3 February 2020

Graham Cooper
Mirvac Projects Pty Ltd
via email: graham.cooper@mirvac.com

Response to EPA: Groundwater Seepage and Disposal
Site 53, 2 Figtree Drive, Sydney Olympic Park, NSW

Dear Graham,

Following receipt of EPA comments titled "*Groundwater Seepage and Disposal*" reference DOC19/1111304-4 dated 23 January 2020 on the proposed Water Cycle Management Plan (WCMP[1]) to address Development Consent condition E8, please find below clarification on the issues raised.

Comment #1

Stormwater and groundwater are separate entities and stormwater should not be used for the dilution of contaminated groundwater.

Practical measures should always be taken to prevent, control, abate or mitigate water pollution and protect the environment from harm.

Response to Comment #1

It is acknowledged that stormwater and groundwater are separate entities and stormwater should not be used for the dilution of contaminated groundwater.

Upon completion of the built form, records provided by Mirvac show that approximately 3,120L of groundwater seepage is collected each day.

JBS&G collected a representative groundwater seepage sample on Friday 24 January 2020. Based on the analytical results (**Attachment 2**), with consideration to the volume of groundwater seepage, and the definition of non-trivial risk of harm as presented in EPA correspondence, it is considered that groundwater seepage does not pose an unacceptable risk of harm to site users. It is noted that ammonia (as N) is below the adopted human health criterion of 5 mg/L with a concentration of 0.83 mg/L.

With regards to the exceedance of the 95% freshwater criteria for copper and zinc, this is considered resultant from the encountered underlying geology. The heavy metals are considered representative of urban background geo-chemistry. Concentrations of these heavy metals were less than 1 order of magnitude above the adopted 95% freshwater criteria. It is noted that ammonia (as N) is below the adopted ecological criterion of 1.32 mg/L with a concentration of 0.83 mg/L.

Adopting a common sense assessment approach to relevant provisions of the *Protection of the Environment Operations Act 1997* (*POEO Act 1997*), and with consideration to the contaminant mass and amount of groundwater seepage, it is considered that the elevated heavy metals are representative of the general urban environment and do not pose an unacceptable risk to

[1] *Water Cycle Management Plan 2 Figtree Drive, Sydney Olympic Park (Site 53).* Prepared for Mirvac Projects by JHA Consulting Engineers Pty Ltd dated 9 June 2017 (JHA 2017)

freshwater ecological receptors. Notwithstanding, as another level of conservatism, rather than discharge collected groundwater seepage to the municipality stormwater network, Mirvac propose to beneficially reuse collected groundwater seepage within the site for the irrigation of landscaped areas of the site. Locally harvested rainwater will supplement collected groundwater seepage, as back up if groundwater seepage is insufficient to meet demand and not to dilute the groundwater seepage. Please see edits to the WCMP confirming details of the proposed system.

Based on the analytical results (**Attachment 2**) documenting contaminant concentrations within a sample collected from the constructed basement collection sump, from a contamination viewpoint collected groundwater seepage is considered suitable for irrigation purposes.

Based on the above discourse, it is considered that practical measures have been implemented to prevent, control, abate or mitigate water pollution and protect the environment from harm.

Comment #2

Locally harvested rainwater appears to be a source of non-potable water. The plan states, however, that this could be supplemented by recycled water, as a back-up if harvested rainwater is insufficient to meet demand.

Response to Comment #2

Please refer to response provided above.

Comment #3

The subject site has not been previously notified to the NSW EPA in relation to Section 60 of the *Contaminated Land Management Act 1997* (*CLM Act*) and is currently not regulated under the CLM Act. However, this land is located less than 150 m from the former Bicentennial Park Landfill.

Response to Comment #3

JBS&G acknowledge a number of surrounding properties have been notified to the EPA under Section 60 of the *CLM Act*. Notwithstanding, based on the findings of previous environmental investigations, including extensive soil, ground gas and groundwater assessment, and the findings of the validation assessment for the subject site, the requirement to notify the EPA under Section 60 of the *CLM Act* has not been triggered.

All environmental reports prepared by JBS&G and third parties, have been reviewed and endorsed by an NSW EPA accredited Site Auditor. Furthermore, a Section A1 Site Audit Statement (SAS) has been issued for the site by an NSW EPA Accredited Site Auditor certifying the site is suitable for its proposed land uses. This has included confirmation that there is no migration of unacceptable contamination risks from off-site locations that are the subject of Section 60 notices.

Comment #4

Given the site's proximity to areas that are regulated by the EPA under the CLM Act, further consideration should be given to technology that will minimise or prevent the ingress of groundwater.

Response to Comment #4

Reference should be made to the above responses which refer to the practical measures that have been implemented to prevent, control, abate or mitigate water pollution and protect the environment from harm.

Comment #5

Groundwater contamination is known to occur in the vicinity of this development and has been identified in groundwater monitoring bores (MW1 and MW2). Limited groundwater monitoring

data appears to indicate the presence of pollutants including ammonia and various hydrocarbons. The limited number of samples do not provide representative data on potential variability in groundwater pollutant concentrations.

Response to Comment #5

Groundwater at the site has been extensively characterised as documented in the Site Audit Report (SAR) prepared for the site by an NSW EPA accredited Site Auditor. Based on the findings of previous investigation and following remediation works (associated with identified soil impacts) at the site, groundwater was considered by the appointed NSW EPA accredited Site Auditor to not represent an unacceptable human health or ecological rick to site and/or down gradient receptors.

As noted above, a Section A1 SAS has been issued for the site certifying that the site is suitable for the proposed land uses. This included consideration of the potential for migration of contamination onto the site from surrounding properties notified under Section 60 of the CLM Act.

Furthermore, as discussed above, now that construction of the built form has been completed, JBS&G has collected a representative sample of groundwater seepage. Based on the analytical results (**Attachment A**) groundwater seepage is considered not to represent an unacceptable human health or ecological risk.

Based on the above discourse, it is considered that groundwater has been adequately characterised along with potential variability in groundwater pollutant concentrations.

Comment #6

The proponent should consider testing a broader suite of key leachate indicators which are regularly monitored from the surrounding landfills such as total dissolved solids (TDS), total suspended solids (TSS), oil and grease, ammonium , cyanide, alkalinity,· biological oxygen demand (BOD), total metals (copper, lead and zinc), benzene and total petroleum hydrocarbons (TPH)).

Response to Comment #6

JBS&G note previous groundwater characterisation activities have included the majority of the aforementioned contaminants of potential concern, with the Site Auditor certifying that the groundwater has been adequately characterised.

Reference should also be made to **Attachment 2** and discourse above demonstrating groundwater seepage does not represent an unacceptable human health and/or ecological risk.

As noted above, as another level of conservatism, rather than discharge of collected groundwater seepage to the municipal stormwater network, Mirvac propose to beneficially reuse collected groundwater seepage for irrigation of landscaped areas within the site.

Comment #7

There is insufficient information to demonstrate that the proposed measures (including a gross pollutant trap/oil separator) will ensure discharges of pollutants from the premises will not pose a risk of non-trivial harm to human health or the environment. "Trivial" here relates to both the concentration of the pollutant as well as its risk to the environment. For example:

- Nutrient related risks of ammonia and concentrations of Bis(2-ethylhexyl) phthalate are potential additional risk factors that have not been adequately considered in the WCMP.
- The groundwater report stated that there is no endorsed site assessment criteria for Bis(2-ethylhexyl)phthalate, however, Bis(2-ethylhexyl phthalate is also called Di(2-ethylhexyl)phthalate (DEHP) and there is an interim trigger value in ANZECC (2000) Volume 2 of 1 µg/L. A concentration of 42 µg/L was recorded at MW01. Bioaccumulation must also be considered.

- The ammonia values are highly elevated. It should be noted that nutrient-related impacts can occur through both concentration and loads. Therefore, the proposed dilution would not address all potential risks to downstream waters based on loads. In addition, the proposed 10:1 dilution ratio would not protect downstream waters from potential nutrient concentration related risks. Based on the analysis of just two samples, the ammonia levels could be much higher under different conditions.

Response to Comment #7

Reference should be made to the discourse above in which groundwater seepage has been demonstrated not to represent an unacceptable human health or ecological risk and practical measures have been implemented to prevent, control, abate or mitigate water pollution and protect the environment from harm.

Should you require clarification, please contact the undersigned on 02 8245 0300 or by email ncussen@jbsg.com.au / jrosner@jbsg.com.au.

Yours sincerely:

Nathan Cussen
Senior Associate
JBS&G Australia Pty Ltd

Reviewed/Approved by:

Joanne Rosner
Senior Principal,
JBS&G Australia Pty Ltd

Attachments:
1) Limitations
2) Summary of Groundwater Seepage Analytical Results

Attachment 1 – Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquires.

Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

Attachment 2 – Summary of Groundwater Seepage Analytical Results

Table A: Groundwater Seepage Analytical Results
Project Number: 54000
Project Name: SOPA

	Metals & Metalloids								TPHs (NEPC 1999)					TRHs (NEPC 2013)							BTEXN						
	Arsenic (Total) (Filtered)	Cadmium (Filtered)	Chromium (Total) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Inorganic) (Filtered)	Nickel (Filtered)	Zinc (Filtered)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C40 Fraction (Total)	>C10-C16 less Naphthalene (F2)	C6-C10 Fraction	C6-C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)	Naphthalene
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.005	0.02	0.05	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.05	0.02	0.02	0.001	0.001	0.001	0.001	0.002	0.003	0.01
ANZECC 2000 - Water Quality for Irrigation and General Water Use	0.1	0.01	0.1	0.2	2	0.002	0.2	2																			
ANZG 2018 Water Quality Guidelines (Fresh Water) 95% level of Protection		0.0002		0.0014	0.0034	0.0006	0.011	0.008													0.95			0.35			0.016
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Aesthetics				10				30														0.03	0.25			0.2	
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Health	0.1	0.02		20	0.1	0.01	0.2			0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9			0.01	3	8			6	
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Clay 2 to <4m																		NL		NL	5	NL	NL			NL	NL
Field ID	**Sampled Date**	**Lab Report Number**																									
S1	24/01/2020	698511, 698512, 698899	<0.001	<0.0002	0.006	0.045	<0.001	<0.0001	0.002	0.031	<0.02	0.07	0.4	0.2	0.67	0.1	0.6	<0.1	0.7	0.1	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003	<0.01

Table A: Groundwater Seepage Analytical Results
Project Number: 54000
Project Name: SOPA

				Chlorinated Alkanes															Chlorinated Alkenes									
				1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	Bromochloromethane	Carbon tetrachloride	Chloroethane	Chloromethane	Dichlorodifluoromethane	Dichloromethane	Trichlorofluoromethane	1,1-dichloroethene	3-chloropropene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Vinyl Chloride
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
ANZECC 2000 - Water Quality for Irrigation and General Water Use																													
ANZG 2018 Water Quality Guidelines (Fresh Water) 95% level of Protection							6.5																						
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Aesthetics																													
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Health										0.03				0.03				0.04		0.3					0.5			0.2	0.003
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Clay 2 to <4m																													
Field ID	**Sampled Date**	**Lab Report Number**																											
S1	24/01/2020	698511, 698512, 698899		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table A: Groundwater Seepage Analytical Results
Project Number: 54000
Project Name: SOPA

	Solvents	Monocyclic Aromatic Hydrocarbons					VOC	Miscellaneous Hydrocarbons						Chlorinated Benzenes				Trihalomethanes				Organic Sulfur Compounds
	2-Propanone (Acetone)	1,2,4-trimethyl benzene	1,3,5-trimethyl benzene	Bromobenzene	Isopropylbenzene	Styrene	Total MAH*	1,2-dibromoethane	2-Butanone (MEK)	4-Methyl-2-pentanone (MIBK)	Bromomethane	Dibromomethane	Iodomethane	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	Bromodichloromethane	Chloroform	Dibromochloromethane	Tribromomethane	Carbon disulfide
	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MG/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	1	0.001	0.001	0.001	0.001	0.001	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.001
ANZECC 2000 - Water Quality for Irrigation and General Water Use																						
ANZG 2018 Water Quality Guidelines (Fresh Water) 95% level of Protection														0.16	0.26	0.06						
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Aesthetics						0.04								0.01	0.2	0.03	0.1					
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Health	140000					0.3		0.01			0.01			15		0.4	3	2.5	2.5	2.5	2.5	
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Clay 2 to <4m																						

Field ID	Sampled Date	Lab Report Number																				
S1	24/01/2020	698511, 698512, 698899	<1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001

Table A: Groundwater Seepage Analytical Results
Project Number: 54000
Project Name: SOPA

	Phthalates					SVOC	Non-Metallic Inorganics				Inorganic	Ionic Balance	Other		pH
	Di(2-ethylhexyl) phthalate	Dibutyl phthalate	Diethyl phthalate	Dimethyl phthalate	di-n-octylphthalate	Butyl benzyl phthalate	Ammonia (as N)	Cyanide	Nitrate (as N)	Nitrite (as N)	Oil & Grease (HEM)	EC_Lab	Total Dissolved Solids	Total Suspended Solids	pH
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MG/L	µS/cm	mg/L	mg/L	pH
EQL	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.005	0.02	0.02	10	10	5	5	0.1
ANZECC 2000 - Water Quality for Irrigation and General Water Use															
ANZG 2018 Water Quality Guidelines (Fresh Water) 95% level of Protection		3.7	0.026	0.00015			1.32	0.007							
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Aesthetics													6000		
Australian Drinking Water (2011) (as amended Oct 2017) (factor 10) – Health	0.1						5	0.8	112.9	92					
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Clay 2 to <4m															

Field ID	Sampled Date	Lab Report Number													
S1	24/01/2020	698511, 698512, 698899	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.83	<0.005	2.7	<0.02	15	520	250	66	7.7

017741

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54000
PROJECT NAME: SOPA
DATE NEEDED BY: 24 HR TAT

LABORATORY BATCH NO.: 698511
SAMPLERS: CBennett

QC LEVEL: NEPM (2013)

PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) cbennett@jbsg.com.au; (3) NCussen@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TRH/BTEX	VOCs	H. Metals	[redacted]	TSS	Oil/grease	Nitrate	Nitrile.	Cyanide									TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
S1	Water	24.1.20		various bottles		X	X	X	[redacted]	X	X	X	X	X											

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: DATE: 24.1.20 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: Grace DATE: 24/1 OF: Eurofins	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP 6.2 deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

eurofins | Environment Testing

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NATA # 1261
Site # 1254 & 14271

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NATA # 1261 Site # 20794

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

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

Sample Receipt Advice

Company name: **JBS & G Australia (NSW) P/L**

Contact name: Claudia Bennett
Project name: SOPA
Project ID: 54000
COC number: Not provided
Turn around time: 1 Day
Date/Time received: Jan 24, 2020 3:45 PM
Eurofins reference: **698511**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 6.2 degrees Celsius.

☑ 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.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

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

Ursula Long on Phone : or by e.mail: UrsulaLong@eurofins.com

Results will be delivered electronically via e.mail to Claudia Bennett - CBennett@jbsg.com.au.

Note: A copy of these results will also be delivered to the general JBS & G Australia (NSW) P/L email address.

eurofins | Environment Testing

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

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Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: SOPA
Project ID: 54000

Order No.:
Report #: 698511
Phone: 02 8245 0300
Fax:

Received: Jan 24, 2020 3:45 PM
Due: Jan 28, 2020
Priority: 1 Day
Contact Name: Claudia Bennett

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Cyanide (total)	Nitrate (as N)	Nitrite (as N)	Oil & Grease (HEM)	Total Suspended Solids Dried at 103–105°C	Volatile Organics	Eurofins | mgt Suite B6 (filtered metals)
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X			
Sydney Laboratory - NATA Site # 18217						X				X	X	X
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
External Laboratory												
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**							
1	S1	Jan 24, 2020		Water	S20-Ja24036	X	X	X	X	X	X	X
Test Counts						1	1	1	1	1	1	1

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Claudia Bennett**

Report **698511-W**
Project name SOPA
Project ID 54000
Received Date Jan 24, 2020

Client Sample ID			**S1**
Sample Matrix			**Water**
Eurofins Sample No.			**S20-Ja24036**
Date Sampled			**Jan 24, 2020**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	0.07
TRH C15-C28	0.1	mg/L	0.4
TRH C29-C36	0.1	mg/L	0.2
TRH C10-C36 (Total)	0.1	mg/L	0.67
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	%	86
Volatile Organics			
1.1-Dichloroethane	0.001	mg/L	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001
2-Butanone (MEK)	0.001	mg/L	< 0.001
2-Propanone (Acetone)	0.001	mg/L	< 0.001
4-Chlorotoluene	0.001	mg/L	< 0.001
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001
Allyl chloride	0.001	mg/L	< 0.001

Client Sample ID			S1
Sample Matrix			Water
Eurofins Sample No.			S20-Ja24036
Date Sampled			Jan 24, 2020
Test/Reference	LOR	Unit	
Volatile Organics			
Benzene	0.001	mg/L	< 0.001
Bromobenzene	0.001	mg/L	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001
Bromoform	0.001	mg/L	< 0.001
Bromomethane	0.001	mg/L	< 0.001
Carbon disulfide	0.001	mg/L	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001
Chloroethane	0.001	mg/L	< 0.001
Chloroform	0.005	mg/L	< 0.005
Chloromethane	0.001	mg/L	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001
Dibromomethane	0.001	mg/L	< 0.001
Dichlorodifluoromethane	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
Iodomethane	0.001	mg/L	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
Methylene Chloride	0.001	mg/L	< 0.001
o-Xylene	0.001	mg/L	< 0.001
Styrene	0.001	mg/L	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001
Trichloroethene	0.001	mg/L	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
Total MAH*	0.003	mg/L	< 0.003
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005
4-Bromofluorobenzene (surr.)	1	%	86
Toluene-d8 (surr.)	1	%	83
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.01	mg/L	< 0.01
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	0.10
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	0.1
TRH >C16-C34	0.1	mg/L	0.6
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	0.7

Client Sample ID			S1
Sample Matrix			**Water**
Eurofins Sample No.			**S20-Ja24036**
Date Sampled			**Jan 24, 2020**
Test/Reference	LOR	Unit	
Cyanide (total)	0.005	mg/L	< 0.005
Nitrate (as N)	0.02	mg/L	2.7
Nitrite (as N)	0.02	mg/L	< 0.02
Oil & Grease (HEM)	10	mg/L	15
Total Suspended Solids Dried at 103–105°C	5	mg/L	66
Heavy Metals			
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	0.006
Copper (filtered)	0.001	mg/L	0.045
Lead (filtered)	0.001	mg/L	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	0.002
Zinc (filtered)	0.005	mg/L	0.031

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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
Eurofins | mgt Suite B6 (filtered metals)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Jan 24, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Jan 24, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jan 24, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jan 24, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8 filtered	Sydney	Jan 24, 2020	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Volatile Organics	Sydney	Jan 24, 2020	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Cyanide (total)	Sydney	Jan 24, 2020	14 Days
- Method: E054 Total Cyanide			
Nitrate (as N)	Melbourne	Jan 28, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrite (as N)	Melbourne	Jan 28, 2020	2 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Oil & Grease (HEM)	Melbourne	Jan 28, 2020	28 Days
- Method: APHA 5520B Oil & Grease			
Total Suspended Solids Dried at 103–105°C	Sydney	Jan 24, 2020	7 Days
- Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry			

eurofins | Environment Testing

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Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: SOPA
Project ID: 54000

Order No.:
Report #: 698511
Phone: 02 8245 0300
Fax:

Received: Jan 24, 2020 3:45 PM
Due: Jan 28, 2020
Priority: 1 Day
Contact Name: Claudia Bennett

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Cyanide (total)	Nitrate (as N)	Nitrite (as N)	Oil & Grease (HEM)	Total Suspended Solids Dried at 103–105°C	Volatile Organics	Eurofins | mgt Suite B6 (filtered metals)
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X			
Sydney Laboratory - NATA Site # 18217						X				X	X	X
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
External Laboratory												
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**							
1	S1	Jan 24, 2020		Water	S20-Ja24036	X	X	X	X	X	X	X
Test Counts						1	1	1	1	1	1	1

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Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram | **mg/L:** milligrams per litre | **ug/L:** micrograms per litre

ppm: Parts per million | **ppb:** Parts per billion | **%:** Percentage

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

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
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	
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							
Volatile Organics							
1.1-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001			0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.4-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.3.5-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
2-Butanone (MEK)	mg/L	< 0.001			0.001	Pass	
2-Propanone (Acetone)	mg/L	< 0.001			0.001	Pass	
4-Chlorotoluene	mg/L	< 0.001			0.001	Pass	
4-Methyl-2-pentanone (MIBK)	mg/L	< 0.001			0.001	Pass	
Allyl chloride	mg/L	< 0.001			0.001	Pass	
Bromobenzene	mg/L	< 0.001			0.001	Pass	
Bromochloromethane	mg/L	< 0.001			0.001	Pass	
Bromodichloromethane	mg/L	< 0.001			0.001	Pass	
Bromoform	mg/L	< 0.001			0.001	Pass	
Bromomethane	mg/L	< 0.001			0.001	Pass	
Carbon disulfide	mg/L	< 0.001			0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001			0.001	Pass	
Chlorobenzene	mg/L	< 0.001			0.001	Pass	
Chloroethane	mg/L	< 0.001			0.001	Pass	
Chloroform	mg/L	< 0.005			0.005	Pass	
Chloromethane	mg/L	< 0.001			0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Dibromochloromethane	mg/L	< 0.001			0.001	Pass	
Dibromomethane	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dichlorodifluoromethane	mg/L	< 0.001			0.001	Pass	
Iodomethane	mg/L	< 0.001			0.001	Pass	
Isopropyl benzene (Cumene)	mg/L	< 0.001			0.001	Pass	
Methylene Chloride	mg/L	< 0.001			0.001	Pass	
Styrene	mg/L	< 0.001			0.001	Pass	
Tetrachloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Trichloroethene	mg/L	< 0.001			0.001	Pass	
Trichlorofluoromethane	mg/L	< 0.001			0.001	Pass	
Vinyl chloride	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	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							
Cyanide (total)	mg/L	< 0.005			0.005	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Suspended Solids Dried at 103–105°C	mg/L	< 5			5	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	90			70-130	Pass	
TRH C10-C14	%	109			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	83			70-130	Pass	
Toluene	%	75			70-130	Pass	
Ethylbenzene	%	89			70-130	Pass	
m&p-Xylenes	%	88			70-130	Pass	
o-Xylene	%	92			70-130	Pass	
Xylenes - Total	%	89			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	94			70-130	Pass	
1.1.1-Trichloroethane	%	82			70-130	Pass	
1.2-Dichlorobenzene	%	98			70-130	Pass	
1.2-Dichloroethane	%	79			70-130	Pass	
Trichloroethene	%	78			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Naphthalene			%	87			70-130	Pass	
TRH C6-C10			%	93			70-130	Pass	
TRH >C10-C16			%	105			70-130	Pass	
LCS - % Recovery									
Cyanide (total)			%	107			70-130	Pass	
Nitrate (as N)			%	109			70-130	Pass	
Nitrite (as N)			%	108			70-130	Pass	
Total Suspended Solids Dried at 103–105°C			%	81			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic (filtered)			%	89			70-130	Pass	
Cadmium (filtered)			%	90			70-130	Pass	
Chromium (filtered)			%	89			70-130	Pass	
Copper (filtered)			%	90			70-130	Pass	
Lead (filtered)			%	91			70-130	Pass	
Mercury (filtered)			%	91			70-130	Pass	
Nickel (filtered)			%	91			70-130	Pass	
Zinc (filtered)			%	91			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
				Result 1					
Cyanide (total)	S20-Ja18337	NCP	%	102			70-130	Pass	
Nitrate (as N)	M20-Ja25419	NCP	%	97			70-130	Pass	
Nitrite (as N)	M20-Ja25419	NCP	%	118			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S20-Ja20734	NCP	%	92			70-130	Pass	
Cadmium (filtered)	S20-Ja20734	NCP	%	90			70-130	Pass	
Chromium (filtered)	S20-Ja20734	NCP	%	89			70-130	Pass	
Copper (filtered)	S20-Ja20734	NCP	%	89			70-130	Pass	
Lead (filtered)	S20-Ja20734	NCP	%	80			70-130	Pass	
Mercury (filtered)	S20-Ja20734	NCP	%	80			70-130	Pass	
Nickel (filtered)	S20-Ja20734	NCP	%	90			70-130	Pass	
Zinc (filtered)	S20-Ja20734	NCP	%	89			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-Ja18945	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S20-Ja18945	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S20-Ja18945	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1-Dichloroethene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1-Trichloroethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2-Trichloroethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1.2.2-Tetrachloroethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dibromoethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichlorobenzene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichloroethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichloropropane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2.3-Trichloropropane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2.4-Trimethylbenzene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3-Dichlorobenzene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3-Dichloropropane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3.5-Trimethylbenzene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.4-Dichlorobenzene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
2-Butanone (MEK)	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
2-Propanone (Acetone)	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
4-Chlorotoluene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Allyl chloride	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromobenzene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromochloromethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromodichloromethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromoform	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromomethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Carbon disulfide	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Carbon Tetrachloride	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chlorobenzene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chloroethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chloroform	S20-Ja18945	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Chloromethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
cis-1.2-Dichloroethene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
cis-1.3-Dichloropropene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibromochloromethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibromomethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dichlorodifluoromethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iodomethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Isopropyl benzene (Cumene)	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Methylene Chloride	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Styrene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Tetrachloroethene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
trans-1.2-Dichloroethene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
trans-1.3-Dichloropropene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Trichloroethene	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Trichlorofluoromethane	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vinyl chloride	S20-Ja18945	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Ja18945	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S20-Ja18945	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Cyanide (total)	S20-Ja18335	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nitrate (as N)	M20-Ja25419	NCP	mg/L	2.7	2.7	<1	30%	Pass	
Nitrite (as N)	M20-Ja25419	NCP	mg/L	0.10	0.10	1.0	30%	Pass	
Total Suspended Solids Dried at 103–105°C	S20-Ja24036	CP	mg/L	66	74	10	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S20-Ja24036	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S20-Ja24036	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S20-Ja24036	CP	mg/L	0.006	0.006	<1	30%	Pass	
Copper (filtered)	S20-Ja24036	CP	mg/L	0.045	0.045	<1	30%	Pass	
Lead (filtered)	S20-Ja24036	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S20-Ja24036	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S20-Ja24036	CP	mg/L	0.002	0.001	2.0	30%	Pass	
Zinc (filtered)	S20-Ja24036	CP	mg/L	0.031	0.031	1.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	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.

Authorised By

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Inorganic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Julie Kay	Senior Analyst-Inorganic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

017742

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54000
PROJECT NAME: SOPA
DATE NEEDED BY: 24 Hr TAT
LABORATORY BATCH NO.: 698512
SAMPLERS: CB
QC LEVEL: NEPM (2013)
PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688
SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) cbennett@jbsg.com.au; (3) mcussen@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	Ammonia	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
S1	Water	24.1.20		1 x glass		X			

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: CB DATE: 24.1.19	CONSIGNMENT NOTE NO.	NAME: Grace	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF: JBS&G	TRANSPORT CO.	DATE: 24/1/19 OF: Eurofins	COOLER TEMP 6.2 deg C
NAME: DATE:	CONSIGNMENT NOTE NO.	NAME: DATE:	COOLER SEAL – Yes..... No ..... Intact ..... Broken .....
OF:	TRANSPORT CO	OF:	COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

eurofins | Environment Testing

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

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

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

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

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

Sample Receipt Advice

Company name: **JBS & G Australia (NSW) P/L**

Contact name: Claudia Bennett
Project name: SOPA
Project ID: 54000
COC number: 017742
Turn around time: 1 Day
Date/Time received: Jan 24, 2020 3:45 PM
Eurofins reference: **698512**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 6.2 degrees Celsius.

☑ 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.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

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

Ursula Long on Phone : or by e.mail: UrsulaLong@eurofins.com

Results will be delivered electronically via e.mail to Claudia Bennett - CBennett@jbsg.com.au.

Note: A copy of these results will also be delivered to the general JBS & G Australia (NSW) P/L email address.

eurofins | Environment Testing

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

Australia

Melbourne
6 Monterey Road
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Site # 1254 & 14271

Sydney
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NATA # 1261
Site # 23736

New Zealand

Auckland
35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: SOPA
Project ID: 54000

Order No.:
Report #: 698512
Phone: 02 8245 0300
Fax:

Received: Jan 24, 2020 3:45 PM
Due: Jan 28, 2020
Priority: 1 Day
Contact Name: Claudia Bennett

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Ammonia (as N)
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	S1	Jan 24, 2020		Water	S20-Ja24049	X
Test Counts						1

eurofins | Environment Testing

Certificate of Analysis

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Claudia Bennett**

Report **698512-W**
Project name SOPA
Project ID 54000
Received Date Jan 24, 2020

Client Sample ID			**S1**
Sample Matrix			**Water**
Eurofins Sample No.			**S20-Ja24049**
Date Sampled			**Jan 24, 2020**
Test/Reference	LOR	Unit	
Ammonia (as N)	0.01	mg/L	0.83

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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
Ammonia (as N)	Melbourne	Jan 28, 2020	28 Days

- Method: LTM-INO-4200 Ammonia by Discrete Analyser

eurofins | Environment Testing

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

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NATA # 1261
Site # 23736

New Zealand

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Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: SOPA
Project ID: 54000

Order No.:
Report #: 698512
Phone: 02 8245 0300
Fax:

Received: Jan 24, 2020 3:45 PM
Due: Jan 28, 2020
Priority: 1 Day
Contact Name: Claudia Bennett

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Ammonia (as N)
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	S1	Jan 24, 2020		Water	S20-Ja24049	X
Test Counts						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.

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

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
ug/L: micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%: Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Ammonia (as N)			mg/L	< 0.01			0.01	Pass	
LCS - % Recovery									
Ammonia (as N)			%	100			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M20-Ja25419	NCP	%	95			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M20-Ja25419	NCP	mg/L	0.02	0.02	8.0	30%	Pass	

Comments

Sample Integrity

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

Authorised By

Ursula Long	Analytical Services Manager
Julie Kay	Senior Analyst-Inorganic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

#AU04_Enviro_Sample_NSW

Subject: FW: 1 DAY ADDITIONAL:FW: Additional Analysis - 54000

From: Claudia Bennett [mailto:cbennett@jbsg.com.au]
Sent: Wednesday, 29 January 2020 9:22 AM
To: Ursula Long
Cc: Nathan Cussen
Subject: Additional Analysis - 54000

Morning Ursula,

Can I please arrange for the following additional analysis:

- Sample S1 (54000) for Phthalates on a 24 hour TAT please?

Thanks in advance,
Claudia

Claudia Bennett | Environmental Consultant | JBS&G
Sydney | Melbourne | Adelaide | Perth | Brisbane | Canberra | Darwin | Wollongong | Bunbury
Level 1, 50 Margaret Street Sydney NSW 2000
T: 02 8245 0300 | M: 0403 351 446| E: cbennett@jbsg.com.au | W: www.jbsg.com.au
Contaminated Land | Groundwater Remediation | Environmental Approvals | Auditing and Compliance | Hygiene and Hazardous Materials | Due Diligence and Liability | Stakeholder and Risk Management

#AU04_Enviro_Sample_NSW

From: Nathan Cussen <NCussen@jbsg.com.au>
Sent: Wednesday, 29 January 2020 10:58 AM
To: Ursula Long; Claudia Bennett
Subject: RE: Additional Analysis - 54000

EXTERNAL EMAIL*

Hi Ursula,

Can we also get pH.

Cheers,
Nathan

Nathan Cussen | Senior Associate | JBS&G Australia Pty Ltd
Sydney | Melbourne | Adelaide | Perth | Brisbane | Canberra | Darwin | Wollongong | Bunbury
Level 1, 50 Margaret Street Sydney NSW 2000
T: 02 8245 0300 | M: 0431 401 022 | www.jbsg.com.au
Contaminated Land | Groundwater Remediation | Approvals and Assessments | Auditing and Compliance | Hygiene and Hazardous Materials | Due Diligence and Liability | Stakeholder and Risk Management

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From: UrsulaLong@eurofins.com <UrsulaLong@eurofins.com>
Sent: Wednesday, 29 January 2020 9:30 AM
To: Claudia Bennett <cbennett@jbsg.com.au>
Cc: Nathan Cussen <NCussen@jbsg.com.au>
Subject: RE: Additional Analysis - 54000

No problem Claudia, I'll get this organised.

Kind regards,

Ursula Long
Analytical Services Manager

Eurofins | Environment Testing
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone : +61 2 9900 8420
Mobile: +61 428 845 495

Email : UrsulaLong@eurofins.com
Website: www.eurofins.com.au/environmental-testing

From: Claudia Bennett [mailto:cbennett@jbsg.com.au]
Sent: Wednesday, 29 January 2020 9:22 AM
To: Ursula Long
Cc: Nathan Cussen
Subject: Additional Analysis - 54000

EXTERNAL EMAIL*

Morning Ursula,

Can I please arrange for the following additional analysis:

- Sample S1 (54000) for Phthalates on a 24 hour TAT please?

Thanks in advance,
Claudia

Claudia Bennett | Environmental Consultant | JBS&G
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Ursula Long

From: Claudia Bennett <cbennett@jbsg.com.au>
Sent: Thursday, 30 January 2020 1:26 PM
To: Nathan Cussen; Ursula Long
Subject: RE: Additional Analysis - 54000

Follow Up Flag: Follow up
Flag Status: Flagged

EXTERNAL EMAIL*

Hey again Ursula,

Can we also arrange for EC analysis of this sample? Same day analysis if possible??

Thanks heaps,
Claudia

Claudia Bennett | Environmental Consultant | JBS&G
Sydney | Melbourne | Adelaide | Perth | Brisbane | Canberra | Darwin | Wollongong | Bunbury
Level 1, 50 Margaret Street Sydney NSW 2000
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Contaminated Land | Groundwater Remediation | Environmental Approvals | Auditing and Compliance | Hygiene and Hazardous Materials | Due Diligence and Liability | Stakeholder and Risk Management

---

From: Nathan Cussen <NCussen@jbsg.com.au>
Sent: Wednesday, 29 January 2020 11:27 AM
To: UrsulaLong@eurofins.com; Claudia Bennett <cbennett@jbsg.com.au>
Subject: RE: Additional Analysis - 54000

Thanks

From: UrsulaLong@eurofins.com <UrsulaLong@eurofins.com>
Sent: Wednesday, 29 January 2020 11:02 AM
To: Nathan Cussen <NCussen@jbsg.com.au>; Claudia Bennett <cbennett@jbsg.com.au>
Subject: RE: Additional Analysis - 54000

Will do Nathan.

eurofins | Environment Testing

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6 Monterey Road
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Phone : +61 3 8564 5000
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Site # 1254 & 14271

Sydney
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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

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

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

Sample Receipt Advice

Company name: **JBS & G Australia (NSW) P/L**

Contact name: Claudia Bennett
Project name: ADDITIONAL SOPA
Project ID: 54000
COC number: Not provided
Turn around time: 1 Day
Date/Time received: Jan 29, 2020 9:22 AM
Eurofins reference: **698899**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 6.2 degrees Celsius.

☑ 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.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

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

Ursula Long on Phone : or by e.mail: UrsulaLong@eurofins.com

Results will be delivered electronically via e.mail to Claudia Bennett - CBennett@jbsg.com.au.

Note: A copy of these results will also be delivered to the general JBS & G Australia (NSW) P/L email address.

eurofins | Environment Testing

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

Australia

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6 Monterey Road
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NATA # 1261
Site # 23736

New Zealand

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35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: ADDITIONAL SOPA
Project ID: 54000

Order No.:
Report #: 698899
Phone: 02 8245 0300
Fax:

Received: Jan 29, 2020 9:22 AM
Due: Jan 30, 2020
Priority: 1 Day
Contact Name: Claudia Bennett

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						pH (at 25°C)	Phthalate Esters
Melbourne Laboratory - NATA Site # 1254 & 14271							X
Sydney Laboratory - NATA Site # 18217						X	
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	S1	Jan 24, 2020		Water	S20-Ja27334	X	X
Test Counts						1	1

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Claudia Bennett**

Report **698899-W**
Project name ADDITIONAL SOPA
Project ID 54000
Received Date Jan 29, 2020

Client Sample ID			**S1**
Sample Matrix			**Water**
Eurofins Sample No.			**S20-Ja27334**
Date Sampled			**Jan 24, 2020**
Test/Reference	LOR	Unit	
Phthalate Esters			
Bis(2-ethylhexyl)phthalate	0.005	mg/L	< 0.005
Butyl benzyl phthalate	0.005	mg/L	< 0.005
Di-n-butyl phthalate	0.005	mg/L	< 0.005
Di-n-octyl phthalate	0.005	mg/L	< 0.005
Diethyl phthalate	0.005	mg/L	< 0.005
Dimethyl phthalate	0.005	mg/L	< 0.005
Conductivity (at 25°C)	10	uS/cm	520
pH (at 25°C)	0.1	pH Units	7.7
Total Dissolved Solids Dried at 180°C ± 2°C	5	mg/L	250

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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
Phthalate Esters	Melbourne	Jan 30, 2020	7 Days
- Method: USEPA 8270 Phthalate Esters			
Conductivity (at 25°C)	Sydney	Jan 30, 2020	28 Days
- Method: LTM-INO-4030 Conductivity			
pH (at 25°C)	Sydney	Jan 29, 2020	1 Days
- Method: LTM-GEN-7090 pH in water by ISE			
Total Dissolved Solids Dried at 180°C ± 2°C	Sydney	Jan 30, 2020	7 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			

eurofins | Environment Testing

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

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Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: ADDITIONAL SOPA
Project ID: 54000

Order No.:
Report #: 698899
Phone: 02 8245 0300
Fax:

Received: Jan 29, 2020 9:22 AM
Due: Jan 30, 2020
Priority: 1 Day
Contact Name: Claudia Bennett

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						pH (at 25°C)	Phthalate Esters
Melbourne Laboratory - NATA Site # 1254 & 14271							X
Sydney Laboratory - NATA Site # 18217						X	
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	S1	Jan 24, 2020		Water	S20-Ja27334	X	X
Test Counts						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.

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

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
ug/L: micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%: Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Phthalate Esters							
Bis(2-ethylhexyl)phthalate	mg/L	< 0.005			0.005	Pass	
Butyl benzyl phthalate	mg/L	< 0.005			0.005	Pass	
Di-n-butyl phthalate	mg/L	< 0.005			0.005	Pass	
Di-n-octyl phthalate	mg/L	< 0.005			0.005	Pass	
Diethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethyl phthalate	mg/L	< 0.005			0.005	Pass	
Method Blank							
Conductivity (at 25°C)	uS/cm	< 10			10	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 5			5	Pass	
LCS - % Recovery							
Conductivity (at 25°C)	%	100			70-130	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	%	76			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Phthalate Esters				Result 1	Result 2	RPD			
Bis(2-ethylhexyl)phthalate	M20-Ja14950	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Butyl benzyl phthalate	M20-Ja14950	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Di-n-butyl phthalate	M20-Ja14950	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Di-n-octyl phthalate	M20-Ja14950	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Diethyl phthalate	M20-Ja14950	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Dimethyl phthalate	M20-Ja14950	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	S20-Ja27334	CP	uS/cm	520	530	1.3	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	S20-Ja27334	CP	mg/L	250	300	20	30%	Pass	

Comments

Sample Integrity

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

Authorised By

Ursula Long	Analytical Services Manager
Gabriele Cordero	Senior Analyst-Inorganic (NSW)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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