance appropriate for the commercial/industrial land use and heavily disturbed receiving environment. These include (refer **Table 1** for criteria values):

- Health risk screening: Direct contact exposure based on guidelines adopted from National Health and Medical Research Council (NHMRC) (2011), *Australian Drinking Water Guidelines* and NHMRC (2008) *Guidelines for Managing Risks in Recreational Water* for recreational exposure. This is also conservative for incidental exposure to workers.
- Ecological risk screening: ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* for heavily disturbed environments. Surface water that discharges the site may migrate and discharge into Prospect Creek, which is the nearest surface water body downstream of the site, though the ultimate receiving environment is the George's River and Botany Bay (marine). The WMP indicates previous studies found that the local receiving waterways are heavily disturbed. The relevant ecological guidelines for toxicants, are therefore, the freshwater default guidelines values for heavily disturbed environments from ANZG (2018).
- Aesthetic impacts – e.g. no gross aesthetic impacts such as non-aqueous phase liquids.

2.4 Deviations from the WMP

There were no material deviations from the surface water management plan requirements in the WMP.

3.0 Results

3.1 Site Inspection

The following key observations were made during quarterly inspections of the surface water sampling points and subsurface drain pits in December 2022, March 2023, June 2023 and September 2023:

- The grates were cleaned when observations indicated that sediment was present and debris was removed when necessary.
- The sediment chamber of the Ecoceptor was checked during each quarterly observation, with no further action required on each occasion.
- No repairs were required for the surface water and stormwater drain structures.
- The rainwater tank was clear of pests and debris on each occasion, with no repairs required.

3.2 Rainfall Prior to Sampling

The surface water sampling events were targeted to follow a rainfall event. **Table 3-2** outlines the rainfall that occurred in the 3-day period prior to each monitoring event.

Rainfall data was monitored prior to each surface water sampling event. The following rainfall data was collected from the Australian Bureau of Meteorology (BOM), measured from Prospect Reservoir (station 067019) 1 km north of the site.

Table 3-1: Rainfall prior to surface water monitoring events

Date	24-hour Rainfall (including day of sampling)	3-Day Rainfall (including day of sampling)
10 February 2023	0 mm	10 mm
14 August 2023	14 mm	14 mm

3.3 Surface Water

3.3.1 Observations and Geochemical Parameters

The field-measured surface water geochemical parameters for the sampling events are presented in the table below**.**

Table 3-2 Surface water observations and geochemical parameters

Event/Location	Dissolved Oxygen (mg/L)	Electrical Conductivity (µs/cm)	pH	Redox (Eh) (mV)	Temperature (°C)	Observations
February – SW01	4.23	196	7.5	220	21.8	light brown, no odour, no sheen, moderately turbid
August – SW01	8.55	719	8.4	81	14.0	light brown, no odour, no sheen, moderately turbid
February – SW02	3.85	366	7.0	215	22.2	pale brown, no odour, no sheen, moderately turbid
August – SW02	8.45	650	8.9	62	12.8	white, no odour, no sheen, slightly turbid

Limited volume of water was available for sampling during the February event due to a light rainfall event. Limited volume of water was available for sampling at SW1 during the August event.

3.4 Analytical Results

The surface water sample analytical results and screening against adopted assessment criteria are provided in **Table 1**. The laboratory analysis reports (**Appendix E**) contain all analysis results.

A summary of exceedances of water quality objectives is provided in the table below.

Table 3-3 Surface Water Analytical Summary

Analyte / Value	Screening Criteria Exceedances			Comment
	Health-Risk	Ecological Risk	Aesthetics	
Heavy metals and metalloids	None identified	Heavy metal concentrations were reported at low levels less than relevant screening criteria for highly disturbed environments with the exceptions of: • Copper (at SW1, and SW2 in February 2023). • Zinc (SW2 in August 2023). The average concentration (0.012 mg/L) was less than the criterion.	-	Metals concentrations were generally less than or similar to relevant screening criteria for disturbed ecosystems consistent with the WMP. Copper concentrations reported were slightly elevated above screening criteria at SW1 – this represents water prior to on-site treatment via the sand filter. The average concentration at SW2 (Ecoceptor outflow point) (0.002 mg/L) was lower and equivalent to the criterion (0.0018 mg/L). The reported zinc concentration at SW2 in August 2023 was elevated (an order of magnitude) above other sample results – the cause for this is unclear and quality should be reviewed following further monitoring under the WMP.
Nutrients	None identified	No exceedances for toxicants. Exceedances of conservative physical stressor values for total oxidised nitrogen (as N), TN and TP.	-	Concentrations are similar or less than median values for TN (1.7 mg/L) and TP (0.31 mg/L) in stormwater runoff in urban or commercial/ industrial areas in east coast Australia reported by Drapper et al (2022) and Fletcher et al (2004).
Organic CoPC	None identified	None identified	-	TRH, BTEX, PAHs were not detected in water samples.
Physico-chemical Parameters	None identified	None identified	None identified	TSS ranged from 39 to 238 mg/L.

There are indications that concentrations of key parameters (TN, TP, TSS) are lower at SW2 (downstream of treatment train) than SW1 (upstream of system). However, further monitoring as required by the WMP is needed to assess performance of the treatment system(s) – this should be evaluated in the next annual report. The water, sediment and erosion controls in the WMP should continue to be followed to minimise migration of sediments and fines into the stormwater system.

3.5 Data Quality Review

A review of the sampling and laboratory QA/QC data completed by Senversa is presented in **Appendix D**. The QA/QC review indicated that results are generally within the relevant data quality indicator acceptance criteria for the analyses conducted and that any identified non-conformances are unlikely to affect the suitability of the data set for the purposes of this investigation. The quality of the analytical data is considered reliable for the purpose of this investigation.

4.0 Conclusions

Based on the available data and with respect to the objectives, the following conclusions are made:

Compliance with WMP:

Surface water monitoring was conducted consistent with requirements in the WMP during the period.

***Ensure surface water/stormwater controls are adequately maintained and performing to meet the performance targets set out in the SSD COA and FCC (2017) Stormwater Management Policy*:**

No repairs were identified to be required. The weekly inspections reported that there were no outstanding factors that needed addressing during the monitoring period.

***Assess surface water/stormwater quality with respect to Condition L1.1 of EPL 21092*:**

- All analytes were either not detected or reported at low concentrations less than health-based criteria.
- Concentrations of certain metals and nutrients above conservative ecological screening criteria were reported in surface water samples upstream of the sand filter (SW1), with lower concentrations generally reported downstream at the Ecoceptor discharge point (SW2). Average concentrations of metals were similar to or less than the adopted assessment criteria. The concentrations of nutrients at SW2 are considered to be similar to water quality in stormwater runoff in east coast Australia published in the literature.
- The reported zinc concentration at SW2 in August 2023 was elevated (an order of magnitude) above other sample results – the cause for this is unclear and water quality should be reviewed following further monitoring under the WMP.

Ongoing environmental management under the WMP, including system maintenance and sediment and erosion controls, should be conducted to mitigate potential impacts to surface water and monitor system performance.

5.0 Principles and Limitations of Investigation

The following principles are an integral part of site contamination assessment practices and are intended to be referred to in resolving any ambiguity or exercising such discretion as is accorded the user or site assessor.

Area	Uncertainties and Limitations
Elimination of Uncertainty	Some uncertainty is inherent in all site investigations. Furthermore, any sample, either surface or subsurface, taken for chemical testing may or may not be representative of a larger population or area. Professional judgment and interpretation are inherent in the process, and even when exercised in accordance with objective scientific principles, uncertainty is inevitable. Additional assessment beyond that which was reasonably undertaken may reduce the uncertainty.
Failure to Detect	Even when site investigation work is executed competently and in accordance with the appropriate Australian guidance, such as the National Environment Protection (Assessment of Site Contamination) Amendment Measure ('the NEPM'), it must be recognised that certain conditions present especially difficult target analyte detection problems. Such conditions may include, but are not limited to, complex geological settings, unusual or generally poorly understood behaviour and fate characteristics of certain substances, complex, discontinuous, random, or heterogeneous distributions of existing target analytes, physical impediments to investigation imposed by the location of services, structures and other man-made objects, and the inherent limitations of assessment technologies.
Limitations of Information	The effectiveness of any site investigation may be compromised by limitations or defects in the information used to define the objectives and scope of the investigation, including inability to obtain information concerning historic site uses or prior site assessment activities despite the efforts of the user and assessor to obtain such information.
Chemical Analysis Error	Chemical testing methods have inherent uncertainties and limitations. Senversa routinely seeks to require the laboratory to report any potential or actual problems experienced, or non-routine events which may have occurred during the testing, so that such problems can be considered in evaluating the data.
Level of Assessment	The investigation herein should not be considered to be an exhaustive assessment of environmental conditions on a property. There is a point at which the effort of information obtained and the time required to obtain it outweigh the benefit of the information gained and, in the context of private transactions and contractual responsibilities, may become a material detriment to the orderly conduct of business. If the presence of target analytes is confirmed on a property, the extent of further assessment is a function of the degree of confidence required and the degree of uncertainty acceptable in relation to the objectives of the assessment.
Comparison with Subsequent Inquiry	The justification and adequacy of the investigation findings in light of the findings of a subsequent inquiry should be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made.
Data Useability	Investigation data generally only represent the site conditions at the time the data were generated. Therefore, the usability of data collected as part of this investigation may have a finite lifetime depending on the application and use being made of the data. In all respects, a future reader of this report should evaluate whether previously generated data are appropriate for any subsequent use beyond the original purpose for which they were collected or are otherwise subject to lifetime limits imposed by other laws, regulations or regulatory policies.
Nature of Advice	The investigation works herein are intended to develop and present sound, scientifically valid data concerning actual site conditions. Senversa does not seek or purport to provide legal or business advice.

6.0 References

ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality for heavily disturbed environments.

Drapper D, Olive K, McAlister T, Coleman R, Lampard J-L (2022) *A Review of Pollutant Concentrations in Urban Stormwater Across Eastern Australia, After 20 Years*. Front. Environ. Chem. 3:853764.

Fletcher T., Duncan H., Poelsma P., Lloyd S. (2004). *Stormwater Flow and Quality, and the Effectiveness of Non-Proprietary Stormwater Treatment Measures: A Review and Gap Analysis*. Cooperative Research Centre for Catchment Hydrology, Technical Report 04/8, December 2004.

National Environment Protection Council. 1999. National Environment Protection Measure (NEPM), Assessment of Site Contamination (ASC), as amended 2013 (ASC NEPM 2013).

NSW EPA, 2020. *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land*. April 2020, updated 5 May 2020.

Primary contact recreation (PCR) guidelines adopted from National Health and Medical Research Council (NHMRC) (2011), Australian Drinking Water Guidelines and NHMRC (2008) Guidelines for Managing Risks in Recreational Water.

Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019 (UPSS Regulation).

Senversa, 2022. Water Management Plan reDirect Resource Recovery Facility – 24 Davis Road, Wetherill Park NSW, 5 April 2022.

Figures

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Legend

- Site Boundary
- Proposed Groundwater Monitoring Well
- Surface Water Sample
- Inferred Groundwater Flow Direction

Notes:
Aerial Imagery (17/10/2021) © Nearmap

Created:	T. Sohi	Date:	5/04/2022
Reviewed:	M. Coles	Revisicn:	0
Approved:	E. Walsh	Scale:	1:1,000 (A3)

File: S19355_002_F002_Surface Water and Groundwater Sampling Locations

0 5 10 20 30 40 50 Metres

Coordinate System: GDA 1994 MGA Zone 56

Figure No: 2

Title: Proposed Surface Water and Groundwater Sampling Locations

Project: Water Management Plan

Location: 24 Davis Road, Wetherill Park NSW

Client: Space Urban

Path: S:\01_Jobs\1.NSW_Jobs\S19355_SPACE URBAN_WETHERILL PARK_WMP\APRX\S19355.aprx

Tables

Table X: Analytical Results
ReDirect Wetherill Park
ReDirect Wetherill Park, 24 Davis Road

						Location Code	SW1	SW1	SW2	SW2
						Field ID	SW1	SW1	SW2	SW2
						Date	10/02/2023	14/08/2023	10/02/2023	14/08/2023
						Sample Type	Normal	Normal	Normal	Normal
						Lab Report No.	ES2304342	ES2327328	ES2304342	ES2327328
	Unit	EQL	Aquatic ecosystems DGV - highly disturbed (90%) - freshwater	**Aquatic ecosystems DGV - slightly to moderately disturbed (95%) - freshwater**	ANZECC 2000 - physical stressors - South-east Australia Lowland River	*NHMRC (2008)Primary Contact Recreation - Health*				
Physical Parameters										
Total Dissolved Solids	mg/L	10					240	316	352	105
Total Suspended Solids	mg/L	5					86	238	69	39
pH (Lab)	pH Units	0.01			6.5-8.0	*6.5-8.5* #13	-	8.03	-	7.75
Inorganics										
Total Oxidised Nitrogen (as N)	mg/L	0.01			0.04		0.36	0.68	0.5	0.62
Total Kjeldahl Nitrogen	mg/L	0.1					0.3	1.7	1	0.7
Total Nitrogen (as N)	mg/L	0.1			0.35		0.7	2.4	1.5	1.3
Phosphorus (as P)	mg/L	0.01			0.025		0.06	0.35	0.19	0.09
Metals										
Arsenic (filtered)	mg/L	0.001	0.042 #3	**0.013** #3		*0.1* #14	0.001	0.001	<0.001	<0.001
Cadmium (filtered)	mg/L	0.0001	0.0004 #4	**0.0002** #4		*0.02* #14	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (filtered)	mg/L	0.001	0.0033 #12	**0.001** #5		*0.5* #15	**0.002**	0.001	**0.002**	<0.001
Copper (filtered)	mg/L	0.001	0.0018 #6	**0.0014** #6		*20* #14	**0.006**	**0.004**	**0.003**	0.001
Iron (filtered)	mg/L	0.05				*140* #16	0.06	<0.05	0.06	<0.05
Lead (filtered)	mg/L	0.001	0.0056 #4	**0.0034** #4		*0.1* #14	<0.001	<0.001	<0.001	<0.001
Manganese (filtered)	mg/L	0.001	2.5 #6	**1.9** #6		*5* #14	0.01	0.016	<0.01	0.007
Mercury (filtered)	mg/L	0.0001	0.0006 #7	**0.00006** #7		*0.01* #14	<0.0001	<0.0001	<0.0001	<0.0001
Nickel (filtered)	mg/L	0.001	0.013 #4	**0.011** #4		*0.2* #14	0.001	<0.001	0.001	<0.001
Zinc (filtered)	mg/L	0.005	0.015 #4	**0.008** #4		*60* #16	<0.005	0.005	<0.005	**0.038**
BTEX										
Benzene	µg/L	1	1,300 #6	**950** #6		*10* #14	<1	<1	<1	<1
Toluene	µg/L	2	230 #6	**180** #6		*8,000* #14	<2	<2	<2	<2
Ethylbenzene	µg/L	2	110 #6	**80** #6		*3,000* #14	<2	<2	<2	<2
Xylene (m & p)	µg/L	2					<2	<2	<2	<2
Xylene (o)	µg/L	2	470 #6	**350** #6			<2	<2	<2	<2
Total Xylene	µg/L	2				*6,000* #14	<2	<2	<2	<2
Total BTEX	µg/L	1					<1	<1	<1	<1
Total Petroleum Hydrocarbons										
C6-C9 Fraction	µg/L	20					<20	<20	<20	<20
C10-C14 Fraction	µg/L	50					<50	<50	<50	<50
C15-C28 Fraction	µg/L	100					<100	<100	<100	<100
C29-C36 Fraction	µg/L	50					<50	<50	<50	<50
C10-C36 Fraction (Sum)	µg/L	50					<50	<50	<50	<50
Total Recoverable Hydrocarbons										
C6-C10 Fraction	µg/L	20					<20	<20	<20	<20
C6-C10 Fraction minus BTEX (F1)	µg/L	20	440 #8	**440** #8		*900* #17	<20	<20	<20	<20
>C10-C16 Fraction	µg/L	100					<100	<100	<100	<100
>C10-C16 Fraction minus naphthalene (F2)	µg/L	100	440 #8	**440** #8		*900* #17	<100	<100	<100	<100
>C16-C34 Fraction	µg/L	100	640 #9	**640** #9		*900* #18	<100	<100	<100	<100
>C34-C40 Fraction	µg/L	100	640 #10	**640** #10		*900* #18	<100	<100	<100	<100
>C10-C40 Fraction (Sum)	µg/L	100					<100	<100	<100	<100
PAHs										
Acenaphthene	µg/L	1				*5,350* #16	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	µg/L	1					<1.0	<1.0	<1.0	<1.0
Anthracene	µg/L	1	0.4 #7	**0.01** #7		*17,700* #16	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	µg/L	1					<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	µg/L	0.5	0.2 #7	**0.1** #7		*0.1* #14	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	µg/L	1					<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	µg/L	1					<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	µg/L	1					<1.0	<1.0	<1.0	<1.0
Chrysene	µg/L	1					<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	µg/L	1					<1.0	<1.0	<1.0	<1.0
Fluoranthene	µg/L	1	1.4 #7	**1** #7		*8,020* #16	<1.0	<1.0	<1.0	<1.0
Fluorene	µg/L	1				*2,940* #16	<1.0	<1.0	<1.0	<1.0
Indeno(1,2,3-c,d)pyrene	µg/L	1					<1.0	<1.0	<1.0	<1.0
Naphthalene	µg/L	1	37 #6	**16** #6		*700* #19	<1.0	<1.0	<1.0	<1.0
Phenanthrene	µg/L	1	2 #7	**0.6** #7			<1.0	<1.0	<1.0	<1.0
Pyrene	µg/L	1				*1,210* #16	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene TEQ (Zero)	µg/L	0.5				*0.1* #20	<0.5	<0.5	<0.5	<0.5
Sum of Polycyclic aromatic hydrocarbons (PAH)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5
Phenols										
2-Methylphenol	µg/L	1				*9,260* #16	<1.0	<1.0	<1.0	<1.0
2-Nitrophenol	µg/L	1					<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	µg/L	1	2 #11	**2** #11		*3,550* #16	<1.0	<1.0	<1.0	<1.0
3-&4-Methylphenol (m&p-cresol)	µg/L	2					<2.0	<2.0	<2.0	<2.0
4-Chloro-3-methylphenol	µg/L	1				*14,500* #16	<1.0	<1.0	<1.0	<1.0
Phenol	µg/L	1	600 #6	**320** #6		*57,700* #16	<1.0	<1.0	<1.0	<1.0
Halogenated Phenols										
2,4,5-Trichlorophenol	µg/L	1				*11,800* #16	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	1	20 #7	**3** #7		*200* #14	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	µg/L	1	160 #7	**120** #7	4	*2,000* #14	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	µg/L	1	34 #11	**34** #11			<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	µg/L	1	490 #7	**340** #7		*3,000* #14	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	µg/L	2	10 #7	**3.6** #7		*100* #14	<2.0	<2.0	<2.0	<2.0

Comments
#1 <0.2–1.8, varies with hardness
#2 <1–7, varies with hardness
#3 ANZG (2018). The more conservative value (Arsenic AsV) out of the available arsenic species was adopted for initial screening purposes.
#4 ANZG (2018). Adjust DGVs for site-specific hardness using the hardness-dependent algorithm in Warne et al. (2018)
#5 ANZG (2018). The more conservative value (Chromium CrVI) out of the available chromium species was adopted for initial screening purposes.
#6 ANZG (2018)
#7 ANZG (2018). Higher species protection level adopted as recommended
#8 CRWB (2019). Lowest of values for gasoline (C4-C12) and diesel (C8-C21) range hydrocarbons.
#9 CRWB (2019). Value for diesel (C8-C21) mixture.
#10 CRWB (2019). Value for diesel (C8-C21) mixture. No value derived for TPH >C21 as not considered soluble; diesel value used for screening.
#11 ANZG (2018). Unknown species protection level
#12 ANZG (2018). The more conservative value (Chromium CrIII) out of the available chromium species was adopted for initial screening purposes.
#13 NHMRC (2008)
#14 NHMRC (2011) - Health. Multiplied by a factor of x10
#15 NHMRC (2011) - Health. Guideline for Cr (VI) conservatively adopted for comparision to total chromium. Speciated analysis should be undertaken where guideline is exceeded. Multiplied by a factor of x10
#16 USEPA Tap Water RSL (TR=1E-06; THQ=0.1). Multiplied by a factor of x10
#17 WHO (2008). Lowest derived value for aliphatic and aromatic fractions in this range. Multiplied by a factor of x10
#18 Lowest derived value for aliphatic and aromatic fractions in this range (90 ug/L). Multiplied by a factor of x10
#19 NHMRC (2011) - Health. Derived as per NHMRC (2011) based on TDI used for NEPM HSL derivation. Multiplied by a factor of x10
#20 NHMRC (2011) - Health. Value is for BaP but applies to TEQ. Multiplied by a factor of x10

Appendix A: ReDirect Weekly Inspections

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	28.10.22
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	N/A	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y	
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	N/A	

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	N/A	
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	N/A	
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	N/A	
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	N/A	

6. Vermin and pest management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	N/A	

10. Waste management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)		
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly		

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	N/A	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	Action assigned to	Date assigned	Date to be completed	Signature

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		

Workplace inspection checklists must be completeddaily, stored in the site file and uploaded to Datastation before the end of each day.

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	09.11.22
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	N/A	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y	
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	N/A	

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	N/A	
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	N/A	
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	N/A	
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	N/A	

6. Vermin and pest management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	N/A	

10. Waste management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)		
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly		

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	N/A	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	Action assigned to	Date assigned	Date to be completed	Signature

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		

Workplace inspection checklists must be completeddaily, stored in the site file and uploaded to Datastation before the end of each day.

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	10.11.22
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

	1. General Management and mitigations ☐ N/A	**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

	2. Traffic mitigations ☐ N/A	**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

	3. Air quality, odour and dust mitigations ☐ N/A	**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

	5. Stormwater mitigations ☐ N/A	**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	N/A	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y	
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	N/A	

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	N/A	
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	N/A	
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	N/A	
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	N/A	

6. Vermin and pest management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	N/A	

10. Waste management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)		
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly		

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	N/A	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	**Action assigned to**	**Date assigned**	**Date to be completed**	**Signature**

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		
Workplace inspection checklists must be completeddaily, stored in the site file and uploaded to Datastation before the end of each day.		

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	30.11.22
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	N/A	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y	
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	N/A	

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	N/A	
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	N/A	
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	N/A	
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	N/A	

6. Vermin and pest management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	N/A	

10. Waste management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)		
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly		

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	N/A	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	**Action assigned to**	**Date assigned**	**Date to be completed**	**Signature**

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		

Workplace inspection checklists must be completeddaily, stored in the site file and uploaded to Datastation before the end of each day.

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	01.12.22
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	Y	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y Dec 2022	Lift grate,brush out lip for grate and down walls remove debris replace grate
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	Y Dec 2022	Inspected no action required

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	Y Dec 2022	Check Basket – no litter
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	Y Dec 2022	Empty tank inspect no sign of pests
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	Y Dec 2022	No repairs required
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	Y Dec 2022	Checked no action required

6. Vermin and pest management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	Y	

10. Waste management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)	Y Dec 2022	Fully stocked and in good condition
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly	Y Dec 2022	

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	Y Dec 2022	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	**Action assigned to**	**Date assigned**	**Date to be completed**	**Signature**

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		
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OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	28.02.23
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	N/A	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y	
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	N/A	

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	N/A	
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	N/A	
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	N/A	
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	N/A	

6. Vermin and pest management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	N/A	

10. Waste management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)		
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly		

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	N/A	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	**Action assigned to**	**Date assigned**	**Date to be completed**	**Signature**

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		

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OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	31.03.23
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	Y	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y March 2023	Lift grate,brush out lip for grate and down walls remove debris replace grate
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	Y March 2023	Inspected no action required

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	Y March 2023	Check Basket – no litter
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	Y March 2023	Empty tank inspect no sign of pests
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	Y March 2023	No repairs required
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	Y March 2023	Checked no action required

6. Vermin and pest management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	Y	

10. Waste management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)	Y March 2023	Fully stocked and in good condition

11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly	Y March 2023	

12. Biodiversity ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	Y March 2023	

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	**Action assigned to**	**Date assigned**	**Date to be completed**	**Signature**

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		

Workplace inspection checklists must be completeddaily, stored in the site file and uploaded to Datastation before the end of each day.

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	30.04.23
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	N/A	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y	
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	N/A	

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	N/A	
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	N/A	
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	N/A	
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	N/A	

6. Vermin and pest management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	N/A	

10. Waste management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)		
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly		

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	N/A	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	**Action assigned to**	**Date assigned**	**Date to be completed**	**Signature**
Storage and Reference	**Inspection Completed By**			**Date**
To be reviewed at Site Meeting.				

Workplace inspection checklists must be completeddaily, stored in the site file and uploaded to Datastation before the end of each day.

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	31.05.23
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	N/A	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y	
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	N/A	

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	N/A	
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	N/A	
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	N/A	
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	N/A	

6. Vermin and pest management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	N/A	

10. Waste management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)		
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly		

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	N/A	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	**Action assigned to**	**Date assigned**	**Date to be completed**	**Signature**

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		

Workplace inspection checklists must be completeddaily, stored in the site file and uploaded to Datastation before the end of each day.

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	30.06.23
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	Y	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y Dec 2022	Lift grate,brush out lip for grate and down walls remove debris replace grate
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	Y Dec 2022	Inspected no action required

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	Y Dec 2022	Check Basket – no litter
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	Y Dec 2022	Empty tank inspect no sign of pests
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	Y Dec 2022	No repairs required
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	Y Dec 2022	Checked no action required

6. Vermin and pest management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	Y	

10. Waste management mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ N/A		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)	Y Dec 2022	Fully stocked and in good condition
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly	Y Dec 2022	

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	Y Dec 2022	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	Action assigned to	Date assigned	Date to be completed	Signature

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		

Workplace inspection checklists must be completeddaily, stored in the site file and uploaded to Datastation before the end of each day.

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	31.07.23
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	N/A	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y	
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	N/A	

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	N/A	
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	N/A	
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	N/A	
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	N/A	

6. Vermin and pest management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	N/A	

10. Waste management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)		
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly		

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	N/A	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	**Action assigned to**	**Date assigned**	**Date to be completed**	**Signature**

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		

Workplace inspection checklists must be completeddaily, stored in the site file and uploaded to Datastation before the end of each day.

OPERATIONAL ENVIRONMENTAL MANGEMENT PLAN – WETHERILL PARK INSPECTION CHECKLIST

Location:	reDirect – Wetherill Park	**Date:**	30.09.22
Inspection Completed By:	M.Stewart	**Signature:**	M.P.Stewart

1. General Management and mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
1.2	Employees and contractors have been inducted and are suitably trained.	As required	Y	
1.3	Plant and equipment being used is in good working condition at the start of the day?	Daily	Y	

2. Traffic mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
2.1	Traffic is continually monitored by Operations Coordinator?	Daily	Y	
2.2	Alll car spaces are free from obstruction and maintained for use by employees and visitors?	Daily	Y	
2.3	Vehicles are entering and leaving the site in forward direction.	Daily	Y	

3. Air quality, odour and dust mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
3.1	Good dust management procedures are being implemented (inside building): Sweeper working and being used?	Daily	Y	
3.2	Good dust management procedures are implemented (outside the building): Sweeper working and being used?	Daily	Y	
3.3	Residual waste has been transported offsite (check general waste bin capacity)?	Daily	Y	

5. Stormwater mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
5.1	Are there any spills that have been left unattended?	Daily	N	
5.2	Have storm water drains been inspected for any build up of sediment, debris, litter and vegetation within drainage system?	Monthly	Y	
5.3	If materials identified in stormwater drains, has it been removed?	Monthly	N/A	
5.4	Inflow areas and pit grates have been inspected and clear of litter / debris?	Monthly	Y	
5.5	Ensure downpipe leaf eaters, first flush devices and litter screens are unblocked and are operating correctly.	Monthly	Y	
5.6	Site structires to be regularly checked for erosion and scouring	Monthly	Y	
5.7	Treatment areas and structures will be regularly checked for the build up of litter material	Monthly	Y	
5.8	Remove grate and inspect internal walls and base. Remove any collected sediment, debris, litter and vegetation. Inspect and ensure grate is clear following any removal of objects. Ensure flush placement of grate upon refitment.	Quarterly (Mar, Jun, Sep, Dec)	Y	September
5.9	Have all drainage structures been inspected noting any dilapidation, if so have repairs been carried out?	Bi-annually (Jun, Dec)	N/A	

5.10	Rainwater tank – has tank been checked for evidence of litter and functioning properly	Bi-annually (Jun, Dec)	N/A	
5.11	Rainwater tank – has tank been checked for evidence of access by pests (birds, insects, mosquito larvae ect.)	Bi-annually (Jun, Dec)	N/A	
5.12	Rainwater tank – has structural integrity of tank been inspected? Note any dilapidation or repairs required / completed.	Bi-annually (Jun, Dec)	N/A	
5.13	The sediment chamber of the Ecoceptor will be reqgularly checked and cleaned and any damaged covers replaced.	Bi-annually (Jun, Dec)	N/A	

6. Vermin and pest management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
6.1	Drainage sumps and catch drains will be inspected daily and cleaned regularly to prevent providing a habitat for pests.	Ongoing	Y	
6.2	Has the site been inspected for windblown litter? Any identified litter must be removed and disposed appropriately.	Ongoing	Y	
6.3	All overhead structures and internal roofs are visually inspected weekly to ensure they are kept clean.	Ongoing	Y	

7. Pollution management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
7.1	Are all dangerous goods stored appropriately according to their ADG classes and compatibility?	Daily	Y	
7.2	Has training on the pollution incident response management plan been provided in toolbox?	As required	Y	

8. Fire management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
8.1	Fire extinguishers are positioned at readily accessible points, including on mobile plant	Daily	Y	

9. Noise and vibration mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
9.1	Are defective plant parked up and not being used?	As required	N/A	

10. Waste management mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
10.1	All waste stored on site onsite is permitted by the EPL?	Daily	Y	
10.2	The total amount of waste stored at the premises is under EPL Authorised Amount?	Daily	Y	
10.3	The total amount of waste received daily is being recorded via the weighbridges in place?	Daily	Y	

11. Flooding mitigations ☐ **N/A**		**Frequency**	**Y/N/NA**	**General Comments**
11.1	Inspection and maintenance of the Flood Emergency Kit will be undertaken as required to ensure all components are present and in operating condition.	Bi-annually (Jun, Dec)		
11.2	Yearly (at minimum) evacuation drills will be implemented as part of ongoing training onsite.	Yearly		

12. Biodiversity ☐ N/A		Frequency	Y/N/NA	General Comments
12.1	Weed treatment will occur alongside maintenance of landscaping within subject site. This supports compliance with the NSW Biosecurity Act 2015.	Quarterly (Mar, Jun, Sep, Dec)	N/A	

Action Plan - to be transferred as a 'Hazard Report'				
Actions required	**Action assigned to**	**Date assigned**	**Date to be completed**	**Signature**

Storage and Reference	Inspection Completed By	Date
To be reviewed at Site Meeting.		

Workplace inspection checklists must be completeddaily, stored in the site file and uploaded to Datastation before the end of each day.

Appendix B: Field Records

Monitoring Round: S20102_10 Feb 2023 _1

Location Visit

Site ID	S20102	**Monitoring Zone**	
Location Code	SW2		
Arrival Date/Time	10/02/2023 08:16AM	**Departure Date/Time**	10/02/2023 08:17AM
Executed By	Bec Chapple		
Weather	Sunny		
Comments			

Authorisation

Checked By	
Date Checked	

Sample Data

Sampled Date/Time	10/02/2023 08:17AM
Field ID	SW2
Sample Depth From (m)	
Sample Depth To	
Sample Type	Normal
Sample Comments	
Matrix Type	Water

Sample Observations (purge end)

Sample Colour (Description)	light brown
Sample Odour (Description)	no odour
Sample Sheen (Description)	no sheen
Sample Turbidity (Description)	Moderately turbid

QA Samples

QA Sample ID (1)	
QA Sample ID (2)	
QA Sample ID (3)	
QA Sample ID (4)	

Field Chemistry

Temp	22.2 oC (-)
DO	3.85 mg/L (-)
EC	365.7 uS/cm (-)
pH	7.04 - (-)
Redox	215.3 mV (-)

Monitoring Round: S20102_10 Feb 2023 _1

Location Visit

Site ID	S20102	**Monitoring Zone**	
Location Code	SW1		
Arrival Date/Time	10/02/2023 08:40AM	**Departure Date/Time**	10/02/2023 08:42AM
Executed By	Bec Chapple		
Weather			
Comments			

Authorisation

Checked By	
Date Checked	

Sample Data

Sampled Date/Time	10/02/2023 08:42AM
Field ID	SW1
Sample Depth From (m)	
Sample Depth To	
Sample Type	Normal
Sample Comments	
Matrix Type	Water

Sample Observations (purge end)

Sample Colour (Description)	light brown
Sample Odour (Description)	no odour
Sample Sheen (Description)	no sheen
Sample Turbidity (Description)	Moderately turbid

QA Samples

QA Sample ID (1)	
QA Sample ID (2)	
QA Sample ID (3)	
QA Sample ID (4)	

Field Chemistry

Temp	21.8 oC (-)
DO	4.23 mg/L (-)
EC	196.2 uS/cm (-)
pH	7.54 - (-)
Redox	219.6 mV (-)

senversa

Project number: S20102

Name: H4

Date: 14/8/23

2:02 PM → SW01

T 14 °C
DO 8.55 mg/L
EC 7194 S/cm
pH 8.39
ORP 80.8 mV

pale brown, no odour, no sheen, moderately turbid

Collected from close to the bottom of channel.

2:15 PM → Started raining shortly after collecting SW1. Didn't rain for long.

QC samples

QC 102 - MW3
QC 202 - MW3
QC 302 - Rinsate
QC 402 - TB
QC 502 - TS

→ SW2

T 12.8 °C
DO 8.45 mg/L
EC 650 MS/cm
pH 8.85
ORP 62.1 mV

~~pale~~ white, no odour, no sheen, slightly turbid.

Collected from middle of channel.

Started raining just after I started collecting the sample. Flow and water level increased quickly. I took photos of both flow + levels. (Before and after rain).

Appendix C: Calibration Certificates

WAMSCIENTIFIC
Your water and air monitoring equipment specialists

Certificate of Service and Calibration
Interface Meter
Heron H.Oil

Company Name	WAM Scientific
Office Address	26 Bungarra Crescent, Chipping Norton NSW 2170
Phone Number	+61 405 241 484
Contact Name	William Pak
Instrument	Heron H.Oil Interface Meter (30m)
Serial Number	01-7967
Client Name	Bec Chapple (Senversa)
Project Number	S20102

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H_2O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H_2O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

Declaration
WAM Scientific certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

Checked By	William Pak
Calibration Date	01/02/2023
Calibration Due	01/08/2023

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Certificate of Service and Calibration
Water Quality Meter
YSI Professional Plus

Company Name	WAM Scientific
Office Address	26 Bungarra Crescent, Chipping Norton NSW 2170
Phone Number	+61 405 241 484
Contact Name	William Pak
Instrument	YSI Professional Plus Water Quality Meter w/ 1m Quatro Cable
Serial Number	21A102654
Client Name	Bec Chapple (Senversa)
Project Number	S20102
Comments	-

Instrument Check

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

Instrument Readings

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	26.6	26.5	26.6	°C
pH	pH 4.00	386466	4.01	4.04	4.01	pH
pH	pH 7.00	387329	7.00	6.96	7.00	pH
Conductivity	2760 µs/cm at 25°C	388521	2760	2797	2760	µs/cm
ORP (Ref. check only)	Zobell A & B	380835/382785	229.9	223.8	229.9	mV
Zero Dissolved O_2	$NaSO_3$ in Distilled H_2O	389912	0.0	0.3	0.0	%
100% Dissolved O_2	100% Air Saturated H_2O	Fresh Air	100.0	108.1	100.0	%

7Declaration

WAM Scientific certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

Calibrated By	William Pak
Calibration Date	01/02/2023
Calibration Due	01/08/2023

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Certificate of Service and Calibration
Interface Meter
Heron H.Oil

Company Name	WAM Scientific
Office Address	26 Bungarra Crescent, Chipping Norton NSW 2170
Phone Number	+61 405 241 484
Contact Name	William Pak
Instrument	Heron H.Oil Interface Meter (60m)
Serial Number	01-8640
Client Name	Bec Chapple (Senversa)
Project Number	S20102

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H_2O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H_2O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

Declaration
WAM Scientific certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

Checked By	William Pak
Calibration Date	30/07/2023
Calibration Due	30/01/2024

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WAMSCIENTIFIC
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Certificate of Service and Calibration
Water Quality Meter
YSI Professional Plus

Company Name	WAM Scientific
Office Address	26 Bungarra Crescent, Chipping Norton NSW 2170
Phone Number	+61 405 241 484
Contact Name	William Pak
Instrument	YSI Pro Plus Water Quality Meter w/ 1m Quatro Cable
Serial Number	20B122031
Client Name	Hayley Yellowlees/Chris Redford (Senversa)
Project Number	S20049
Comments	-

Instrument Check

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

Instrument Readings

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	14.2	14.6	14.2	°C
pH	pH 4.00	386466	4.01	4.05	4.01	pH
pH	pH 7.00	387329	7.00	7.07	7.00	pH
Conductivity	2760 µs/cm at 25°C	388521	2760	2629	2760	µs/cm
ORP (Ref. check only)	Zobell A & B	380835/382785	253.2	259.6	253.2	mV
Zero Dissolved O_2	$NaSO_3$ in Distilled H_2O	389912	0.0	0.1	0.0	%
100% Dissolved O_2	100% Air Saturated H_2O	Fresh Air	100.0	100.4	100.0	%

Declaration

WAM Scientific certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

Calibrated By	William Pak
Calibration Date	14/08/2023
Calibration Due	14/02/2024

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Appendix D: Data Validation

Data Validation Checklist

Job Number:	S20102
Report Title:	Surface Water Monitoring
Client:	ReDirect Recycling
Completed By:	Bec Chapple
Date:	5-Sep-23
Verified By:	
Date:	

SAMPLE DELIVERY GROUP (SDG):	**ES2304342**	SAMPLE DELIVERY GROUP (SDG):	**ES2304011**
Laboratory:	ALS	Laboratory:	ALS
Sample Dates:	10-Feb-23	Sample Dates:	8-Feb-23
Sample Media:	Water	Sample Media:	Water

Quality Assurance Process	Objectives & Measure	Acceptance Criteria	Source of Information	Acceptance Criteria Met?	Notes/Details of Nonconformance	Acceptance Criteria Met?	Notes/Details of Nonconformance
Standard Procedures	Standard field sampling procedures and forms used	No deviation from standard procedure and forms used.	Borelogs, field sheets, COCs, data tables	Yes		Yes	
Equipment Calibration	All equipment calibrated in accordance with manufacturers specifications	All equipment calibrated in accordance with manufacturers specifications.	Calibration Certificates / Records	Yes		Yes	
Testing Method Accreditation	NATA accredited methods used for all analyses determined	Primary and secondary laboratories to use NATA accredited methods for all analytes determined.	Laboratory Report	Yes		Yes	
Quality Control Sampling Frequency	Field QC sampling frequency in accordance with AS4482.1 2005	Field (Intra-laboratory) Duplicates - ≥ 1 in 20 primary samples. (note that PFAS NEMP recommends 1 in 10 for PFAS investigations)	QA/QC register (within field book)	N/A	Relevant intra-lab QC samples for this monitoring were present in ES2304011.	Yes	
		Secondary (inter-laboratory) duplicates - ≥ 1 in 20 primary samples. (note that PFAS NEMP recommends 1 in 10 for PFAS investigations)	QA/QC register (within field book)	N/A	Relevant inter-lab QC samples for this monitoring were present in 316159.	N/A	
		Rinsate Blanks - ≥ 1 per day, per matrix per equipment.	QA/QC register (within field book)	N/A	Relevant intra-lab QC samples for this monitoring were present in ES2304011.	Yes	QC301
		Trip Blanks - ≥ 1 per esky containing samples for volatiles.	QA/QC register (within field book)	N/A	Relevant intra-lab QC samples for this monitoring were present in ES2304011.	Yes	QC401
	Laboratory QC analysis frequency in accordance with NEPC 2013	Laboratory Duplicates - at least 1 in 10 analyses or 1 per process batch.	Laboratory Reports	No	A laboratory duplicate for PAH/Phenols and TRH-Semivolatile fraction was not analysed, resulting in a non-conformance for frequency for this analysis. Not considered to impact upon assessment of accuracy, precision and comparability since the intra-laboratory and inter-laboratory field duplicates were analysed for PAH/ phenols and TRH semivolatile fraction and were DQI compliant.	No	A laboratory duplicate for PAH/Phenols and TRH-Semivolatile fraction was not analysed, resulting in a non-conformance for frequency for this analysis. Not considered to impact upon assessment of accuracy, precision and comparability since the intra-laboratory and inter-laboratory field duplicates were analysed for PAH/ phenols and TRH semivolatile fraction and were DQI compliant.
		Method Blanks - at least 1 per process batch.	Laboratory Reports	Yes		Yes	
		Surrogate Recoveries - all samples spiked where appropriate (e.g. chromatographic analysis of organics).	Laboratory Reports	Yes		Yes	
		Laboratory Control Samples - at least 1 per process batch.	Laboratory Reports	Yes		Yes	
		Matrix Spikes - at least 1 per matrix type per process batch.	Laboratory Reports	No	A matrix spike for PAH/Phenols and TRH-Semivolatile fraction was not analysed, resulting in a non-conformance for frequency for this analysis. Not considered to impact upon assessment of accuracy, precision and comparability since the intra-laboratory and inter-laboratory field duplicates were analysed for PAH/ phenols and TRH semivolatile fraction and were DQI compliant.	No	A matrix spike for PAH/Phenols, dissolved metals and TRH-Semivolatile fraction was not analysed, resulting in a non-conformance for frequency for this analysis. Not considered to impact upon assessment of accuracy, precision and comparability since the intra-laboratory and inter-laboratory field duplicates were analysed for PAH/ phenol, dissolved metals and TRH semivolatile fraction and were DQI compliant.
Sample Preservation, Handling and Holding Times	Samples appropriately preserved upon collection, stored and transported, and analysed within holding times	In accordance with laboratory specific method requirements. Unless specific method indicates otherwise, soil and water samples should be stored, transported and received by the laboratory at < 6°C.	Laboratory Reports	Yes		Yes	
Data Management	No errors in data transcription	Entry of field data verified by peer.	10% check of electronically imported data (e.g. ESDAT). 100% check of manually entered data (e.g. field parameters, gauging data).	Yes		Yes	
Data Useability	Limits of reporting less than investigation levels	Limits of reporting less than relevant investigation levels.	Results Tables	Yes		Yes	

Quality Control Process	Objectives & Measure	Acceptance Criteria	How? (i.e. ESDAT output, review lab reports, review data etc)	Acceptance Criteria Met?	Notes/Details of Nonconformance	Acceptance Criteria Met?	Notes/Details of Nonconformance
Field (Intra-laboratory) Duplicate Sampling and Analysis	Field Duplicate samples used assess the variability in analyte concentration between samples collected from the sample location and the reproducibility of the laboratory analysis. Where required, resubmission of previously analysed samples for chemicals within their holding times may be undertaken to further assess precision level of precision.	Analysed for same chemicals as primary sample. RPD <30% of mean conc. where both conc. >20 x LOR RPD <50% of mean conc. where both conc. 10-20 x LOR RPD No limit where both conc. < 10 x LOR	ESDAT generated summary of relative percent difference (RPD) results for field duplicate samples.	N/A	Relevant intra-lab QC samples for this monitoring were present in ES2304011.	Yes	
Secondary Inter-laborator) Duplicate Sampling and Analysis	Results are accurate and free from laboratory error. Secondary duplicate samples sent to a secondary laboratory to assess the accuracy of the analyte concentrations reported by the primary laboratory.	Analysed for same chemicals as primary sample. RPD <30% of mean conc. where both conc. >20 x LOR. RPD <50% of mean conc. where both conc. 10-20 x LOR. RPD no limit where both conc. < 10 x LOR.	ESDAT generated summary of relative percent difference (RPD) results for field duplicate samples.	N/A		Yes	
Field Rinsate Blank Preparation & Analysis	Cross contamination of samples does not occur between sampling locations due to carry-over from sampling equipment.	Analyte concentrations below LORs.	ESDAT generated summary of field blank analytical results.	N/A	Relevant intra-lab QC samples for this monitoring were present in ES2304011.	Yes	
Trip Blank Sampling and Analysis	Cross contamination between samples does not occur in transit or as an artefact of the sampling handling procedure.	Analyte concentrations below LORs.	ESDAT generated summary of field blank analytical results.	N/A	Relevant intra-lab QC samples for this monitoring were present in ES2304011.	Yes	
Laboratory Duplicates	Laboratory duplicates are used to test the precision of the laboratory measurements.	As specified by laboratory.	Laboratory reports	Yes		Yes	
Laboratory Control Samples	Laboratory control samples (LCS) are used to assess overall method performance. In general these samples are similar in composition to environmental samples, and contain known amounts of the analytes of interest.	Dynamic recovery limits as specified by laboratory.	Laboratory reports	Yes		Yes	
Certified Reference Material	CRM samples are used to monitor the accuracy of analyses performed by the laboratory.	As specified by laboratory (generally dynamic recovery limits). Usually not performed and assessed based on LCS results.	Laboratory reports	N/A		N/A	
Surrogate Recovery	Surrogates are organic compounds that are similar in chemical composition to analytes of interest and are spiked into environmental samples prior to sample preparation and analysis. Surrogate recoveries are used to evaluate matrix interference on a sample-specific basis.	Dynamic recovery limits as specified by laboratory.	Laboratory reports	Yes		Yes	
Matrix Spike Recovery	A matrix spike is an aliquot of a sample spiked with a known concentration of target analyte(s). Spiking occurs prior to sample preparation and analysis, and the results are used to assess the bias of a method in a given sample matrix.	Recovery 70 - 130% or dynamic limits if specified by laboratory.	Laboratory reports	Yes		No	Mattix spike recovery not determined for manganese and nitrite as N as the background level greater than or equal to 4x spike level.
Laboratory Method Blanks	Method blanks are prepared to represent the sample matrix as closely as possible and prepared/extracted/digested and analysed exactly like field samples. These blanks are used by the laboratory to assess contamination introduced during sample preparation activities.	Analyte concentrations below LORs.	Laboratory reports	Yes		Yes	
Potentially Anomalous Data	No discrepancies between field, laboratory and/or expected results are identified	Analytical results are internally consistent, consistent with field measurements, and consistent with expected and/or historical results based on CSM	Multiple sources	Yes		Yes	

Data Validation Checklist

Job Number:	S20102
Report Title:	Surface Water Monitoring
Client:	ReDirect Recycling
Completed By:	Bec Chapple
Date:	5-Sep-23
Verified By:	
Date:	

SAMPLE DELIVERY GROUP (SDG):	**ES2326328**	SAMPLE DELIVERY GROUP (SDG):	**316159**
Laboratory:	ALS	Laboratory:	Envirolab
Sample Dates:	14-Aug-23	Sample Dates:	8-Feb-23
Sample Media:	Water	Sample Media:	Water

Quality Assurance Process	Objectives & Measure	Acceptance Criteria	Source of Information	Acceptance Criteria Met?	Notes/Details of Nonconformance	Acceptance Criteria Met?	Notes/Details of Nonconformance
Standard Procedures	Standard field sampling procedures and forms used	No deviation from standard procedure and forms used.	Borelogs, field sheets, COCs, data tables	Yes		Yes	
Equipment Calibration	All equipment calibrated in accordance with manufacturers specifications	All equipment calibrated in accordance with manufacturers specifications.	Calibration Certificates / Records	Yes		Yes	
Testing Method Accreditation	NATA accredited methods used for all analyses determined	Primary and secondary laboratories to use NATA accredited methods for all analytes determined.	Laboratory Report	Yes		Yes	
Quality Control Sampling Frequency	Field QC sampling frequency in accordance with AS4482.1 2005	Field (Intra-laboratory) Duplicates - ≥ 1 in 20 primary samples. (note that PFAS NEMP recommends 1 in 10 for PFAS investigations)	QA/QC register (within field book)	Yes		N/A	
		Secondary (inter-laboratory) duplicates - ≥ 1 in 20 primary samples. (note that PFAS NEMP recommends 1 in 10 for PFAS investigations)	QA/QC register (within field book)	N/A	Relevant inter-lab QC samples for this monitoring were present in 1020195.	Yes	
		Rinsate Blanks - ≥ 1 per day, per matrix per equipment.	QA/QC register (within field book)	Yes	QC302	N/A	Primary laboratory received sample
		Trip Blanks - ≥ 1 per esky containing samples for volatiles.	QA/QC register (within field book)	Yes	QC502	N/A	Primary laboratory received sample
	Laboratory QC analysis frequency in accordance with NEPC 2013	Laboratory Duplicates - at least 1 in 10 analyses or 1 per process batch.	Laboratory Reports	No	A laboratory duplicate for PAH/Phenols and TRH-Semivolatile fraction was not analysed, resulting in a non-conformance for frequency for this analysis. Not considered to impact upon assessment of accuracy, precision and comparability since the intra-laboratory and inter-laboratory field duplicates were analysed for PAH/ phenols and TRH semivolatile fraction and were DQI compliant.	Yes	
		Method Blanks - at least 1 per process batch.	Laboratory Reports	Yes		Yes	
		Surrogate Recoveries - all samples spiked where appropriate (e.g. chromatographic analysis of organics).	Laboratory Reports	Yes		Yes	
		Laboratory Control Samples - at least 1 per process batch.	Laboratory Reports	Yes		Yes	
		Matrix Spikes - at least 1 per matrix type per process batch.	Laboratory Reports	No	A matrix spike for PAH/Phenols and TRH-Semivolatile fraction was not analysed, resulting in a non-conformance for frequency for this analysis. Not considered to impact upon assessment of accuracy, precision and comparability since the intra-laboratory and inter-laboratory field duplicates were analysed for PAH/ phenols and TRH semivolatile fraction and were DQI compliant.	Yes	
Sample Preservation, Handling and Holding Times	Samples appropriately preserved upon collection, stored and transported, and analysed within holding times	In accordance with laboratory specific method requirements. Unless specific method indicates otherwise, soil and water samples should be stored, transported and received by the laboratory at < 6°C.	Laboratory Reports	Yes		No	Holding times for inter-laboratory duplicate samples
Data Management	No errors in data transcription	Entry of field data verified by peer.	10% check of electronically imported data (e.g. ESDAT). 100% check of manually entered data (e.g. field parameters, gauging data).	Yes		Yes	
Data Useability	Limits of reporting less than investigation levels	Limits of reporting less than relevant investigation levels.	Results Tables	Yes		Yes	

Quality Control Process	Objectives & Measure	Acceptance Criteria	How? (i.e. ESDAT output, review lab reports, review data etc)	Acceptance Criteria Met?	Notes/Details of Nonconformance	Acceptance Criteria Met?	Notes/Details of Nonconformance
Field (Intra-laboratory) Duplicate Sampling and Analysis	Field Duplicate samples used assess the variability in analyte concentration between samples collected from the sample location and the reproducibility of the laboratory analysis. Where required, resubmission of previously analysed samples for chemicals within their holding times may be undertaken to further assess precision level of precision.	Analysed for same chemicals as primary sample. RPD <30% of mean conc. where both conc. >20 x LOR RPD <50% of mean conc. where both conc. 10-20 x LOR RPD No limit where both conc. < 10 x LOR	ESDAT generated summary of relative percent difference (RPD) results for field duplicate samples.	No	RPD exceeded for Zinc (49%) in primary sample MW3 and duplicate sample QC102.	N/A	
Secondary Inter-laborator) Duplicate Sampling and Analysis	Results are accurate and free from laboratory error. Secondary duplicate samples sent to a secondary laboratory to assess the accuracy of the analyte concentrations reported by the primary laboratory.	Analysed for same chemicals as primary sample. RPD <30% of mean conc. where both conc. >20 x LOR. RPD <50% of mean conc. where both conc. 10-20 x LOR. RPD no limit where both conc. < 10 x LOR.	ESDAT generated summary of relative percent difference (RPD) results for field duplicate samples.	N/A		No	RPD exceeded for Phosporous (148%) in primary sample MW3 and triplicate sample QC201.
Field Rinsate Blank Preparation & Analysis	Cross contamination of samples does not occur between sampling locations due to carry-over from sampling equipment.	Analyte concentrations below LORs.	ESDAT generated summary of field blank analytical results.	Yes		N/A	
Trip Blank Sampling and Analysis	Cross contamination between samples does not occur in transit or as an artefact of the sampling handling procedure.	Analyte concentrations below LORs.	ESDAT generated summary of field blank analytical results.	No	QC302 was reported above LOR for Manganese (0.038 mg/L). This is not seen to impact on the data as this concentration is much lower than the adopted criterion.	N/A	
Laboratory Duplicates	Laboratory duplicates are used to test the precision of the laboratory measurements.	As specified by laboratory.	Laboratory reports	Yes		Yes	
Laboratory Control Samples	Laboratory control samples (LCS) are used to assess overall method performance. In general these samples are similar in composition to environmental samples, and contain known amounts of the analytes of interest.	Dynamic recovery limits as specified by laboratory.	Laboratory reports	Yes		Yes	
Certified Reference Material	CRM samples are used to monitor the accuracy of analyses performed by the laboratory.	As specified by laboratory (generally dynamic recovery limits). Usually not performed and assessed based on LCS results.	Laboratory reports	N/A		N/A	
Surrogate Recovery	Surrogates are organic compounds that are similar in chemical composition to analytes of interest and are spiked into environmental samples prior to sample preparation and analysis. Surrogate recoveries are used to evaluate matrix interference on a sample-specific basis.	Dynamic recovery limits as specified by laboratory.	Laboratory reports	Yes		Yes	
Matrix Spike Recovery	A matrix spike is an aliquot of a sample spiked with a known concentration of target analyte(s). Spiking occurs prior to sample preparation and analysis, and the results are used to assess the bias of a method in a given sample matrix.	Recovery 70 - 130% or dynamic limits if specified by laboratory.	Laboratory reports	Yes		Yes	
Laboratory Method Blanks	Method blanks are prepared to represent the sample matrix as closely as possible and prepared/extracted/digested and analysed exactly like field samples. These blanks are used by the laboratory to assess contamination introduced during sample preparation activities.	Analyte concentrations below LORs.	Laboratory reports	Yes		Yes	
Potentially Anomalous Data	No discrepancies between field, laboratory and/or expected results are identified	Analytical results are internally consistent, consistent with field measurements, and consistent with expected and/or historical results based on CSM	Multiple sources	Yes		Yes	

Data Validation Checklist

Job Number:	S20102
Report Title:	Surface Water Monitoring
Client:	ReDirect Recycling
Completed By:	Bec Chapple
Date:	5-Sep-23
Verified By:	
Date:	

SAMPLE DELIVERY GROUP (SDG):	**1020195**
Laboratory:	Eurofins
Sample Dates:	14-Aug-23
Sample Media:	Water

Quality Assurance Process	Objectives & Measure	Acceptance Criteria	Source of Information	Acceptance Criteria Met?	Notes/Details of Nonconformance
Standard Procedures	Standard field sampling procedures and forms used	No deviation from standard procedure and forms used.	Borelogs, field sheets, COCs, data tables	Yes	
Equipment Calibration	All equipment calibrated in accordance with manufacturers specifications	All equipment calibrated in accordance with manufacturers specifications.	Calibration Certificates / Records	Yes	
Testing Method Accreditation	NATA accredited methods used for all analyses determined	Primary and secondary laboratories to use NATA accredited methods for all analytes determined.	Laboratory Report	Yes	
Quality Control Sampling Frequency	Field QC sampling frequency in accordance with AS4482.1-2005	Field (Intra-laboratory) Duplicates - ≥ 1 in 20 primary samples. (note that PFAS NEMP recommends 1 in 10 for PFAS investigations)	QA/QC register (within field book)	N/A	
		Secondary (inter-laboratory) duplicates - ≥ 1 in 20 primary samples. (note that PFAS NEMP recommends 1 in 10 for PFAS investigations)	QA/QC register (within field book)	Yes	
		Rinsate Blanks - ≥ 1 per day, per matrix per equipment.	QA/QC register (within field book)	N/A	Primary laboratory received sample
		Trip Blanks - ≥ 1 per esky containing samples for volatiles.	QA/QC register (within field book)	N/A	Primary laboratory received sample
	Laboratory QC analysis frequency in accordance with NEPC 2013	Laboratory Duplicates - at least 1 in 10 analyses or 1 per process batch.	Laboratory Reports	Yes	
		Method Blanks - at least 1 per process batch.	Laboratory Reports	Yes	
		Surrogate Recoveries - all samples spiked where appropriate (e.g. chromatographic analysis of organics).	Laboratory Reports	Yes	
		Laboratory Control Samples - at least 1 per process batch.	Laboratory Reports	Yes	
		Matrix Spikes - at least 1 per matrix type per process batch.	Laboratory Reports	Yes	
Sample Preservation, Handling and Holding Times	Samples appropriately preserved upon collection, stored and transported, and analysed within holding times	In accordance with laboratory specific method requirements. Unless specific method indicates otherwise, soil and water samples should be stored, transported and received by the laboratory at < 6°C.	Laboratory Reports	Yes	
Data Management	No errors in data transcription	Entry of field data verified by peer.	10% check of electronically imported data (e.g. ESDAT). 100% check of manually entered data (e.g. field parameters, gauging data).	Yes	
Data Useability	Limits of reporting less than investigation levels	Limits of reporting less than relevant investigation levels.	Results Tables	Yes	

Quality Control Process	Objectives & Measure	Acceptance Criteria	How? (i.e. ESDAT output, review lab reports, review data etc)	Acceptance Criteria Met?	Notes/Details of Nonconformance
Field (Intra-laboratory) Duplicate Sampling and Analysis	Field Duplicate samples used assess the variability in analyte concentration between samples collected from the sample location and the reproducibility of the laboratory analysis. Where required, resubmission of previously analysed samples for chemicals within their holding times may be undertaken to further assess precision level of precision.	Analysed for same chemicals as primary sample. RPD <30% of mean conc. where both conc. >20 x LOR RPD <50% of mean conc. where both conc. 10-20 x LOR RPD No limit where both conc. < 10 x LOR	ESDAT generated summary of relative percent difference (RPD) results for field duplicate samples.	N/A	
Secondary Inter-laborator) Duplicate Sampling and Analysis	Results are accurate and free from laboratory error. Secondary duplicate samples sent to a secondary laboratory to assess the accuracy of the analyte concentrations reported by the primary laboratory.	Analysed for same chemicals as primary sample. RPD <30% of mean conc. where both conc. >20 x LOR. RPD <50% of mean conc. where both conc. 10-20 x LOR. RPD no limit where both conc. < 10 x LOR.	ESDAT generated summary of relative percent difference (RPD) results for field duplicate samples.	No	RPD exceedance for iron (84%) and zinc (35%) in primary sample in MW3 and triplicate sample QC202.
Field Rinsate Blank Preparation & Analysis	Cross contamination of samples does not occur between sampling locations due to carry-over from sampling equipment.	Analyte concentrations below LORs.	ESDAT generated summary of field blank analytical results.	N/A	
Trip Blank Sampling and Analysis	Cross contamination between samples does not occur in transit or as an artefact of the sampling handling procedure.	Analyte concentrations below LORs.	ESDAT generated summary of field blank analytical results.	N/A	
Laboratory Duplicates	Laboratory duplicates are used to test the precision of the laboratory measurements.	As specified by laboratory.	Laboratory reports	Yes	
Laboratory Control Samples	Laboratory control samples (LCS) are used to assess overall method performance. In general these samples are similar in composition to environmental samples, and contain known amounts of the analytes of interest.	Dynamic recovery limits as specified by laboratory.	Laboratory reports	Yes	
Certified Reference Material	CRM samples are used to monitor the accuracy of analyses performed by the laboratory.	As specified by laboratory (generally dynamic recovery limits). Usually not performed and assessed based on LCS results.	Laboratory reports	N/A	
Surrogate Recovery	Surrogates are organic compounds that are similar in chemical composition to analytes of interest and are spiked into environmental samples prior to sample preparation and analysis. Surrogate recoveries are used to evaluate matrix interference on a sample-specific basis.	Dynamic recovery limits as specified by laboratory.	Laboratory reports	Yes	
Matrix Spike Recovery	A matrix spike is an aliquot of a sample spiked with a known concentration of target analyte(s). Spiking occurs prior to sample preparation and analysis, and the results are used to assess the bias of a method in a given sample matrix.	Recovery 70 - 130% or dynamic limits if specified by laboratory.	Laboratory reports	Yes	
Laboratory Method Blanks	Method blanks are prepared to represent the sample matrix as closely as possible and prepared/extracted/digested and analysed exactly like field samples. These blanks are used by the laboratory to assess contamination introduced during sample preparation activities.	Analyte concentrations below LORs.	Laboratory reports	Yes	
Potentially Anomalous Data	No discrepancies between field, laboratory and/or expected results are identified	Analytical results are internally consistent, consistent with field measurements, and consistent with expected and/or historical results based on CSM	Multiple sources	Yes	

Project: ReDirect Surface Water monitoring
Client: ReDirect Recycling
Site Address: 24 Davis Rd, Wetherill Park NSW

Table D2: RPD Analytical Results

Lab Report No.			ES2304011	ES2304011		ES2304011	316159		ES2327328	ES2327328		ES2327328	1020195	
Field ID			MW3	QC101		MW3	QC201		MW3	QC102		MW3	QC202	
Location Code			MW3	MW3		MW3	MW3		MW3	MW3		MW3	MW3	
Date			08/02/2023	08/02/2023		08/02/2023	08/02/2023		14/08/2023	14/08/2023		14/08/2023	14/08/2023	
Sample Type			Normal	Field_D	RPD	Normal	Interlab_D	RPD	Normal	Field_D	RPD	Normal	Interlab_D	RPD
	Unit	EQL												
Inorganics														
Ammonia (as N)	mg/L	0.01	0.22	-	-	0.22	-	-	0.29	-	-	0.29	-	-
Nitrate (as N)	mg/L	0.01	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	<0.02	0
Nitrite (as N)	mg/L	0.01	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	<0.02	0
Total Oxidised Nitrogen (as N)	mg/L	0.01	<0.01	0.02	67	<0.01	-	-	<0.01	-	-	<0.01	<0.05	0
Total Kjeldahl Nitrogen	mg/L	0.1	1.0	1.3	26	1.0	-	-	0.4	-	-	0.4	0.5	22
Total Nitrogen (as N)	mg/L	0.1	1.0	1.3	26	1.0	0.5	67	0.4	-	-	0.4	0.5	22
Phosphorus (as P)	mg/L	0.01	0.12	0.10	18	0.12	0.8	**148**	0.02	-	-	0.02	-	-
Metals														
Arsenic (filtered)	mg/L	0.001	<0.010	<0.010	0	<0.010	0.004	0	<0.010	<0.010	0	<0.010	0.002	0
Cadmium (filtered)	mg/L	0.0001	<0.0010	<0.0010	0	<0.0010	0.0001	0	<0.0010	<0.0010	0	<0.0010	<0.0002	0
Chromium (filtered)	mg/L	0.001	<0.010	<0.010	0	<0.010	0.002	0	<0.010	<0.010	0	<0.010	0.002	0
Copper (filtered)	mg/L	0.001	<0.010	<0.010	0	<0.010	<0.001	0	<0.010	<0.010	0	<0.010	0.002	0
Iron (filtered)	mg/L	0.01	5.05	5.15	2	5.05	5.7	12	5.64	6.04	7	5.64	2.3	**84**
Lead (filtered)	mg/L	0.001	<0.010	<0.010	0	<0.010	0.001	0	<0.010	<0.010	0	<0.010	0.002	0
Manganese (filtered)	mg/L	0.001	5.99	6.15	3	5.99	5.8	3	6.39	6.57	3	6.39	5.9	8
Mercury (filtered)	mg/L	0.00005	<0.0001	<0.0001	0	<0.0001	<0.00005	0	<0.0001	<0.0001	0	<0.0001	<0.0001	0
Nickel (filtered)	mg/L	0.001	0.191	0.167	13	0.191	0.18	6	0.207	0.205	1	0.207	0.18	14
Zinc (filtered)	mg/L	0.001	0.225	0.196	14	0.225	0.23	2	0.122	0.074	**49**	0.122	0.086	**35**
BTEX														
Benzene	µg/L	1	<1	<1	0	<1	<1	0	<1	<1	0	<1	<1	0
Toluene	µg/L	1	<2	<2	0	<2	<1	0	<2	<2	0	<2	<1	0
Ethylbenzene	µg/L	1	<2	<2	0	<2	<1	0	<2	<2	0	<2	<1	0
Xylene (m & p)	µg/L	2	<2	<2	0	<2	<2	0	<2	<2	0	<2	<2	0
Xylene (o)	µg/L	1	<2	<2	0	<2	<1	0	<2	<2	0	<2	<1	0
Total Xylene	µg/L	2	<2	<2	0	<2	-	-	<2	<2	0	<2	<3	0
Total BTEX	µg/L	1	<1	<1	0	<1	-	-	<1	<1	0	<1	-	-
Total Petroleum Hydrocarbons														
C6-C9 Fraction	µg/L	10	<20	<20	0	<20	<10	0	<20	<20	0	<20	<20	0
C10-C14 Fraction	µg/L	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
C15-C28 Fraction	µg/L	100	<100	<100	0	<51	140	33	<100	<100	0	<100	<100	0
C29-C36 Fraction	µg/L	50	<50	<50	0	<52	<100	0	<50	<50	0	<50	<100	0
C10-C36 Fraction (Sum)	µg/L	50	<50	<50	0	<53	140	95	<50	<50	0	<50	<100	0
Total Recoverable Hydrocarbons														
C6-C10 Fraction	µg/L	10	<20	<20	0	<20	<10	0	<20	<20	0	<20	<20	0
C6-C10 Fraction minus BTEX (F1)	µg/L	10	<20	<20	0	<20	<10	0	<20	<20	0	<20	<20	0
>C10-C16 Fraction	µg/L	50	<100	<100	0	<100	130	26	<100	<100	0	<100	<50	0
>C10-C16 Fraction minus naphthalene (F2)	µg/L	50	<100	<100	0	<100	130	26	<100	<100	0	<100	<50	0
>C16-C34 Fraction	µg/L	100	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0
>C34-C40 Fraction	µg/L	100	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0
>C10-C40 Fraction (Sum)	µg/L	50	<100	<100	0	<100	130	26	<100	<100	0	<100	<100	0
PAHs														
Acenaphthene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Acenaphthylene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Anthracene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Benz(a)anthracene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Benzo(a)pyrene	µg/L	0.5	<0.5	<0.5	0	<0.5	<1	0	<0.5	<0.5	0	<0.5	<1	0
Benzo(b+j)fluoranthene	µg/L	1	<1.0	<1.0	0	<1.0	-	-	<1.0	<1.0	0	<1.0	<1	0
Benzo(g,h,i)perylene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Benzo(b+j+k)fluoranthene	µg/L	2	-	-	-	-	<2	-	-	-	-	-	-	-
Benzo(k)fluoranthene	µg/L	1	<1.0	<1.0	0	<1.0	-	-	<1.0	<1.0	0	<1.0	<1	0
Chrysene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Dibenz(a,h)anthracene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Fluoranthene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Fluorene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Indeno(1,2,3-c,d)pyrene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Naphthalene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Phenanthrene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Pyrene	µg/L	1	<1.0	<1.0	0	<1.0	<1	0	<1.0	<1.0	0	<1.0	<1	0
Benzo(a)pyrene TEQ (Zero)	µg/L	0.5	<0.5	<0.5	0	<0.5	-	-	<0.5	<0.5	0	<0.5	-	-
Sum of Polycyclic aromatic hydrocarbons (PAH)	µg/L	0.5	<0.5	<0.5	0	<0.5	-	-	<0.5	<0.5	0	<0.5	<1	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (> 20 x EQL))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Prepared by:
Checked by:

Project: Surface Water Monitoring 2023
Client: ReDirect Recycling
Site Address: 24 Davis Road, Wetherill Park NSW

Table D3: Blank Analytical Results

		Field ID	QC301	QC302	QC401	QC502
		Date	08/02/2023	14/08/2023	06/02/2023	01/08/2023
		Sample Type	Rinsate	Rinsate	Trip Blank	Trip Blank
		Lab Report No.	ES2304011	ES2327328	ES2304011	ES2327328
	Unit	EQL				
Inorganics						
Total Oxidised Nitrogen (as N)	mg/L	0.01	<0.01	-	-	-
Total Kjeldahl Nitrogen	mg/L	0.1	<0.1	-	-	-
Total Nitrogen (as N)	mg/L	0.1	<0.1	-	-	-
Phosphorus (as P)	mg/L	0.01	<0.01	-	-	-
Metals						
Arsenic (filtered)	mg/L	0.001	<0.001	<0.001	-	-
Cadmium (filtered)	mg/L	0.0001	<0.0001	<0.0001	-	-
Chromium (filtered)	mg/L	0.001	<0.001	<0.001	-	-
Copper (filtered)	mg/L	0.001	<0.001	<0.001	-	-
Iron (filtered)	mg/L	0.05	<0.05	<0.05	-	-
Lead (filtered)	mg/L	0.001	<0.001	<0.001	-	-
Manganese (filtered)	mg/L	0.001	<0.01	0.038	-	-
Mercury (filtered)	mg/L	0.0001	<0.0001	<0.0001	-	-
Nickel (filtered)	mg/L	0.001	<0.001	<0.001	-	-
Zinc (filtered)	mg/L	0.005	<0.005	<0.005	-	-
BTEX						
Benzene	µg/L	1	<1	<1	<1	<1
Toluene	µg/L	2	<2	<2	<2	<2
Ethylbenzene	µg/L	2	<2	<2	<2	<2
Xylene (m & p)	µg/L	2	<2	<2	<2	<2
Xylene (o)	µg/L	2	<2	<2	<2	<2
Total Xylene	µg/L	2	<2	<2	<2	<2
Total BTEX	µg/L	1	<1	<1	<1	<1
Total Petroleum Hydrocarbons						
C6-C9 Fraction	µg/L	20	<20	<20	<20	<20
C10-C14 Fraction	µg/L	50	<50	<50	-	-
C15-C28 Fraction	µg/L	100	<100	<100	-	-
C29-C36 Fraction	µg/L	50	<50	<50	-	-
C10-C36 Fraction (Sum)	µg/L	50	<50	<50	-	-
Total Recoverable Hydrocarbons						
C6-C10 Fraction	µg/L	20	<20	<20	<20	<20
C6-C10 Fraction minus BTEX (F1)	µg/L	20	<20	<20	<20	<20
>C10-C16 Fraction	µg/L	100	<100	<100	-	-
>C10-C16 Fraction minus naphthalene (F2)	µg/L	100	<100	<100	-	-
>C16-C34 Fraction	µg/L	100	<100	<100	-	-
>C34-C40 Fraction	µg/L	100	<100	<100	-	-
>C10-C40 Fraction (Sum)	µg/L	100	<100	<100	-	-
PAHs						
Acenaphthene	µg/L	1	<1.0	<1.0	-	-
Acenaphthylene	µg/L	1	<1.0	<1.0	-	-
Anthracene	µg/L	1	<1.0	<1.0	-	-
Benz(a)anthracene	µg/L	1	<1.0	<1.0	-	-
Benzo(a)pyrene	µg/L	0.5	<0.5	<0.5	-	-
Benzo(b+j)fluoranthene	µg/L	1	<1.0	<1.0	-	-
Benzo(g,h,i)perylene	µg/L	1	<1.0	<1.0	-	-
Benzo(k)fluoranthene	µg/L	1	<1.0	<1.0	-	-
Chrysene	µg/L	1	<1.0	<1.0	-	-
Dibenz(a,h)anthracene	µg/L	1	<1.0	<1.0	-	-
Fluoranthene	µg/L	1	<1.0	<1.0	-	-
Fluorene	µg/L	1	<1.0	<1.0	-	-
Indeno(1,2,3-c,d)pyrene	µg/L	1	<1.0	<1.0	-	-
Naphthalene	µg/L	1	<1.0	<1.0	<5	<5
Phenanthrene	µg/L	1	<1.0	<1.0	-	-
Pyrene	µg/L	1	<1.0	<1.0	-	-
Benzo(a)pyrene TEQ (Zero)	µg/L	0.5	<0.5	<0.5	-	-
Sum of Polycyclic aromatic hydrocarbons (PAH)	µg/L	0.5	<0.5	<0.5	-	-

Prepared by:
Checked by:

Project: Surface Water Monitoring
Client: ReDirect Recycling
Site Address: 24 Davis Road, Wetherill Park NSW

Table D4: Trip Spike Analytical Results

		Field ID	QC501	TSC	% Recovery	QC402	TSC
		Date	6/02/2023				
		Sample Type	Trip Spike			Trip Spike	
		Lab Report No.	ES2304011				
	Unit	EQL					
BTEXN							
Benzene	µg/L	1	16	20	80	16	20
Toluene	µg/L	2	15	20	75	16	20
Ethylbenzene	µg/L	2	14	20	70	17	20
Xylene (m & p)	µg/L	2	15	20	75	18	20
Xylene (o)	µg/L	2	15	20	75	19	20
Total Xylene	µg/L	2	30	40	75	37	40
Total BTEX	µg/L	1	75	100	75	86	100
Naphthalene	µg/L	1	15	20	75	17	20

Prepared by:
Checked by:

Appendix E: Laboratory Reports

Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address:
Contact: Sample Receipt
Phone:

Job Number:	S20102	Purchase Order:	
Project Name:	Wetherill Park WME	Quote No:	EN/103/21
Sampled By:	Bec Chapple	Turn Around Time:	Standard 7 Days
Project Manager:	Emma Walsh	Page:	1 of 1
Email Report To:	Bec.Chapple@senversa.com.au; Emma.Walsh@senversa.com.au	Phone/Mobile:	0408038593, 0404011544

Environmental Division Sydney
Work Order Reference
ES2304011

Telephone : +61-2-8784 8555

Lab ID	Sample ID	Matrix *	Date	Time	Container Information: Type / Code	Total Bottles	W-18 (TRH/BTEXN)	W-26 (TRH/BTEX/PAH/8 METALS)	W-27 (TRH/BTEX/PAH/8 METALS/ PHENOLS)	NT-14 (CATIONS, ANIONS AND NUTRIENTS)	NT-11 (TN, TP)	EA015H (TDS)	EA025H (TSS)	EG005F (FE AND MN)			HOLD	Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.
1	QC401	W	8/02/2023	AM	VOA	1	X											
2	QC501	W	8/02/2023	AM	VOA	1	X											
3	QC301	W	8/02/2023	AM	VS x2, N, UA, VSA	5		X			X			X				
4	MW1	W	8/02/2023	AM	P, VS x2, N, UA, VSA	6			X	X				X				
5	MW2	W	8/02/2023	AM	P, VS x2, N, UA, VSA	6			X	X				X				
6	MW3	W	8/02/2023	AM	P, VS x2, N, UA, VSA	6			X	X				X				
7	MW4	W	8/02/2023	AM	P, VS x2, N, UA, VSA	6			X	X				X				
8	MW6	W	8/02/2023	AM	P, VS x2, N, UA, VSA	6			X	X				X				
9	QC101	W	8/02/2023	AM	VS x2, N, UA. VSA	5		X			X			X				
K	QC201	W	8/02/2023	AM	VS x2, N, UA, VSA	5												Please forward to Envirolab
Total						47												

HT

Analysis Required

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Bec Chapple

Signature:

Date: 8/02/2023

Relinquished By:			Method of Shipment (if applicable):	Received by:	
Name/Signature:	Bec Chapple	Date: 8/2/23	Carrier / Reference #:	Name/Signature:	Date: 8/2/23
Of:		Time: 12:00 PM	Date/Time:	Of:	Time: 12:29
Name/Signature:		Date:	Carrier / Reference #:	Name/Signature:	Date:
Of:		Time:	Date/Time:	Of:	Time:
Name/Signature:		Date:	Carrier / Reference #:	Name/Signature:	Date:
Of:		Time:	Date/Time:	Of:	Time:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid (HNO_3) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2304011**	Page	: 1 of 11
Client	: **SENVERSA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA WALSH	Contact	: Helen Simpson
Address	: Level 24, 1 Market St, Sydney NSW 2000 SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 8252 0000	Telephone	: +61 2 8784 8555
Project	: S20102 Wetherill Park WME	Date Samples Received	: 08-Feb-2023 12:20
Order number	: ----	Date Analysis Commenced	: 08-Feb-2023
C-O-C number	: ----	Issue Date	: 14-Feb-2023 17:19
Sampler	: Bec Chapple		
Site	: ----		
Quote number	: SY/103/22		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
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General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EK067G: LOR raised for Total P on sample 4 due to sample matrix.
- EK059G: LOR raised for NOx on sample 4 due to sample matrix.
- EK058G: LOR raised for Nitrate on sample 4 due to sample matrix.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- EG020: LORs have been raised for some samples due to matrix interference (High sample salinity)
- EK057G: LOR raised for Nitrite due to sample matrix
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEXN compounds spiked at 20 ug/L.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC401	QC501	QC301	MW1	MW2
			Sampling date / time	06-Feb-2023 00:00	06-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00
Compound	CAS Number	LOR	Unit	ES2304011-001	ES2304011-002	ES2304011-003	ES2304011-004	ES2304011-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	7.74	7.70
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	----	----	----	30.4	31.6
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	25800	25700
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	----	----	----	16800	16700
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	----	----	----	4020	3980
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	916	815
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	916	815
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	691	756
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	8840	8800
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	273	232
Magnesium	7439-95-4	1	mg/L	----	----	----	810	826
Sodium	7440-23-5	1	mg/L	----	----	----	4430	4590
Potassium	7440-09-7	1	mg/L	----	----	----	25	21
EG005(ED093)F: Dissolved Metals by ICP-AES								
Iron	7439-89-6	0.05	mg/L	----	----	<0.05	4.97	0.40
Manganese	7439-96-5	0.01	mg/L	----	----	<0.01	0.92	0.96
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	0.011	0.004
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	----	----	<0.001	0.015	0.011
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	0.023	0.006

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC401	QC501	QC301	MW1	MW2
				Sampling date / time	06-Feb-2023 00:00	06-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00
Compound	CAS Number	LOR	Unit		ES2304011-001	ES2304011-002	ES2304011-003	ES2304011-004	ES2304011-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued									
Zinc	7440-66-6	0.005	mg/L		----	----	<0.005	**0.012**	**0.008**
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	----	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	----	----	**0.8**	**0.7**
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		----	----	----	**0.71**	**0.52**
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		----	----	----	<0.10	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		----	----	----	<0.10	**0.03**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		----	----	<0.01	<0.10	**0.03**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		----	----	<0.1	**0.9**	**1.0**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ **Total Nitrogen as N**	----	0.1	mg/L		----	----	<0.1	**0.9**	**1.0**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		----	----	<0.01	<0.05	**0.06**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		----	----	----	<0.01	**0.02**
EN055: Ionic Balance									
ø **Total Anions**	----	0.01	meq/L		----	----	----	**282**	**280**
ø **Total Cations**	----	0.01	meq/L		----	----	----	**274**	**280**
ø **Ionic Balance**	----	0.01	%		----	----	----	**1.52**	**0.09**
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		----	----	----	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L		----	----	----	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L		----	----	----	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		----	----	----	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L		----	----	----	<1.0	<1.0
2.4-Dimethylphenol	105-67-9	1.0	µg/L		----	----	----	<1.0	<1.0
2.4-Dichlorophenol	120-83-2	1.0	µg/L		----	----	----	<1.0	<1.0

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC401	QC501	QC301	MW1	MW2
				Sampling date / time	06-Feb-2023 00:00	06-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00
Compound	CAS Number	LOR	Unit		ES2304011-001	ES2304011-002	ES2304011-003	ES2304011-004	ES2304011-005
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
2.6-Dichlorophenol	87-65-0	1.0	µg/L		----	----	----	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		----	----	----	<1.0	<1.0
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		----	----	----	<1.0	<1.0
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		----	----	----	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L		----	----	----	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		----	----	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		----	----	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		----	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		----	----	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		----	----	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		----	----	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		----	----	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	----	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	<20	<20	<20

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	QC401	QC501	QC301	MW1	MW2
				Sampling date / time	06-Feb-2023 00:00	06-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00
					ES2304011-001	ES2304011-002	ES2304011-003	ES2304011-004	ES2304011-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	100	µg/L		----	----	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		----	----	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		----	----	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		----	----	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		----	----	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	**16**	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	**15**	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	**14**	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	**15**	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	**15**	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L		<2	**30**	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L		<1	**75**	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	**17**	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	----	**28.1**	**31.6**	**30.2**
2-Chlorophenol-D4	93951-73-6	1.0	%		----	----	**58.8**	**62.4**	**60.6**
2.4.6-Tribromophenol	118-79-6	1.0	%		----	----	**60.4**	**70.1**	**71.9**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	----	**69.7**	**68.8**	**73.0**
Anthracene-d10	1719-06-8	1.0	%		----	----	**94.2**	**98.3**	**93.6**
4-Terphenyl-d14	1718-51-0	1.0	%		----	----	**80.2**	**85.6**	**80.2**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**99.7**	**97.1**	**89.9**	**96.8**	**100**
Toluene-D8	2037-26-5	2	%		**99.4**	**98.2**	**94.5**	**99.5**	**98.4**
4-Bromofluorobenzene	460-00-4	2	%		**97.7**	**94.7**	**88.7**	**96.6**	**96.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	MW3	MW4	MW6	QC101	----
			Sampling date / time	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2304011-006	ES2304011-007	ES2304011-008	ES2304011-009	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.09**	**7.72**	**8.06**	----	----
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	**37.8**	**21.4**	**6.70**	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**34200**	**19900**	**2310**	----	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	**22200**	**12900**	**1500**	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	**4730**	**3980**	**586**	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**222**	**1110**	**834**	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**222**	**1110**	**834**	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**907**	**280**	**44**	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**11900**	**6680**	**341**	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**181**	**299**	**50**	----	----
Magnesium	7439-95-4	1	mg/L	**1040**	**786**	**112**	----	----
Sodium	7440-23-5	1	mg/L	**5980**	**3100**	**373**	----	----
Potassium	7440-09-7	1	mg/L	**14**	**35**	**6**	----	----
EG005(ED093)F: Dissolved Metals by ICP-AES								
Iron	7439-89-6	0.05	mg/L	**5.05**	**1.22**	<0.05	**5.15**	----
Manganese	7439-96-5	0.01	mg/L	**5.99**	**5.45**	**0.04**	**6.15**	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.010	**0.005**	<0.001	<0.010	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0001	<0.0001	<0.0010	----
Chromium	7440-47-3	0.001	mg/L	<0.010	<0.001	<0.001	<0.010	----
Copper	7440-50-8	0.001	mg/L	<0.010	**0.005**	**0.003**	<0.010	----
Lead	7439-92-1	0.001	mg/L	<0.010	<0.001	<0.001	<0.010	----
Nickel	7440-02-0	0.001	mg/L	**0.191**	**0.021**	<0.001	**0.167**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	MW3	MW4	MW6	QC101	----
			Sampling date / time	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2304011-006	ES2304011-007	ES2304011-008	ES2304011-009	--------
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	**0.225**	<0.005	<0.005	**0.196**	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**1.2**	**1.6**	**1.8**	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.22**	**0.34**	**0.02**	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	**0.25**	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	**0.01**	**1.00**	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	**0.01**	**1.25**	**0.02**	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.0**	**1.1**	**0.4**	**1.3**	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ **Total Nitrogen as N**	----	0.1	mg/L	**1.0**	**1.1**	**1.6**	**1.3**	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.12**	**0.09**	**0.09**	**0.10**	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EN055: Ionic Balance								
ø **Total Anions**	----	0.01	meq/L	**359**	**216**	**27.2**	----	----
ø **Total Cations**	----	0.01	meq/L	**355**	**215**	**28.1**	----	----
ø **Ionic Balance**	----	0.01	%	**0.55**	**0.25**	**1.61**	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	MW3	MW4	MW6	QC101	----
			Sampling date / time	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	----
Compound	CAS Number	LOR	Unit	ES2304011-006	ES2304011-007	ES2304011-008	ES2304011-009	--------
				Result	Result	Result	Result	----
EP075(SIM)A: Phenolic Compounds - Continued								
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	MW3	MW4	MW6	QC101	----
				Sampling date / time	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	08-Feb-2023 00:00	----
Compound	CAS Number	LOR	Unit		ES2304011-006	ES2304011-007	ES2304011-008	ES2304011-009	--------
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	----	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**32.6**	**29.6**	**31.5**	**27.0**	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**62.2**	**60.2**	**63.8**	**52.4**	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**84.6**	**78.9**	**70.0**	**62.2**	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		**77.8**	**77.0**	**81.0**	**66.8**	----
Anthracene-d10	1719-06-8	1.0	%		**109**	**102**	**104**	**84.4**	----
4-Terphenyl-d14	1718-51-0	1.0	%		**94.4**	**88.4**	**87.4**	**70.8**	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**99.0**	**102**	**95.4**	**98.2**	----
Toluene-D8	2037-26-5	2	%		**104**	**100.0**	**95.8**	**101**	----
4-Bromofluorobenzene	460-00-4	2	%		**98.9**	**95.0**	**92.1**	**95.6**	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2304011**	Page	: 1 of 11
Client	: **SENVERSA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA WALSH	Telephone	: +61 2 8784 8555
Project	: S20102 Wetherill Park WME	Date Samples Received	: 08-Feb-2023
Site	: ----	Issue Date	: 14-Feb-2023
Sampler	: Bec Chapple	No. of samples received	: 9
Order number	: ----	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005(ED093)F: Dissolved Metals by ICP-AES	ES2304011--007	MW4	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK057G: Nitrite as N by Discrete Analyser	ES2303855--001	Anonymous	**Nitrite as N**	14797-65-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	7	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	7	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Dissolved Metals by ICP-AES	1	24	4.17	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	7	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	7	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container* / Client Sample ID(s)	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	08-Feb-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA006: Sodium Adsorption Ratio (SAR)							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	08-Mar-2023	✓
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	08-Mar-2023	✓
EA065: Total Hardness as CaCO3							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	08-Mar-2023	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	22-Feb-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	08-Mar-2023	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	08-Mar-2023	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	08-Mar-2023	✓
EG005(ED093)F: Dissolved Metals by ICP-AES							
Clear Plastic Bottle - Nitric Acid; Filtered (EG005F)							
QC301, MW1, MW2, MW3, MW4, MW6, QC101	**08-Feb-2023**	**----**	----	----	**09-Feb-2023**	07-Aug-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
QC301, MW1, MW2, MW3, MW4, MW6, QC101	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	07-Aug-2023	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
QC301, MW1, MW2, MW3, MW4, MW6, QC101	**08-Feb-2023**	**----**	----	----	**09-Feb-2023**	08-Mar-2023	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	08-Mar-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**13-Feb-2023**	08-Mar-2023	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	10-Feb-2023	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
QC301, MW1, MW2, MW3, MW4, MW6, QC101	**08-Feb-2023**	**----**	----	----	**13-Feb-2023**	08-Mar-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
MW6	**08-Feb-2023**	**09-Feb-2023**	08-Mar-2023	✓	**09-Feb-2023**	08-Mar-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
QC301, MW1, MW2, MW3, MW4	**08-Feb-2023**	**09-Feb-2023**	08-Mar-2023	✓	**10-Feb-2023**	08-Mar-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
QC101	**08-Feb-2023**	**10-Feb-2023**	08-Mar-2023	✓	**11-Feb-2023**	08-Mar-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
QC301, MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**09-Feb-2023**	08-Mar-2023	✓	**10-Feb-2023**	08-Mar-2023	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
QC101	**08-Feb-2023**	**10-Feb-2023**	08-Mar-2023	✓	**11-Feb-2023**	08-Mar-2023	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G)							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**----**	----	----	**08-Feb-2023**	10-Feb-2023	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
MW1, MW2, MW3, MW4, MW6	**08-Feb-2023**	**10-Feb-2023**	15-Feb-2023	✓	**13-Feb-2023**	22-Mar-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
QC301, MW1, MW2, MW3, MW4, MW6, QC101	**08-Feb-2023**	**10-Feb-2023**	15-Feb-2023	✓	**13-Feb-2023**	22-Mar-2023	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
QC301, MW1, MW2, MW3, MW4, MW6, QC101	**08-Feb-2023**	**10-Feb-2023**	15-Feb-2023	✓	**13-Feb-2023**	22-Mar-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC401	**06-Feb-2023**	**09-Feb-2023**	20-Feb-2023	✓	**09-Feb-2023**	20-Feb-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC301, MW1, MW2, MW3, MW4, MW6, QC101	**08-Feb-2023**	**09-Feb-2023**	22-Feb-2023	✓	**09-Feb-2023**	22-Feb-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
QC301, MW1, MW2, MW3, MW4, MW6, QC101	**08-Feb-2023**	**10-Feb-2023**	15-Feb-2023	✓	**13-Feb-2023**	22-Mar-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC401	**06-Feb-2023**	**09-Feb-2023**	20-Feb-2023	✓	**09-Feb-2023**	20-Feb-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC301, MW1, MW2, MW3, MW4, MW6, QC101	**08-Feb-2023**	**09-Feb-2023**	22-Feb-2023	✓	**09-Feb-2023**	22-Feb-2023	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
QC401, QC501	**06-Feb-2023**	**09-Feb-2023**	20-Feb-2023	✓	**09-Feb-2023**	20-Feb-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC301, MW1, MW2, MW3, MW4, MW6, QC101	**08-Feb-2023**	**09-Feb-2023**	22-Feb-2023	✓	**09-Feb-2023**	22-Feb-2023	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	3	21	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	5	43	**11.63**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-AES	EG005F	3	24	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	23	**13.04**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	34	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	7	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	4	23	**17.39**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	7	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	43	**9.30**	**8.33**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-AES	EG005F	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	3	34	**8.82**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	8	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	6	22	**27.27**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus as P By Discrete Analyser	EK067G	6	23	**26.09**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	43	**2.33**	**1.67**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-AES	EG005F	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	3	34	**8.82**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-AES	EG005F	1	24	**4.17**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by Auto Titrator	EK040P	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	3	34	**8.82**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	7	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	7	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Calculated TDS (from Electrical Conductivity)	EA016	WATER	In house: Calculation from Electrical Conductivity (APHA 2510 B) using a conversion factor specified in the analytical report. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-AES	EG005F	WATER	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. The ICPAES technique ionises the 0.45µm filtered samples, emitting a characteristic spectrum which is compared against matrix matched standards. This method is compliant with NEPM Schedule B(3).
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Fluoride by Auto Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2304011**	Page	: 1 of 11
Client	: **SENVERSA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA WALSH	Contact	: Helen Simpson
Address	: Level 24, 1 Market St, Sydney NSW 2000 SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 8252 0000	Telephone	: +61 2 8784 8555
Project	: S20102 Wetherill Park WME	Date Samples Received	: 08-Feb-2023
Order number	: ----	Date Analysis Commenced	: 08-Feb-2023
C-O-C number	: ----	Issue Date	: 14-Feb-2023
Sampler	: Bec Chapple		
Site	: ----		
Quote number	: SY/103/22		
No. of samples received	: 9		
No. of samples analysed	: 9		

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Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)F: Dissolved Metals by ICP-AES (QC Lot: 4859853)									
ES2303873-004	Anonymous	EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	0.04	115	No Limit
		EG005F: Iron	7439-89-6	0.05	mg/L	0.10	0.10	0.0	No Limit
ES2303873-014	Anonymous	EG005F: Manganese	7439-96-5	0.01	mg/L	0.28	0.30	4.1	0% - 20%
EG005(ED093)F: Dissolved Metals by ICP-AES (QC Lot: 4859854)									
ES2304011-006	MW3	EG005F: Manganese	7439-96-5	0.01	mg/L	5.99	6.28	4.6	0% - 20%
		EG005F: Iron	7439-89-6	0.05	mg/L	5.05	5.29	4.7	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 4859914)									
ES2303998-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.25	8.21	0.5	0% - 20%
ES2304011-007	MW4	EA005-P: pH Value	----	0.01	pH Unit	7.72	7.73	0.1	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 4859910)									
ES2303998-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	488	486	0.4	0% - 20%
ES2303799-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1240	1230	0.6	0% - 20%
ES2303915-029	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	112	111	1.0	0% - 20%
ES2303915-015	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3	3	0.0	No Limit
ES2304011-007	MW4	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	19900	19800	0.4	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 4859913)									
ES2303934-009	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	14	13	10.4	0% - 50%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	14	13	10.4	0% - 50%
ES2304011-007	MW4	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	1110	927	17.7	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
ED037P: Alkalinity by PC Titrator (QC Lot: 4859913) - continued									
ES2304011-007	MW4	ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	1110	927	17.7	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 4860151)									
ES2304009-005	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	10	10	0.0	0% - 50%
ED045G: Chloride by Discrete Analyser (QC Lot: 4860150)									
ES2304029-010	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	13	13	0.0	0% - 50%
ES2304009-005	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	5	5	0.0	No Limit
ED093F: Dissolved Major Cations (QC Lot: 4859850)									
ES2303873-013	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	30	30	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	41	40	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	493	482	2.1	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	38	38	0.0	0% - 20%
ES2303640-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	248	252	1.3	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	66	66	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	1	1	0.0	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	8	8	0.0	No Limit
ED093F: Dissolved Major Cations (QC Lot: 4859855)									
ES2304011-008	MW6	ED093F: Calcium	7440-70-2	1	mg/L	50	48	3.3	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	112	111	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	373	389	4.2	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	6	5	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 4859851)									
ES2303640-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.538	0.546	1.6	0% - 20%
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.034	0.034	0.0	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	782	786	0.5	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	2.72	2.74	0.7	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	2.03	2.04	0.7	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	134	129	3.5	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 4859849)									
ES2304011-004	MW1	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 4859908)									
ES2303799-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	<0.1	0.0	No Limit
ES2304011-007	MW4	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.6	1.6	0.0	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 4861210)									
ES2303838-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.01	0.0	No Limit
ES2303866-007	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.07	0.02	93.9	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 4861212)									
ES2304011-008	MW6	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 4860146)									
ES2303855-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	4.04	4.01	0.9	0% - 20%
EW2300593-011	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 4861209)									
ES2303838-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.61	0.61	0.0	0% - 20%
ES2303866-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 4861211)									
ES2304011-008	MW6	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	1.25	1.18	6.0	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 4864095)									
ME2300270-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.02	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 4861208)									
ES2304011-003	QC301	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 4864092)									
ES2303697-005	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.7	4.6	2.7	0% - 20%
EW2300556-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	232	246	5.7	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 4861207)									
ES2303955-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	296	316	6.4	0% - 20%
ES2304011-003	QC301	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.03	101	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 4864091)									
ES2303697-005	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.46	0.44	4.7	0% - 20%
EW2300556-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	37.0	37.9	2.6	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 4860147)									
ES2303957-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2304009-005	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 4860152)									
ES2304011-008	MW6	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.02	67.3	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4860105)									
ES2303866-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2304011-003	QC301	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4860105)									
ES2303866-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2304011-003	QC301	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 4860105)									
ES2303866-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 4860105) - continued									
ES2303866-001	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2304011-003	QC301	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 4859853)								
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	93.5	82.0	114
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	0.1 mg/L	100	81.0	113
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 4859854)								
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	97.0	82.0	114
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	0.1 mg/L	98.2	81.0	113
EA005P: pH by PC Titrator (QCLot: 4859914)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	100	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 4859910)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	93.5	89.9	110
				<1	2100 µS/cm	101	90.2	111
ED037P: Alkalinity by PC Titrator (QCLot: 4859913)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	92.9	81.0	111
				----	50 mg/L	111	80.0	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 4860151)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	108	82.0	122
				<1	500 mg/L	107	82.0	122
ED045G: Chloride by Discrete Analyser (QCLot: 4860150)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	50 mg/L	105	80.9	127
				<1	1000 mg/L	100	80.9	127
ED093F: Dissolved Major Cations (QCLot: 4859850)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.3	80.0	114
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	102	90.0	116
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	105	82.0	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	104	85.0	113
ED093F: Dissolved Major Cations (QCLot: 4859855)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.2	80.0	114
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	104	90.0	116
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	112	82.0	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	104	85.0	113
EG020F: Dissolved Metals by ICP-MS (QCLot: 4859851)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.9	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.6	84.0	110

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 4859851) - continued								
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.0	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.7	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.2	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.0	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.4	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 4859849)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.6	83.0	105
EK040P: Fluoride by PC Titrator (QCLot: 4859908)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	96.4	82.0	116
EK055G: Ammonia as N by Discrete Analyser (QCLot: 4861210)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	110	90.0	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 4861212)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	110	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 4860146)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	98.4	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4861209)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	91.0	113
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4861211)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4864095)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	95.9	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4861208)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	97.9	69.0	101
				<0.1	1 mg/L	105	70.0	118
				<0.1	5 mg/L	105	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4864092)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	100	69.0	101
				<0.1	1 mg/L	101	70.0	118
				<0.1	5 mg/L	104	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4861207)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	97.7	71.3	126
				<0.01	0.442 mg/L	96.4	71.3	126
				<0.01	1 mg/L	98.7	71.3	126
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4864091)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	92.7	71.3	126
				<0.01	0.442 mg/L	95.2	71.3	126
				<0.01	1 mg/L	99.5	71.3	126

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 4860147)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	98.8	85.0	117
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 4860152)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	100.0	85.0	117
EP075(SIM)A: Phenolic Compounds (QCLot: 4859814)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	30.5	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	61.4	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	55.1	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	51.2	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	67.1	48.0	100
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	49.3	49.0	99.0
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	68.7	53.0	105
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	68.7	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	64.3	53.0	99.0
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	71.6	50.0	106
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	70.2	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	84.8	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4859814)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	69.4	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	71.4	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	71.4	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	74.4	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	100	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	94.9	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	100	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	101	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	80.2	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	84.4	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	91.4	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	72.8	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	79.4	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	81.2	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	81.6	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	81.4	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4859815)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	84.4	53.7	97.0
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	78.0	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	91.6	58.3	120

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4860105)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	98.9	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4859815)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	83.4	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	80.3	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	93.6	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4860105)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	101	75.0	127
EP080: BTEXN (QCLot: 4860105)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	107	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	108	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	109	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	104	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	106	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	109	70.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 4859854)							
ES2304011-007	MW4	EG005F: Manganese	7439-96-5	1 mg/L	# Not Determined	70.0	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 4860151)							
ES2304009-005	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	117	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 4860150)							
ES2304009-005	Anonymous	ED045G: Chloride	16887-00-6	50 mg/L	107	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 4859851)							
ES2304011-005	MW2	EG020A-F: Arsenic	7440-38-2	1 mg/L	108	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	92.8	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	93.8	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	101	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	107	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	101	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 4859851) - continued							
ES2304011-005	MW2	EG020A-F: Zinc	7440-66-6	1 mg/L	95.7	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 4859849)							
ES2304011-003	QC301	EG035F: Mercury	7439-97-6	0.01 mg/L	96.4	70.0	130
EK040P: Fluoride by PC Titrator (QCLot: 4859908)							
ES2303799-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	93.2	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 4861210)							
ES2303838-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	118	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 4861212)							
ES2304011-008	MW6	EK055G: Ammonia as N	7664-41-7	1 mg/L	109	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 4860146)							
ES2303855-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	# Not Determined	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4861209)							
ES2303838-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	117	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4861211)							
ES2304011-008	MW6	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	93.2	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4864095)							
ME2300270-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	99.6	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4861208)							
ES2304011-004	MW1	EK061G: Total Kjeldahl Nitrogen as N	----	25 mg/L	101	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4864092)							
ES2304009-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	100	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4861207)							
ES2304011-004	MW1	EK067G: Total Phosphorus as P	----	5 mg/L	99.5	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4864091)							
ES2304009-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	95.6	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 4860147)							
ES2303957-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	93.3	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 4860152)							
ES2304011-008	MW6	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	98.1	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4860105)							
ES2303866-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	80.0	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4860105)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4860105) - continued							
ES2303866-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	81.9	70.0	130
EP080: BTEXN (QCLot: 4860105)							
ES2303866-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	81.6	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	83.9	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	87.4	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	82.4	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	86.5	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	87.2	70.0	130

Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address:
Contact: Sample Receipt
Phone:

Job Number:	S20102	Purchase Order:	
Project Name:	Wetherill Park WME	Quote No:	EN/103/21
Sampled By:	Bec Chapple	Turn Around Time:	Standard 7 Days
Project Manager:	Emma Walsh	Page:	1 of 1
Email Report To:	Bec.Chapple@senversa.com.au; Emma.Walsh@senversa.com.au	Phone/Mobile:	0408038593, 0404011544

Sample Information					Container Information		Analysis Required												
Lab ID	Sample ID	Matrix *	Date	Time	Type / Code	Total Bottles	W-27 (TRH/BTEX/PAH/8 METALS/ PHENOLS)	NT-11 (TN, TP)	EA015H (TDS)	EA025H (TSS)	EG005F (FE AND MN)						HOLD	Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.
1	SW1	W	10/02/2023	AM		6	X	X	X	X	X							
2	SW2	W	10/02/2023	AM		6	X	X	X	X	X							
Total						12												

Environmental Division
Sydney
Work Order Reference
ES2304342

Telephone : +61-2-8784 8555

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:	Sampler Name: Bec Chapple	Signature:	Date: 10/02/2023

Relinquished By:			Method of Shipment (if applicable):	Received by:	
Name/Signature:	Bec Chapple	Date: 10/2/23	Carrier / Reference #:	Name/Signature: TAD.	Date: 10/2/23
Of:		Time: 9:15 AM	Date/Time:	Of:	Time:
Name/Signature:		Date:	Carrier / Reference #:	Name/Signature:	Date: 10 Feb
Of:		Time:	Date/Time:	Of:	Time:
Name/Signature:		Date:	Carrier / Reference #:	Name/Signature:	Date:
Of:		Time:	Date/Time:	Of:	Time:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid (HNO_3) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2304342**	Page	: 1 of 6
Client	: **SENVERSA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA WALSH	Contact	: Khaleda Ataei
Address	: Level 24, 1 Market St, Sydney NSW 2000 SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 8252 0000	Telephone	: + 61 2 8784 8555
Project	: S20102 Wetherill Park WME	Date Samples Received	: 10-Feb-2023 10:30
Order number	: ----	Date Analysis Commenced	: 13-Feb-2023
C-O-C number	: ----	Issue Date	: 16-Feb-2023 16:15
Sampler	: BEC CHAPPLE		
Site	: ----		
Quote number	: EN/103/21		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	SW1	sw2	----	----	----
			Sampling date / time	10-Feb-2023 00:00	10-Feb-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2304342-001	ES2304342-002	--------	--------	--------
				Result	Result	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**240**	**352**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**86**	**69**	----	----	----
EG005(ED093)F: Dissolved Metals by ICP-AES								
Iron	7439-89-6	0.05	mg/L	**0.06**	**0.06**	----	----	----
Manganese	7439-96-5	0.01	mg/L	**0.01**	<0.01	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.001**	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.002**	**0.002**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.006**	**0.003**	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	**0.001**	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.36**	**0.50**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.3**	**1.0**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.7**	**1.5**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.06**	**0.19**	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW1	sw2	----	----	----
				Sampling date / time	10-Feb-2023 00:00	10-Feb-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2304342-001	ES2304342-002	--------	--------	--------
					Result	Result	----	----	----
EP075(SIM)A: Phenolic Compounds - Continued									
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	<1.0	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW1	sw2	----	----	----
				Sampling date / time	10-Feb-2023 00:00	10-Feb-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2304342-001	ES2304342-002	--------	--------	--------
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**30.1**	**26.2**	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**59.0**	**53.2**	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**55.7**	**58.8**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		**65.1**	**62.5**	----	----	----
Anthracene-d10	1719-06-8	1.0	%		**74.7**	**79.4**	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		**68.6**	**85.7**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**132**	**117**	----	----	----
Toluene-D8	2037-26-5	2	%		**124**	**113**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**120**	**106**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2304342**	Page	: 1 of 7
Client	: **SENVERSA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA WALSH	Telephone	: + 61 2 8784 8555
Project	: S20102 Wetherill Park WME	Date Samples Received	: 10-Feb-2023
Site	: ----	Issue Date	: 16-Feb-2023
Sampler	: BEC CHAPPLE	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
SW1, sw2	**10-Feb-2023**	**----**	----	----	**14-Feb-2023**	17-Feb-2023	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
SW1, sw2	**10-Feb-2023**	**----**	----	----	**14-Feb-2023**	17-Feb-2023	✓
EG005(ED093)F: Dissolved Metals by ICP-AES							
Clear Plastic Bottle - Nitric Acid; Filtered (EG005F)							
SW1, sw2	**10-Feb-2023**	**----**	----	----	**16-Feb-2023**	09-Aug-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
SW1, sw2	**10-Feb-2023**	**----**	----	----	**15-Feb-2023**	09-Aug-2023	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
SW1, sw2	**10-Feb-2023**	**----**	----	----	**16-Feb-2023**	10-Mar-2023	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
SW1, sw2	**10-Feb-2023**	**----**	----	----	**15-Feb-2023**	10-Mar-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
SW1, sw2	**10-Feb-2023**	**14-Feb-2023**	10-Mar-2023	✓	**15-Feb-2023**	10-Mar-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
SW1, sw2	**10-Feb-2023**	**14-Feb-2023**	10-Mar-2023	✓	**15-Feb-2023**	10-Mar-2023	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
SW1, sw2	**10-Feb-2023**	**13-Feb-2023**	17-Feb-2023	✓	**14-Feb-2023**	25-Mar-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
SW1, sw2	**10-Feb-2023**	**13-Feb-2023**	17-Feb-2023	✓	**14-Feb-2023**	25-Mar-2023	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
SW1, sw2	**10-Feb-2023**	**13-Feb-2023**	17-Feb-2023	✓	**14-Feb-2023**	25-Mar-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
SW1	**10-Feb-2023**	**14-Feb-2023**	24-Feb-2023	✓	**14-Feb-2023**	24-Feb-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
sw2	**10-Feb-2023**	**14-Feb-2023**	24-Feb-2023	✓	**15-Feb-2023**	24-Feb-2023	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
SW1, sw2	**10-Feb-2023**	**13-Feb-2023**	17-Feb-2023	✓	**14-Feb-2023**	25-Mar-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
SW1	**10-Feb-2023**	**14-Feb-2023**	24-Feb-2023	✓	**14-Feb-2023**	24-Feb-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
sw2	**10-Feb-2023**	**14-Feb-2023**	24-Feb-2023	✓	**15-Feb-2023**	24-Feb-2023	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
SW1	**10-Feb-2023**	**14-Feb-2023**	24-Feb-2023	✓	**14-Feb-2023**	24-Feb-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
sw2	**10-Feb-2023**	**14-Feb-2023**	24-Feb-2023	✓	**15-Feb-2023**	24-Feb-2023	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-AES	EG005F	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-AES	EG005F	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	17	**17.65**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	16	**18.75**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-AES	EG005F	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Dissolved Mercury by FIMS	EG035F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-AES	EG005F	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-AES	EG005F	WATER	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. The ICPAES technique ionises the 0.45µm filtered samples, emitting a characteristic spectrum which is compared against matrix matched standards. This method is compliant with NEPM Schedule B(3).
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2304342**	Page	: 1 of 7
Client	: **SENVERSA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA WALSH	Contact	: Khaleda Ataei
Address	: Level 24, 1 Market St, Sydney NSW 2000 SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 8252 0000	Telephone	: + 61 2 8784 8555
Project	: S20102 Wetherill Park WME	Date Samples Received	: 10-Feb-2023
Order number	: ----	Date Analysis Commenced	: 13-Feb-2023
C-O-C number	: ----	Issue Date	: 16-Feb-2023
Sampler	: BEC CHAPPLE		
Site	: ----		
Quote number	: EN/103/21		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)F: Dissolved Metals by ICP-AES (QC Lot: 4869828)									
ES2304342-002	sw2	EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG005F: Iron	7439-89-6	0.05	mg/L	0.06	0.06	0.0	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 4870476)									
ES2304252-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4550	4510	0.8	0% - 20%
ES2304358-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	38100000 µg/L	38800	2.0	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 4870477)									
ES2304252-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	11	14	26.3	No Limit
ES2304358-003	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	270000 µg/L	262	3.0	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 4869827)									
ES2304488-011	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ES2304342-002	sw2	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG035F: Dissolved Mercury by FIMS (QC Lot: 4869826)									
ES2304488-008	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0004	0.0004	0.0	No Limit
ES2304342-002	sw2	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 4869687)									
ES2304232-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	1.25	1.22	2.9	0% - 20%
ES2304352-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 4869684)									
ES2304342-002	sw2	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	0.8	14.3	No Limit
ES2304232-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.8	4.4	10.0	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 4869683)									
ES2304342-002	sw2	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.19	0.17	7.2	0% - 50%
ES2304232-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	3.85	3.79	1.4	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4868872)									
ES2304473-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2304473-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4868872)									
ES2304473-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2304473-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 4868872)									
ES2304473-004	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2304473-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 4869828)								
EG005F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	108	82.0	114
EG005F: Manganese	7439-96-5	0.01	mg/L	<0.01	0.1 mg/L	91.1	81.0	113
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 4870476)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	94.6	87.0	109
				<10	293 mg/L	99.5	75.2	126
				<10	2340 mg/L	102	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 4870477)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	95.3	83.0	129
				<5	1000 mg/L	96.3	82.0	110
				<5	987 mg/L	93.6	83.0	118
EG020F: Dissolved Metals by ICP-MS (QCLot: 4869827)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	89.6	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	89.5	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	88.3	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	88.4	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	90.6	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	86.8	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	88.2	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 4869826)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.2	83.0	105
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4869687)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	106	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4869684)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	96.4	69.0	101
				<0.1	1 mg/L	94.4	70.0	118
				<0.1	5 mg/L	102	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4869683)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	93.5	71.3	126
				<0.01	0.442 mg/L	90.4	71.3	126
				<0.01	1 mg/L	98.7	71.3	126
EP075(SIM)A: Phenolic Compounds (QCLot: 4866073)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	34.6	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	74.2	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	66.3	51.0	91.0

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 4866073) - continued								
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	62.1	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	72.5	48.0	100
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	67.3	49.0	99.0
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	72.9	53.0	105
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	69.2	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	71.1	53.0	99.0
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	67.4	50.0	106
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	69.7	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	43.4	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4866073)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	72.1	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	84.9	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	75.1	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	72.2	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	77.5	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	89.5	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	71.1	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	79.4	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	66.4	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	71.5	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	70.4	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	79.6	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	69.2	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	66.2	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	66.5	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	68.7	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4866074)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	57.2	53.7	97.0
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	81.3	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	87.3	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4868872)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	95.2	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4866074)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	62.9	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	87.0	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	86.2	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4868872)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4868872) - continued								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	99.3	75.0	127
EP080: BTEXN (QCLot: 4868872)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	97.8	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	87.9	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	86.4	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	83.2	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	90.0	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	96.0	70.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)F: Dissolved Metals by ICP-AES (QCLot: 4869828)							
ES2304342-001	SW1	EG005F: Manganese	7439-96-5	1 mg/L	108	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 4869827)							
ES2304488-002	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	91.9	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	93.6	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	89.0	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	91.2	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	87.3	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	90.6	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	91.3	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 4869826)							
ES2304342-001	SW1	EG035F: Mercury	7439-97-6	0.01 mg/L	89.4	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4869687)							
ES2304232-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	103	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4869684)							
ES2304233-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	82.4	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4869683)							
ES2304233-001	Anonymous	EK067G: Total Phosphorus as P	----	10 mg/L	92.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4868872)							
ES2304473-001	Anonymous						

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4868872) - continued							
ES2304473-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	108	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4868872)							
ES2304473-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	112	70.0	130
EP080: BTEXN (QCLot: 4868872)							
ES2304473-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	85.3	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	93.5	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	100	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	98.8	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	102	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	99.4	70.0	130

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: Senversa	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☒ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE:		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: Redlived Wetherill Park PROJECT NO.: 20102	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle) COC: (1) 2 3 4 5 6 7	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:	OF: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Bec Chapple	CONTACT PH:		Other comment:
SAMPLER: Hayley Yellowlees	SAMPLER MOBILE: 0429 722968	RELINQUISHED BY:	RECEIVED BY:
COC Emailed to ALS? (YES / NO)	EDD FORMAT (or default):	DATE/TIME: 14/8/23 5:45PM	DATE/TIME:
Email Reports to (will default to PM if no other addresses are listed): bec.chapple@senversa.com.au		RELINQUISHED BY:	RECEIVED BY: ZRW
Email Invoice to (will default to PM if no other addresses are listed): supplieraccounts@senversa.com.au		DATE/TIME:	DATE/TIME: 14/8/23 1803

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	W-26	W-2 (8M)	W-14A (CPAH/phenol)	NT-11	NT-8	W-18	pH	Total dissolved solids (TDS) + Suspended Solids (TSS)	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc. HT
1	MW1	14/8/23	W		6	X				X				
2	MW2					X				X				
3	MW3					X				X				
4	MW4					X				X				
5	MW6					X				X				
6	SW1				5		X	X	X			X	X	
7	SW2				5		X	X	X			X	X	
8	QC102				5	X								
9	QC302				4									
10	QC402				1						X			TRIP Blank
11	QC502				1						X			TRIP Spike.
				TOTAL										

Environmental Division Sydney
Work Order Reference
ES2327328

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldahyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; U = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2327328**	Page	: 1 of 10
Amendment	: **2**		
Client	: **SENVERSA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: BEC CHAPPLE	Contact	: Khaleda Ataei
Address	: Level 24, 1 Market St, Sydney NSW 2000 SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: + 61 2 8784 8555
Project	: 20102 REDIRECT WETHERILL PARK	Date Samples Received	: 14-Aug-2023 17:45
Order number	: ----	Date Analysis Commenced	: 14-Aug-2023
C-O-C number	: ----	Issue Date	: 23-Aug-2023 12:16
Sampler	: Hayley Yellowlees		
Site	: ----		
Quote number	: EN/103/21		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG020: LORs have been raised for some samples due to matrix interference (High sample salinity)
- Amendment (23/08/2023): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method EG020F for samples 001-009.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEXN compounds spiked at 20 ug/L.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	MW1	MW2	MW3	MW4	MW6
			Sampling date / time	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00
Compound	CAS Number	LOR	Unit	ES2327328-001	ES2327328-002	ES2327328-003	ES2327328-004	ES2327328-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.008**	**0.004**	<0.010	**0.007**	**0.002**
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0010	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.010	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.010	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	**0.036**	**0.005**	**0.207**	**0.020**	**0.002**
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.010	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	**0.045**	**0.009**	**0.122**	<0.005	**0.006**
Manganese	7439-96-5	0.001	mg/L	**2.26**	**1.00**	**6.39**	**6.04**	**0.225**
Iron	7439-89-6	0.05	mg/L	**2.01**	**0.58**	**5.64**	**2.91**	**0.20**
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.49**	**0.52**	**0.29**	**0.32**	**0.09**
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**0.02**	<0.01	<0.01	<0.01	**0.18**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.02**	<0.01	<0.01	<0.01	**0.18**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.6**	**0.6**	**0.4**	**0.5**	**0.4**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.6**	**0.6**	**0.4**	**0.5**	**0.6**
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.02**	**0.04**	**0.02**	**0.01**	**0.14**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	MW1	MW2	MW3	MW4	MW6
				Sampling date / time	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00
Compound	CAS Number	LOR	Unit		ES2327328-001	ES2327328-002	ES2327328-003	ES2327328-004	ES2327328-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	MW1	MW2	MW3	MW4	MW6
				Sampling date / time	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00
Compound	CAS Number	LOR	Unit		ES2327328-001	ES2327328-002	ES2327328-003	ES2327328-004	ES2327328-005
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		22.9	22.8	26.0	20.8	21.5
2-Chlorophenol-D4	93951-73-6	1.0	%		50.6	51.0	57.1	47.4	48.6
2.4.6-Tribromophenol	118-79-6	1.0	%		42.6	40.1	48.2	42.4	38.5
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		63.7	62.6	69.8	58.0	60.5
Anthracene-d10	1719-06-8	1.0	%		78.5	75.9	82.2	72.3	72.0
4-Terphenyl-d14	1718-51-0	1.0	%		85.5	84.1	89.2	82.0	79.2
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		121	117	110	116	97.2
Toluene-D8	2037-26-5	2	%		110	113	116	112	99.9
4-Bromofluorobenzene	460-00-4	2	%		124	125	123	120	107

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	SW1	SW2	QC102	QC302	QC402 TRIP SPIKE
			Sampling date / time	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	31-Jul-2023 00:00
Compound	CAS Number	LOR	Unit	ES2327328-006	ES2327328-007	ES2327328-008	ES2327328-009	ES2327328-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.03**	**7.75**	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**316**	**105**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**238**	**39**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.001**	<0.001	<0.010	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0010	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	**0.001**	<0.001	<0.010	<0.001	----
Copper	7440-50-8	0.001	mg/L	**0.004**	**0.001**	<0.010	<0.001	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	**0.205**	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.010	<0.001	----
Zinc	7440-66-6	0.005	mg/L	**0.005**	**0.038**	**0.074**	<0.005	----
Manganese	7439-96-5	0.001	mg/L	**0.016**	**0.007**	**6.57**	**0.038**	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	**6.04**	<0.05	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**0.68**	**0.62**	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**1.7**	**0.7**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**2.4**	**1.3**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.35**	**0.09**	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW1	SW2	QC102	QC302	QC402 TRIP SPIKE
				Sampling date / time	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	31-Jul-2023 00:00
Compound	CAS Number	LOR	Unit		ES2327328-006	ES2327328-007	ES2327328-008	ES2327328-009	ES2327328-010
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	<1.0	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	<1.0	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW1	SW2	QC102	QC302	QC402 TRIP SPIKE
				Sampling date / time	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	14-Aug-2023 00:00	31-Jul-2023 00:00
Compound	CAS Number	LOR	Unit		ES2327328-006	ES2327328-007	ES2327328-008	ES2327328-009	ES2327328-010
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	16
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	16
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	17
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	18
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	19
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	37
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	86
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	17
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		23.9	23.1	22.4	19.8	----
2-Chlorophenol-D4	93951-73-6	1.0	%		52.5	51.4	47.7	49.2	----
2.4.6-Tribromophenol	118-79-6	1.0	%		50.5	54.1	42.3	40.1	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		67.4	67.4	57.2	64.8	----
Anthracene-d10	1719-06-8	1.0	%		86.2	85.2	71.5	71.2	----
4-Terphenyl-d14	1718-51-0	1.0	%		87.7	86.7	76.6	78.4	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		99.7	111	114	112	98.0
Toluene-D8	2037-26-5	2	%		105	110	108	110	116
4-Bromofluorobenzene	460-00-4	2	%		115	115	119	122	123

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC502 TRIP BLANK	----	----	----	----
				Sampling date / time	01-Aug-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2327328-011	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		96.6	----	----	----	----
Toluene-D8	2037-26-5	2	%		115	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		121	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2327328**	Page	: 1 of 9
Amendment	: **2**		
Client	: **SENVERSA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: BEC CHAPPLE	Telephone	: + 61 2 8784 8555
Project	: 20102 REDIRECT WETHERILL PARK	Date Samples Received	: 14-Aug-2023
Site	: ----	Issue Date	: 23-Aug-2023
Sampler	: Hayley Yellowlees	No. of samples received	: 11
Order number	: ----	No. of samples analysed	: 11

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
	0				
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	18	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	18	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container* / Client Sample ID(s)	*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
SW1, SW2	**14-Aug-2023**	**----**	----	----	**14-Aug-2023**	14-Aug-2023	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
SW1, SW2	**14-Aug-2023**	**----**	----	----	**17-Aug-2023**	21-Aug-2023	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
SW1, SW2	**14-Aug-2023**	**----**	----	----	**17-Aug-2023**	21-Aug-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
MW1, MW2, MW3, MW4, MW6, SW1, SW2, QC102, QC302	**14-Aug-2023**	**----**	----	----	**16-Aug-2023**	10-Feb-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
MW1, MW2, MW3, MW4, MW6, SW1, SW2, QC102, QC302	**14-Aug-2023**	**----**	----	----	**17-Aug-2023**	11-Sep-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
MW1, MW2, MW3, MW4, MW6	**14-Aug-2023**	**----**	----	----	**17-Aug-2023**	11-Sep-2023	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
MW1, MW2, MW3, MW4, MW6	**14-Aug-2023**	**----**	----	----	**16-Aug-2023**	16-Aug-2023	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
MW1, MW2, MW3, MW4, MW6, SW1, SW2	**14-Aug-2023**	**----**	----	----	**17-Aug-2023**	11-Sep-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
MW1, MW2, MW3, MW4, MW6, SW1, SW2	**14-Aug-2023**	**16-Aug-2023**	11-Sep-2023	✓	**17-Aug-2023**	11-Sep-2023	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
MW1, MW2, MW3, MW4, MW6, SW1, SW2	**14-Aug-2023**	**16-Aug-2023**	11-Sep-2023	✓	**17-Aug-2023**	11-Sep-2023	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
SW1, SW2	**14-Aug-2023**	**16-Aug-2023**	21-Aug-2023	✓	**17-Aug-2023**	25-Sep-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
MW1, MW2, MW3, MW4, MW6, SW1, SW2	**14-Aug-2023**	**16-Aug-2023**	21-Aug-2023	✓	**17-Aug-2023**	25-Sep-2023	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
QC102, QC302	**14-Aug-2023**	**16-Aug-2023**	21-Aug-2023	✓	**18-Aug-2023**	25-Sep-2023	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
MW1, MW2, MW3, MW4, MW6, SW1, SW2, QC102, QC302	**14-Aug-2023**	**16-Aug-2023**	21-Aug-2023	✓	**17-Aug-2023**	25-Sep-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC502 - TRIP BLANK	**01-Aug-2023**	**14-Aug-2023**	15-Aug-2023	✓	**14-Aug-2023**	15-Aug-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
MW1, MW2, MW3, MW4, MW6, SW1, SW2, QC102, QC302	**14-Aug-2023**	**17-Aug-2023**	28-Aug-2023	✓	**17-Aug-2023**	28-Aug-2023	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
MW1, MW2, MW3, MW4, MW6, SW1, SW2, QC102, QC302	**14-Aug-2023**	**16-Aug-2023**	21-Aug-2023	✓	**17-Aug-2023**	25-Sep-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC502 - TRIP BLANK	**01-Aug-2023**	**14-Aug-2023**	15-Aug-2023	✓	**14-Aug-2023**	15-Aug-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
MW1, MW2, MW3, MW4, MW6, SW1, SW2, QC102, QC302	**14-Aug-2023**	**17-Aug-2023**	28-Aug-2023	✓	**17-Aug-2023**	28-Aug-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC502 - TRIP BLANK	**01-Aug-2023**	**14-Aug-2023**	15-Aug-2023	✓	**14-Aug-2023**	15-Aug-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW1, MW2, MW3, MW4, MW6, SW1, SW2, QC102, QC302	**14-Aug-2023**	**17-Aug-2023**	28-Aug-2023	✓	**17-Aug-2023**	28-Aug-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC402 - TRIP SPIKE	**31-Jul-2023**	**14-Aug-2023**	14-Aug-2023	✓	**14-Aug-2023**	14-Aug-2023	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	39	**10.26**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	18	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	25	**12.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	16	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	**12.50**	**12.50**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	40	**12.50**	**12.50**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	19	**15.79**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	19	**15.79**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	16	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	18	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

QUALITY CONTROL REPORT

Work Order	: **ES2327328**	Page	: 1 of 11
Amendment	: **2**		
Client	: **SENVERSA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: BEC CHAPPLE	Contact	: Khaleda Ataei
Address	: Level 24, 1 Market St, Sydney NSW 2000 SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: + 61 2 8784 8555
Project	: 20102 REDIRECT WETHERILL PARK	Date Samples Received	: 14-Aug-2023
Order number	: ----	Date Analysis Commenced	: 14-Aug-2023
C-O-C number	: ----	Issue Date	: 23-Aug-2023
Sampler	: Hayley Yellowlees		
Site	: ----		
Quote number	: EN/103/21		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA005P: pH by PC Titrator (QC Lot: 5233621)									
ES2327282-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.64	7.72	1.0	0% - 20%
ES2327333-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.64	7.67	0.4	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5239101)									
ES2327006-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	160	157	1.9	0% - 50%
ES2327035-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	47200000 µg/L	44600	5.5	0% - 20%
ES2327110-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1680	1580	5.9	0% - 20%
EW2303543-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	530	537	1.3	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5239102)									
ES2327006-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2327035-005	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	30000 µg/L	43	34.8	No Limit
ES2327110-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	356	310	14.0	0% - 20%
EW2303543-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5236663)									
ES2327041-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.022	0.022	0.0	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.088	0.088	0.0	0% - 50%
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.18	0.18	0.0	No Limit
ES2327081-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5236663) - continued									
ES2327081-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.104	0.099	4.9	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.006	0.005	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5236666)									
EW2303610-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.060	0.060	1.7	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.07	0.07	0.0	No Limit
EW2303629-005	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.050	0.051	2.2	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.13	0.22	47.9	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 5236665)									
ES2327080-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2327328-002	MW2	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5238030)									
ES2327281-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.0	No Limit
ES2327328-003	MW3	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.29	0.29	0.0	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5237562)									
ES2327328-003	MW3	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2327281-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5238031)									
ES2327281-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.09	0.09	0.0	No Limit
ES2327328-003	MW3	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5238027)									
ES2327281-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.9	0.0	No Limit
ES2327328-002	MW2	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.6	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5238026)									
ES2327281-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.04	0.0	No Limit
ES2327328-002	MW2	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.04	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5233625)									
ES2327291-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5236018)									
ES2327093-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2327167-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5233625)									
ES2327291-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5236018)									
ES2327093-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2327167-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 5233625)									
ES2327291-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP080: BTEXN (QC Lot: 5236018)									
ES2327093-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2327167-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 5233621)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	98.8	101
				----	7 pH Unit	99.8	99.2	101
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5239101)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	101	87.0	109
				<10	293 mg/L	102	75.2	126
				<10	2380 mg/L	103	83.0	124
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5239102)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	102	83.0	129
				<5	1000 mg/L	98.0	82.0	110
				<5	931 mg/L	102	83.0	118
EG020F: Dissolved Metals by ICP-MS (QCLot: 5236663)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.1	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.0	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.0	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.5	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.8	83.0	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	101	82.0	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.1	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	103	81.0	117
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.4	82.0	112
EG020F: Dissolved Metals by ICP-MS (QCLot: 5236666)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.8	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.9	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	101	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.8	83.0	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	99.1	82.0	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.0	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	106	81.0	117
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	97.7	82.0	112
EG035F: Dissolved Mercury by FIMS (QCLot: 5236665)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG035F: Dissolved Mercury by FIMS (QCLot: 5236665) - continued								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.8	83.0	105
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5238030)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	102	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5237562)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5238031)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5238027)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	89.1	69.0	101
				<0.1	1 mg/L	89.2	70.0	118
				<0.1	5 mg/L	91.0	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5238026)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	87.1	71.3	126
				<0.01	0.442 mg/L	87.0	71.3	126
				<0.01	1 mg/L	97.4	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 5235620)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	33.4	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	68.8	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	77.5	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	63.5	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	75.4	48.0	100
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	71.7	49.0	99.0
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	68.2	53.0	105
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	69.9	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	71.2	53.0	99.0
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	71.8	50.0	106
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	76.0	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	33.4	10.0	95.0
EP075(SIM)A: Phenolic Compounds (QCLot: 5235874)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	35.5	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	72.2	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	66.5	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	59.0	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	66.8	48.0	100

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Acceptable Limits (%)
				Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 5235874) - continued								
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	72.6	49.0	99.0
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	66.7	53.0	105
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	73.2	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	73.1	53.0	99.0
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	67.1	50.0	106
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	77.8	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	35.7	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5235620)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	66.7	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	72.0	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	72.0	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	73.8	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	70.4	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	93.1	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	76.7	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	78.3	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	78.2	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	77.0	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	71.7	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	85.5	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	78.8	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	68.6	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	70.2	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	69.0	59.1	118
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5235874)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	70.9	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	76.6	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	80.4	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	79.3	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	75.7	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	91.4	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	81.0	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	83.4	63.1	118

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5235874) - continued								
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	73.5	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	87.1	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	69.2	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	76.0	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	83.0	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	68.6	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	69.8	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	71.0	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5233625)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	101	75.0	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5235621)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	66.4	53.7	97.0
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	80.9	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	91.1	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5235873)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	83.4	53.7	97.0
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	88.5	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	79.5	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5236018)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	93.9	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5233625)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	98.0	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5235621)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	79.7	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	80.9	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	93.4	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5235873)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	66.9	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	89.5	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	89.3	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5236018)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	99.5	75.0	127
EP080: BTEXN (QCLot: 5233625)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080: BTEXN (QCLot: 5233625) - continued								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	91.7	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	92.1	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	89.1	73.8	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	99.7	73.0	122
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	102	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	84.2	75.5	124
EP080: BTEXN (QCLot: 5236018)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.0	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	95.6	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	73.8	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	102	73.0	122
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	104	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	102	75.5	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 5236663)							
ES2327041-002	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	106	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	98.2	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	98.4	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	105	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	95.7	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	93.8	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	97.4	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	98.0	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5236666)							
ES2327328-005	MW6	EG020A-F: Arsenic	7440-38-2	1 mg/L	109	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	126	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	118	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	108	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 5236666) - continued							
ES2327328-005	MW6	EG020A-F: Lead	7439-92-1	1 mg/L	115	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	125	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	129	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	103	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 5236665)							
ES2327080-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	89.1	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5238030)							
ES2327281-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	119	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5237562)							
ES2327281-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	112	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5238031)							
ES2327281-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	110	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5238027)							
ES2327281-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	88.5	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5238026)							
ES2327281-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	92.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5233625)							
ES2327291-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	127	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5236018)							
ES2327093-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	88.8	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5233625)							
ES2327291-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	128	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5236018)							
ES2327093-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	90.7	70.0	130
EP080: BTEXN (QCLot: 5233625)							
ES2327291-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	106	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	112	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	123	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	128	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	126	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	94.9	70.0	130
EP080: BTEXN (QCLot: 5236018)							
ES2327093-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	95.5	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	91.4	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080: BTEXN (QCLot: 5236018) - continued							
ES2327093-001	Anonymous	EP080: Ethylbenzene	100-41-4	25 µg/L	100.0	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	101	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	102	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	86.1	70.0	130

Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: ALS NSW
Address:
Contact: Sample Receipt
Phone:

Job Number:	S20102	**Purchase Order:**	
Project Name:	Wetherill Park WME	**Quote No:**	EN/103/21
Sampled By:	Bec Chapple	**Turn Around Time:**	Standard 7 Days
Project Manager:	Emma Walsh	**Page:**	1 of 1
Email Report To:	Bec.Chapple@senversa.com.au; Emma.Walsh@senversa.com.au	**Phone/Mobile:**	0408038593, 0404011544

Sample Information					Container Information		Analysis Required												
Lab ID	Sample ID	Matrix *	Date	Time	Type / Code	Total Bottles	W-18 (TRH/BTEXN)	W-26 (TRH/BTEX/PAH/8 METALS)	W-27 (TRH/BTEX/PAH/8 METALS/ PHENOLS)	NT-14 (CATIONS, ANIONS AND NUTRIENTS)	NT-11 (TN, TP)	EA015H (TDS)	EA025H (TSS)	EG005F (FE AND MN)			HOLD	Comments: e.g. Highly contaminated sample; hazardous materials present, trace LORs etc.
1	QC401	W	8/02/2023	AM	VOA	1	X											
2	QC501	W	8/02/2023	AM	VOA	1	X											
3	QC301	W	8/02/2023	AM	VS x2, N, UA, VSA	5		X			X			X				
4	MW1	W	8/02/2023	AM	P, VS x2, N, UA, VSA	6			X	X				X				
5	MW2	W	8/02/2023	AM	P, VS x2, N, UA, VSA	6			X	X				X				
6	MW3	W	8/02/2023	AM	P, VS x2, N, UA, VSA	6			X	X				X				
7	MW4	W	8/02/2023	AM	P, VS x2, N, UA, VSA	6			X	X				X				
8	MW6	W	8/02/2023	AM	P, VS x2, N, UA, VSA	6			X	X				X				
9	QC101	W	8/02/2023	AM	VS x2, N, UA, VSA	5		X			X			X				
K	(1) QC201	W	8/02/2023	AM	VS x2, N, UA, VSA	5												Please forward to Envirolab
Total						47												

Environmental Division Sydney
Work Order Reference
ES2304011

Telephone : + 61-2-8784 8555

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

ENVIROLAB

Job No: 316[illegible]9
Date Received: 09/02/23
Time Received: 16:00
Received By: CA
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Subcon / Forward Lab / Split WO
Lab / Analysis: ~~ALS~~ ENVIROLAB
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No: ES2304011
Attached By PO / Internal Sheet:

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples.

Sampler Name: Bec Chapple **Signature:** **Date:** 8/02/2023

Relinquished By:		Method of Shipment (if applicable):	Received by:	
Name/Signature: Bec Chapple	Date: 8/2/23	Carrier / Reference #:	Name/Signature: TAM	Date: 8/2/23
Of:	Time: 12:00 PM	Date/Time:	Of: ALS	Time: 12:29
Name/Signature:	Date:	Carrier / Reference #:	Name/Signature: [illegible]	Date: 09/02/23
Of:	Time:	Date/Time:	Of: ENVIROLAB	Time: 16:00
Name/Signature:	Date:	Carrier / Reference #:	Name/Signature:	Date:
Of:	Time:	Date/Time:	Of:	Time:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid (HNO_3) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

Simon Song

From: Emma Walsh <Emma.Walsh@senversa.com.au>
Sent: Wednesday, 15 February 2023 9:55 AM
To: Simon Song
Cc: Bec Chapple
Subject: RE: Sample Receipt for 316159 S20102, Wetherill Park WME

Hi Simon,

Sorry for the delay in getting back to you - can you pleased analyse sample QC201 for the following:

- TRH/BTEXN/PAH/8 metals (As, Cd, Cr, Cu, Hg, Ni and Zn)
- Total N, total P
- Additional metals – iron and manganese

Thanks.

Kind regards,

Emma Walsh
Senior Associate Environmental Scientist
M: +61 404 011 544
www.senversa.com.au
Level 24, 1 Market St,
Djubuguli, Eora Country
Sydney, NSW, 2000, Australia

From: Simon Song <SSong@envirolab.com.au>
Sent: Friday, 10 February 2023 1:16 PM
To: Bec Chapple <bec.chapple@senversa.com.au>; Emma Walsh <Emma.Walsh@senversa.com.au>
Subject: Sample Receipt for 316159 S20102, Wetherill Park WME

Please refer to attached for:
a copy of the COC/paperwork received from you
a copy of our Sample Receipt Advice (SRA)
Please open and read the SRA as it contains important information.
Please let the lab know immediately if there are any issues.

Results will be available by 6.30pm on the date indicated.

PLEASE NOTE COMBO PRICES WILL ONLY APPLY IF COMBOS ARE SELECTED ON COC

We have a new reporting format and would welcome your feedback. Sydney@envirolab.com.au

Please note that subcontracted testing or non routine testing may take significantly longer than just the standard 5 day TAT, contact the lab to get an approximate due date.

Enquiries should be made directly to:
customerservice@envirolab.com.au

Regards

Envirolab Services
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Senversa Pty Ltd
Attention	Bec Chapple, Emma Walsh

Sample Login Details

Your reference	S20102, Wetherill Park WME
Envirolab Reference	316159
Date Sample Received	09/02/2023
Date Instructions Received	15/02/2023
Date Results Expected to be Reported	22/02/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	3
Cooling Method	Ice
Sampling Date Provided	YES

Comments

last day of holding time for organics 15/2

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHsin Water	HM in water - dissolved	Total Nitrogen in water	Metals in Waters -Total
QC201	✓	✓	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 316159

Client Details

Client	Senversa Pty Ltd
Attention	Bec Chapple, Emma Walsh
Address	6/15 William St, Melbourne, VIC, 3000

Sample Details

Your Reference	**S20102, Wetherill Park WME**
Number of Samples	1 Water
Date samples received	09/02/2023
Date completed instructions received	15/02/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	22/02/2023
Date of Issue	22/02/2023

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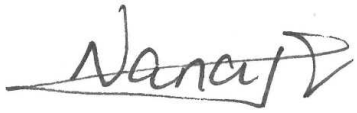
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Josh Williams, Organics Supervisor
Kyle Gavrily, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		316159-1
Your Reference	UNITS	QC201
Date Sampled		8/02/2023
Type of sample		Water
Date extracted	-	21/02/2023
Date analysed	-	21/02/2023
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	113
Surrogate toluene-d8	%	103
Surrogate 4-BFB	%	104

svTRH (C10-C40) in Water		
Our Reference	UNITS	316159-1
Your Reference		QC201
Date Sampled		8/02/2023
Type of sample		Water
Date extracted	-	16/02/2023
Date analysed	-	16/02/2023
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	140
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	140
TRH >C_{10} - C_{16}	µg/L	130
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	130
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	130
Surrogate o-Terphenyl	%	67

PAHs in Water		
Our Reference	UNITS	316159-1
Your Reference		QC201
Date Sampled		8/02/2023
Type of sample		Water
Date extracted	-	16/02/2023
Date analysed	-	20/02/2023
Naphthalene	µg/L	<2
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	74

HM in water - dissolved		
Our Reference		316159-1
Your Reference	UNITS	QC201
Date Sampled		8/02/2023
Type of sample		Water
Date prepared	-	17/02/2023
Date analysed	-	20/02/2023
Arsenic-Dissolved	µg/L	4
Cadmium-Dissolved	µg/L	0.1
Chromium-Dissolved	µg/L	2
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	180
Zinc-Dissolved	µg/L	230
Iron-Dissolved	µg/L	5,700
Manganese-Dissolved	µg/L	5,800

Miscellaneous Inorganics		
Our Reference		316159-1
Your Reference	UNITS	QC201
Date Sampled		8/02/2023
Type of sample		Water
Date prepared	-	16/02/2023
Date analysed	-	16/02/2023
Total Nitrogen in water	mg/L	0.5

Metals in Waters - Total		
Our Reference		316159-1
Your Reference	UNITS	QC201
Date Sampled		8/02/2023
Type of sample		Water
Date prepared	-	20/02/2023
Date analysed	-	20/02/2023
Phosphorus - Total	mg/L	0.8

Method ID	Methodology Summary
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			21/02/2023	[NT]	[NT]	[NT]	[NT]	21/02/2023	[NT]
Date analysed	-			21/02/2023	[NT]	[NT]	[NT]	[NT]	21/02/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	95	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	93	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	110	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-023	104	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-023	103	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			16/02/2023	[NT]	[NT]	[NT]	[NT]	16/02/2023	[NT]
Date analysed	-			16/02/2023	[NT]	[NT]	[NT]	[NT]	16/02/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	120	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	120	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	75	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			16/02/2023	[NT]	[NT]	[NT]	[NT]	16/02/2023	[NT]
Date analysed	-			20/02/2023	[NT]	[NT]	[NT]	[NT]	20/02/2023	[NT]
Naphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	72	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	73	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	74	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	69	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	77	[NT]	[NT]	[NT]	[NT]	77	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			17/02/2023	[NT]	[NT]	[NT]	[NT]	17/02/2023	[NT]
Date analysed	-			20/02/2023	[NT]	[NT]	[NT]	[NT]	20/02/2023	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	97	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Iron-Dissolved	µg/L	10	Metals-022	<10	[NT]	[NT]	[NT]	[NT]	93	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	[NT]	[NT]	[NT]	[NT]	94	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			16/02/2023	[NT]	[NT]	[NT]	[NT]	16/02/2023	[NT]
Date analysed	-			16/02/2023	[NT]	[NT]	[NT]	[NT]	16/02/2023	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]

QUALITY CONTROL: Metals in Waters - Total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			20/02/2023	[NT]	[NT]	[NT]	[NT]	20/02/2023	[NT]
Date analysed	-			20/02/2023	[NT]	[NT]	[NT]	[NT]	20/02/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	111	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved amber sample bottle.
Note: there is a possibility some elements may be underestimated.

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DATA QUALITY ASSESSMENT SUMMARY

Report Details

Envirolab Report Reference	**316159**
Client ID	Senversa Pty Ltd
Project Reference	S20102, Wetherill Park WME
Date Issued	22/02/2023

QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant except:

Holding Time Exceedances

Analysis	Sample No	Date Sampled	Date Extracted	Date Analysed	Accepted
svTRH (C10-C40) in Water					
	316159-1	8/02/2023	16/02/2023	16/02/2023	✗
PAHs in Water					
	316159-1	8/02/2023	16/02/2023	20/02/2023	✗

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

QC Evaluation

Duplicate(s) was performed as per NEPM frequency	✓
Laboratory Control Sample(s) were analysed with the samples received	✓
A Method Blank was performed with the samples received	✓
Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)	✓

Refer to Certificate of Analysis for all Quality Control data.

senversa

Chain of Custody Documentation

Senversa Pty Ltd
www.senversa.com.au
ABN 89 132 231 380

Laboratory: mgt/Eurofins VIC
Address:
Contact: Sample Receipt
Phone:

Job Number:	S20102	**Purchase Order:**	
Project Name:	Redirect	**Quote No:**	
Sampled By:	HY	**Turn Around Time:**	24 Hours
Project Manager:	Bec Chapple	**Page:**	1 of 1
Email Report To:	bec.chapple@senversa.com.au	**Phone/Mobile:**	0408 038 593

Sample Information					Container Information		Analysis Required																Comments: e.g. Highly contaminated sample; hazardous materials present; trace LORs etc.
Lab ID	**Sample ID**	**Matrix ***	**Date**	**Time**	**Type / Code**	**Total Bottles**	TRH/BTEX/PAH/8 Heavy metals	Total Phosphorous and Total Nitrogen	Manganese and Iron													HOLD	
	QC202	Water	14/08/2023				X	X	X														
Total																							

Sampler: I attest that proper field sampling procedures in accordance with Senversa standard procedures and/or project specifications were used during the collection of these samples:

Sampler Name: Hayley Yellowlees **Signature:** **Date:** 14/08/2023

Relinquished By:			**Method of Shipment (if applicable):**	**Received by:**	
Name/Signature:	Bec Chapple	Date: 25/8/23	Carrier / Reference #:	Name/Signature:	Date: 25/8
Of:		Time:	Date/Time:	Of:	Time: 12:12
Name/Signature:		Date:	Carrier / Reference #:	Name/Signature:	Date:
Of:		Time:	Date/Time:	Of:	Time:
Name/Signature:		Date:	Carrier / Reference #:	Name/Signature:	Date:
Of:		Time:	Date/Time:	Of:	Time:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid (HNO_3) Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide (NaOH)/Cadmium (Cd) Preserved; S = Sodium Hydroxide Preserved Plastic; STH = Sodium thiosulfate preserved plastic; V = VOA Vial Hydochloric Acid (HCl) Preserved; VS = VOA Vial Sulphuric Preserved; VSA = Sulphuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; UA = Unpreserved Amber Glass; L=Lugol's iodine preserved white plastic bottle; SW= sulfuric acid preserved wide mouth glass jar

Completed by: _____
Checked by: _____

7.1

Report # 1020195

eurofins | Environment Testing

www.eurofins.com.au EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

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

Eurofins ARL Pty Ltd

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Site# 2370

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35 O'Rorke Road	43 Detroit Drive	1277 Cameron Road,
Penrose,	Rolleston,	Gate Pa,
Auckland 1061	Christchurch 7675	Tauranga 3112
Tel: +64 9 526 4551	Tel: +64 3 343 5201	Tel: +64 9 525 0568
IANZ# 1327	IANZ# 1290	IANZ# 1402

Sample Receipt Advice

Company name:	Senversa Pty Ltd NSW
Contact name:	Bec Chapple
Project name:	REDIRECT
Project ID:	S20102
Turnaround time:	1 Day
Date/Time received	Aug 25, 2023 12:11 PM
Eurofins reference	1020195

Sample Information

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

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Hannah Mawbey on phone : or by email: HannahMawbey@eurofins.com

Results will be delivered electronically via email to Bec Chapple - bec.chapple@senversa.com.au.

Note: A copy of these results will also be delivered to the general Senversa Pty Ltd NSW email address.

eurofins

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

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

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

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NATA# 2377
Site# 2370

Eurofins Environment Testing NZ Ltd
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IANZ# 1327	IANZ# 1290	IANZ# 1402

Company Name: Senversa Pty Ltd NSW
Address: Level 24, 1 Market Street
SYDNEY
NSW 2000

Project Name: REDIRECT
Project ID: S20102

Order No.:
Report #: 1020195
Phone: 02 9994 8016
Fax: 03 9606 0074

Received: Aug 25, 2023 12:11 PM
Due: Aug 28, 2023
Priority: 1 Day
Contact Name: Bec Chapple

Eurofins Analytical Services Manager : Hannah Mawbey

Sample Detail						Iron	Manganese	Phosphate total (as P)	Total Nitrogen (as N)	Eurofins Suite B7
Melbourne Laboratory - NATA # 1261 Site # 1254									X	X
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X		X
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	QC202	Aug 14, 2023		Water	S23-Au0064866	X	X	X	X	X
Test Counts						1	1	1	1	1

Senversa Pty Ltd NSW
Level 24, 1 Market Street
SYDNEY
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Bec Chapple**

Report **1020195-W**
Project name REDIRECT
Project ID S20102
Received Date Aug 25, 2023

Client Sample ID			**QC202**
Sample Matrix			**Water**
Eurofins Sample No.			**S23-Au0064866**
Date Sampled			**Aug 14, 2023**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	95
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.01	mg/L	< 0.01
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001

Client Sample ID			QC202
Sample Matrix			**Water**
Eurofins Sample No.			**S23-Au0064866**
Date Sampled			**Aug 14, 2023**
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	< 0.001
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001
Total PAH*	0.001	mg/L	< 0.001
2-Fluorobiphenyl (surr.)	1	%	71
p-Terphenyl-d14 (surr.)	1	%	130
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)	0.01	mg/L	0.03
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5
Total Nitrogen (as N)*	0.2	mg/L	0.5
Heavy Metals			
Arsenic	0.001	mg/L	0.002
Cadmium	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	0.002
Copper	0.001	mg/L	0.002
Iron	0.05	mg/L	2.3
Lead	0.001	mg/L	0.002
Manganese	0.005	mg/L	5.9
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.18
Zinc	0.005	mg/L	0.086

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Aug 25, 2023	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Aug 25, 2023	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Aug 25, 2023	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Aug 25, 2023	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Polycyclic Aromatic Hydrocarbons	Sydney	Aug 25, 2023	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Aug 28, 2023	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	Aug 31, 2023	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrate (as N)	Melbourne	Aug 31, 2023	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrite (as N)	Melbourne	Aug 31, 2023	2 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	Aug 31, 2023	28 Days
- Method: APHA 4500-Norg B,D Total Kjeldahl Nitrogen by FIA			
Phosphate total (as P)	Sydney	Aug 25, 2023	28 Days
- Method: E052 Total Phosphate (as P)			
Heavy Metals	Sydney	Aug 28, 2023	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

eurofins

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

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VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	Tel: +61 2 4968 8448
Tel: +61 3 8564 5000	Tel: +61 3 8564 5000	Tel: +61 2 9900 8400	Tel: +61 2 6113 8091	Tel: +61 7 3902 4600	NATA# 1261
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	Site# 25079 & 25289
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	

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Sample Detail						Iron	Manganese	Phosphate total (as P)	Total Nitrogen (as N)	Eurofins Suite B7
Melbourne Laboratory - NATA # 1261 Site # 1254									X	X
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X		X
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	QC202	Aug 14, 2023		Water	S23-Au0064866	X	X	X	X	X
Test Counts						1	1	1	1	1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**µg/L:** micrograms per litre
ppm: parts per million	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

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

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

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

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

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

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. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons							
TRH C6-C9	%	78			70-130	Pass	
TRH C10-C14	%	91			70-130	Pass	
TRH C6-C10	%	78			70-130	Pass	
TRH >C10-C16	%	89			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	95			70-130	Pass	
Toluene	%	86			70-130	Pass	
Ethylbenzene	%	85			70-130	Pass	
m&p-Xylenes	%	85			70-130	Pass	
o-Xylene	%	82			70-130	Pass	
Xylenes - Total*	%	84			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	95			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	99			70-130	Pass	
Acenaphthylene	%	98			70-130	Pass	
Anthracene	%	113			70-130	Pass	
Benz(a)anthracene	%	91			70-130	Pass	
Benzo(a)pyrene	%	111			70-130	Pass	
Benzo(b&j)fluoranthene	%	109			70-130	Pass	
Benzo(g.h.i)perylene	%	118			70-130	Pass	
Benzo(k)fluoranthene	%	128			70-130	Pass	
Chrysene	%	125			70-130	Pass	
Dibenz(a.h)anthracene	%	84			70-130	Pass	
Fluoranthene	%	114			70-130	Pass	
Fluorene	%	111			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	100			70-130	Pass	
Naphthalene	%	83			70-130	Pass	
Phenanthrene	%	95			70-130	Pass	
Pyrene	%	113			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	101			80-120	Pass	
Cadmium	%	101			80-120	Pass	
Chromium	%	102			80-120	Pass	
Copper	%	101			80-120	Pass	
Iron	%	95			80-120	Pass	
Lead	%	106			80-120	Pass	
Manganese	%	100			80-120	Pass	
Mercury	%	109			80-120	Pass	
Nickel	%	101			80-120	Pass	
Zinc	%	101			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C10-C14	S23-Au0058328	NCP	%	73			70-130	Pass	
TRH >C10-C16	S23-Au0058328	NCP	%	72			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S23-Au0054217	NCP	%	117			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium	L23-Au0051993	NCP	%	99			75-125	Pass	
Chromium	L23-Au0051993	NCP	%	88			75-125	Pass	
Copper	S23-Au0054217	NCP	%	85			75-125	Pass	
Iron	L23-Au0051993	NCP	%	82			75-125	Pass	
Lead	L23-Au0051993	NCP	%	81			75-125	Pass	
Manganese	L23-Au0051993	NCP	%	91			75-125	Pass	
Mercury	S23-Au0054217	NCP	%	97			75-125	Pass	
Nickel	S23-Au0054217	NCP	%	89			75-125	Pass	
Zinc	S23-Au0054217	NCP	%	85			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S23-Au0058331	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S23-Au0058327	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S23-Au0058327	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S23-Au0058327	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C6-C10	S23-Au0058331	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S23-Au0058327	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S23-Au0058327	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S23-Au0058327	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S23-Au0058331	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S23-Au0058331	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S23-Au0058331	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S23-Au0058331	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S23-Au0058331	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S23-Au0058331	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S23-Au0058331	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S23-Au0066997	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S23-Au0066997	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S23-Au0066997	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	S23-Au0066997	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	S23-Au0066997	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	S23-Au0066997	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	S23-Au0066997	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	S23-Au0066997	NCP	mg/L	0.0001	0.0001	4.8	30%	Pass	
Nickel	S23-Au0066997	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	S23-Au0066997	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised by:

Hannah Mawbey	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Inorganic
Roopesh Rangarajan	Senior Analyst-Organic
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Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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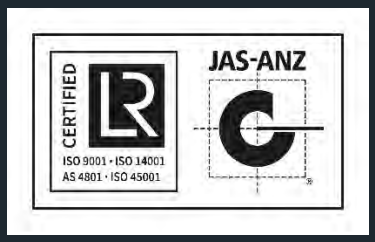

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Appendix B – Groundwater Monitoring Results

Table X: Analytical Results
ReDirect Wetherill Park
ReDirect Wetherill Park, 24 Davis Road

						Location Code	MW1	MW1	MW2	MW2	MW3	MW3	MW4	MW4	MW6	MW6
						Field ID	MW1	MW1	MW2	MW2	MW3	MW3	MW4	MW4	MW6	MW6
						Date	08/02/2023	14/08/2023	08/02/2023	14/08/2023	08/02/2023	14/08/2023	08/02/2023	14/08/2023	08/02/2023	14/08/2023
						Sample Type	Normal	Normal	Normal	Normal	Highest Conc.	Highest Conc.	Normal	Normal	Normal	Normal
						Lab Report No.	ES2304011	ES2327328	ES2304011	ES2327328	ES2304011	ES2327328	ES2304011	ES2327328	ES2304011	ES2327328
	Unit	EQL	**NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay 2-4m**	Aquatic ecosystems DGV - highly disturbed (90%) - freshwater	**Aquatic ecosystems DGV - slightly to moderately disturbed (95%) - freshwater**	*NHMRC (2008)Primary Contact Recreation - Health*										
Physical Parameters																
Electrical Conductivity	µS/cm	1					25,800	-	25,700	-	34,200	-	19,900	-	2,310	-
Total Dissolved Solids	mg/L	1					16,800	-	16,700	-	22,200	-	12,900	-	1,500	-
pH (Lab)	pH Units	0.01				*6.5-8.5* [#14]	7.74	-	7.70	-	7.09	-	7.72	-	8.06	-
Inorganics																
Ammonia (as N)	mg/L	0.01		1.43 [#3]	**0.9** [#3]		0.71	0.49	0.52	0.52	0.22	0.29	0.34	0.32	0.02	0.09
Nitrate (as N)	mg/L	0.01		3.8 [#4]	**2.4** [#4]	*110* [#15]	<0.10	0.02	0.03	<0.01	<0.01	<0.01	0.01	<0.01	1.00	0.18
Nitrite (as N)	mg/L	0.01				*9* [#16]	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.25	<0.01
Total Oxidised Nitrogen (as N)	mg/L	0.01					<0.10	0.02	0.03	<0.01	<0.01	<0.01	0.01	<0.01	1.25	0.18
Total Kjeldahl Nitrogen	mg/L	0.1					0.9	0.6	1.0	0.6	1.3	0.5	1.1	0.5	0.4	0.4
Total Nitrogen (as N)	mg/L	0.1					0.9	0.6	1.0	0.6	1.3	0.5	1.1	0.5	1.6	0.6
Phosphorus (as P)	mg/L	0.01					<0.05	0.02	0.06	0.04	0.12	0.02	0.09	0.01	0.09	0.14
Phosphate (as P)	mg/L	0.01					-	-	-	-	-	0.03	-	-	-	-
Ortho-phosphate (as P)	mg/L	0.01					<0.01	-	0.02	-	<0.01	-	<0.01	-	<0.01	-
Fluoride	mg/L	0.1				*15* [#17]	0.8	-	0.7	-	1.2	-	1.6	-	1.8	-
Sodium Absorption Ratio (filtered)	-	0.01					30.4	-	31.6	-	37.8	-	21.4	-	6.70	-
Major Ions																
Calcium (filtered)	mg/L	1					273	-	232	-	181	-	299	-	50	-
Chloride	mg/L	1					8,840	-	8,800	-	11,900	-	6,680	-	341	-
Magnesium (filtered)	mg/L	1					810	-	826	-	1,040	-	786	-	112	-
Potassium (filtered)	mg/L	1					25	-	21	-	14	-	35	-	6	-
Sulfate (as SO4) (filtered)	mg/L	1					691	-	756	-	907	-	280	-	44	-
Sodium (filtered)	mg/L	1					4,430	-	4,590	-	5,980	-	3,100	-	373	-
Anions Total	meq/L	0.01					282	-	280	-	359	-	216	-	27.2	-
Cations Total	meq/L	0.01					274	-	280	-	355	-	215	-	28.1	-
Ionic Balance	%	0.01					1.52	-	0.09	-	0.55	-	0.25	-	1.61	-
Alkalinity																
Bicarbonate Alkalinity (as CaCO3)	mg/L	1					916	-	815	-	222	-	1,110	-	834	-
Carbonate Alkalinity (as CaCO3)	mg/L	1					<1	-	<1	-	<1	-	<1	-	<1	-
Hydroxide Alkalinity (as CaCO3)	mg/L	1					<1	-	<1	-	<1	-	<1	-	<1	-
Total Alkalinity (as CaCO3)	mg/L	1					916	-	815	-	222	-	1,110	-	834	-
Hardness (as CaCO3) (filtered)	mg/L	1					4,020	-	3,980	-	4,730	-	3,980	-	586	-
Metals																
Arsenic (filtered)	mg/L	0.001		0.042 [#5]	**0.013** [#5]	*0.1* [#17]	0.011	0.008	0.004	0.004	0.004	0.002	0.005	0.007	<0.001	0.002
Cadmium (filtered)	mg/L	0.0001		0.0004 [#6]	**0.0002** [#6]	*0.02* [#17]	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0010	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (filtered)	mg/L	0.001		0.0033 [#13]	**0.001** [#7]	*0.5* [#18]	<0.001	<0.001	<0.001	<0.001	**0.002**	**0.002**	<0.001	<0.001	<0.001	<0.001
Copper (filtered)	mg/L	0.001		0.0018 [#3]	**0.0014** [#3]	*20* [#17]	**0.015**	<0.001	**0.011**	<0.001	<0.010	**0.002**	**0.005**	<0.001	**0.003**	<0.001
Iron (filtered)	mg/L	0.01				*140* [#19]	4.97	2.01	0.40	0.58	5.7	6.04	1.22	2.91	<0.05	0.20
Lead (filtered)	mg/L	0.001		0.0056 [#6]	**0.0034** [#6]	*0.1* [#17]	<0.001	<0.001	<0.001	<0.001	0.001	0.002	<0.001	<0.001	<0.001	<0.001
Manganese (filtered)	mg/L	0.001		2.5 [#3]	**1.9** [#3]	*5* [#17]	0.92	**2.26**	0.96	1.00	***6.15***	***6.57***	***5.45***	***6.04***	0.04	0.225
Mercury (filtered)	mg/L	0.00005		0.0006 [#8]	**0.00006** [#8]	*0.01* [#17]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel (filtered)	mg/L	0.001		0.013 [#6]	**0.011** [#6]	*0.2* [#17]	**0.023**	**0.036**	0.006	0.005	**0.18**	***0.207***	**0.021**	**0.020**	<0.001	0.002
Zinc (filtered)	mg/L	0.001		0.015 [#6]	**0.008** [#6]	*60* [#19]	**0.012**	**0.045**	0.008	**0.009**	**0.23**	**0.122**	<0.005	<0.005	<0.005	0.006
BTEX																
Benzene	µg/L	1	**30,000**	1,300 [#3]	**950** [#3]	*10* [#17]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	µg/L	1	**NL**	230 [#3]	**180** [#3]	*8,000* [#17]	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	µg/L	1	**NL**	110 [#3]	**80** [#3]	*3,000* [#17]	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Xylene (m & p)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Xylene (o)	µg/L	1		470 [#3]	**350** [#3]		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Xylene	µg/L	2	**NL**			*6,000* [#17]	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total BTEX	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Petroleum Hydrocarbons																
C6-C9 Fraction	µg/L	10					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
C10-C14 Fraction	µg/L	50					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15-C28 Fraction	µg/L	100					<100	<100	<100	<100	140	<100	<100	<100	<100	<100
C29-C36 Fraction	µg/L	50					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C10-C36 Fraction (Sum)	µg/L	50					<50	<50	<50	<50	140	<50	<50	<50	<50	<50

Table X: Analytical Results
ReDirect Wetherill Park
ReDirect Wetherill Park, 24 Davis Road

						Location Code	MW1	MW1	MW2	MW2	MW3	MW3	MW4	MW4	MW6	MW6
						Field ID	MW1	MW1	MW2	MW2	MW3	MW3	MW4	MW4	MW6	MW6
						Date	08/02/2023	14/08/2023	08/02/2023	14/08/2023	08/02/2023	14/08/2023	08/02/2023	14/08/2023	08/02/2023	14/08/2023
						Sample Type	Normal	Normal	Normal	Normal	Highest Conc.	Highest Conc.	Normal	Normal	Normal	Normal
						Lab Report No.	ES2304011	ES2327328	ES2304011	ES2327328	ES2304011	ES2327328	ES2304011	ES2327328	ES2304011	ES2327328
	Unit	EQL	**NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay 2-4m**	Aquatic ecosystems DGV - highly disturbed (90%) - freshwater	**Aquatic ecosystems DGV - slightly to moderately disturbed (95%) - freshwater**	*NHMRC (2008)Primary Contact Recreation - Health*										
Total Recoverable Hydrocarbons																
C6-C10 Fraction	µg/L	10					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
C6-C10 Fraction minus BTEX (F1)	µg/L	10	NL [#1]	440 [#9]	**440** [#9]	*900* [#20]	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
>C10-C16 Fraction	µg/L	50					<100	<100	<100	<100	130	<100	<100	<100	<100	<100
>C10-C16 Fraction minus naphthalene (F2)	µg/L	50	NL [#2]	440 [#9]	**440** [#9]	*900* [#20]	<100	<100	<100	<100	130	<100	<100	<100	<100	<100
>C16-C34 Fraction	µg/L	100		640 [#10]	**640** [#10]	*900* [#21]	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C34-C40 Fraction	µg/L	100		640 [#11]	**640** [#11]	*900* [#21]	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C10-C40 Fraction (Sum)	µg/L	50					<100	<100	<100	<100	130	<100	<100	<100	<100	<100
PAHs																
Acenaphthene	µg/L	1				*5,350* [#19]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	µg/L	1					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	µg/L	1		0.4 [#8]	**0.01** [#8]	*17,700* [#19]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	µg/L	1					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	µg/L	0.5		0.2 [#8]	**0.1** [#8]	*0.1* [#17]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	µg/L	1					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	µg/L	1					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j+k)fluoranthene	µg/L	2					-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	µg/L	1					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	µg/L	1					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	µg/L	1					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	µg/L	1		1.4 [#8]	**1** [#8]	*8,020* [#19]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	µg/L	1				*2,940* [#19]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Indeno(1,2,3-c,d)pyrene	µg/L	1					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	µg/L	1	NL	37 [#3]	**16** [#3]	*700* [#22]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	µg/L	1		2 [#8]	**0.6** [#8]		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	µg/L	1				*1,210* [#19]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene TEQ (Zero)	µg/L	0.5				*0.1* [#23]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of Polycyclic aromatic hydrocarbons (PAH)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ	µg/L	5				*0.1* [#23]	-	-	-	-	-	-	-	-	-	-
Total Positive PAHs	µg/L	1					-	-	-	-	0	-	-	-	-	-
Phenols																
2-Methylphenol	µg/L	1				*9,260* [#19]	<1.0	-	<1.0	-	<1.0	-	<1.0	-	<1.0	-
2-Nitrophenol	µg/L	1					<1.0	-	<1.0	-	<1.0	-	<1.0	-	<1.0	-
2,4-Dimethylphenol	µg/L	1		2 [#12]	**2** [#12]	*3,550* [#19]	<1.0	-	<1.0	-	<1.0	-	<1.0	-	<1.0	-
3-&4-Methylphenol (m&p-cresol)	µg/L	2					<2.0	-	<2.0	-	<2.0	-	<2.0	-	<2.0	-
4-Chloro-3-methylphenol	µg/L	1				*14,500* [#19]	<1.0	-	<1.0	-	<1.0	-	<1.0	-	<1.0	-
Phenol	µg/L	1		600 [#3]	**320** [#3]	*57,700* [#19]	<1.0	-	<1.0	-	<1.0	-	<1.0	-	<1.0	-
Halogenated Phenols																
2,4,5-Trichlorophenol	µg/L	1				*11,800* [#19]	<1.0	-	<1.0	-	<1.0	-	<1.0	-	<1.0	-
2,4,6-Trichlorophenol	µg/L	1		20 [#8]	**3** [#8]	*200* [#17]	<1.0	-	<1.0	-	<1.0	-	<1.0	-	<1.0	-
2,4-Dichlorophenol	µg/L	1		160 [#8]	**120** [#8]	*2,000* [#17]	<1.0	-	<1.0	-	<1.0	-	<1.0	-	<1.0	-
2,6-Dichlorophenol	µg/L	1		34 [#12]	**34** [#12]		<1.0	-	<1.0	-	<1.0	-	<1.0	-	<1.0	-
2-Chlorophenol	µg/L	1		490 [#8]	**340** [#8]	*3,000* [#17]	<1.0	-	<1.0	-	<1.0	-	<1.0	-	<1.0	-
Pentachlorophenol	µg/L	2		10 [#8]	**3.6** [#8]	*100* [#17]	<2.0	-	<2.0	-	<2.0	-	<2.0	-	<2.0	-

Table X: Analytical Results
ReDirect Wetherill Park
ReDirect Wetherill Park, 24 Davis Road

						Location Code	MW1	MW1	MW2	MW2	MW3	MW3	MW4	MW4	MW6	MW6
						Field ID	MW1	MW1	MW2	MW2	MW3	MW3	MW4	MW4	MW6	MW6
						Date	08/02/2023	14/08/2023	08/02/2023	14/08/2023	08/02/2023	14/08/2023	08/02/2023	14/08/2023	08/02/2023	14/08/2023
						Sample Type	Normal	Normal	Normal	Normal	Highest Conc.	Highest Conc.	Normal	Normal	Normal	Normal
						Lab Report No.	ES2304011	ES2327328	ES2304011	ES2327328	ES2304011	ES2327328	ES2304011	ES2327328	ES2304011	ES2327328
	Unit	EQL	**NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay 2-4m**	Aquatic ecosystems DGV - highly disturbed (90%) - freshwater	**Aquatic ecosystems DGV - slightly to moderately disturbed (95%) - freshwater**	*NHMRC (2008)Primary Contact Recreation - Health*										

Comments

#1 To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#2 To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#3 ANZG (2018)
#4 Derived by NZ NIWA (2013) using ANZECC (2000) methodology. ANZECC (2000) value was withdrawn due to calculation errors.
#5 ANZG (2018). The more conservative value (Arsenic AsV) out of the available arsenic species was adopted for initial screening purposes.
#6 ANZG (2018). Adjust DGVs for site-specific hardness using the hardness-dependent algorithm in Warne et al. (2018)
#7 ANZG (2018). The more conservative value (Chromium CrVI) out of the available chromium species was adopted for initial screening purposes.
#8 ANZG (2018). Higher species protection level adopted as recommended
#9 CRWB (2019). Lowest of values for gasoline (C4-C12) and diesel (C8-C21) range hydrocarbons.
#10 CRWB (2019). Value for diesel (C8-C21) mixture.
#11 CRWB (2019). Value for diesel (C8-C21) mixture. No value derived for TPH >C21 as not considered soluble; diesel value used for screening.
#12 ANZG (2018). Unknown species protection level
#13 ANZG (2018). The more conservative value (Chromium CrIII) out of the available chromium species was adopted for initial screening purposes.
#14 NHMRC (2008)
#15 NHMRC (2011) - Health. Converted from guideline for nitrate (as nitrate). Multiplied by a factor of x10
#16 NHMRC (2011) - Health. Converted from guideline for nitrite (as nitrite). Multiplied by a factor of x10
#17 NHMRC (2011) - Health. Multiplied by a factor of x10
#18 NHMRC (2011) - Health. Guideline for Cr (VI) conservatively adopted for comparision to total chromium. Speciated analysis should be undertaken where guideline is exceeded. Multiplied by a factor of x10
#19 USEPA Tap Water RSL (TR=1E-06; THQ=0.1). Multiplied by a factor of x10
#20 WHO (2008). Lowest derived value for aliphatic and aromatic fractions in this range. Multiplied by a factor of x10
#21 Lowest derived value for aliphatic and aromatic fractions in this range (90 ug/L). Multiplied by a factor of x10
#22 NHMRC (2011) - Health. Derived as per NHMRC (2011) based on TDI used for NEPM HSL derivation. Multiplied by a factor of x10
#23 NHMRC (2011) - Health. Value is for BaP but applies to TEQ. Multiplied by a factor of x10

Appendix C – Community Complaints

Complaint No	Category	Date Received	Property	Detail	Follow Up Actions
NIL	-	-	-	-	-

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