

16 June 2017

Daniel Herbertson  
Senior Project Manager  
Savills Australia  
Via email: [dherbertson@savills.com.au](mailto:dherbertson@savills.com.au)

**Preliminary Sub Surface Soil Assessment – Old Hospital Building  
Wagga Wagga Base Hospital, Wagga Wagga, NSW**

Dear Daniel,

**1. Introduction**

JBS&G Australia Pty Ltd (JBS&G) was engaged by Savills Australia on behalf of Health Infrastructure (HI, the client) to undertake a preliminary assessment of subsurface soils in the vicinity of the Old Hospital Building (OHB) at Wagga Wagga Base Hospital, Wagga Wagga, NSW (the site). The site location is shown on **Figure 1** and the site layout is shown on **Figure 2**.

The OHB is proposed for demolition as part of the greater site areas ongoing redevelopment. Following demolition of the former ward tower building directly to the east of the OHB, unexpected sub surface contamination was encountered as friable asbestos within soils in the basement areas of the former structure. It is suspected that historical asbestos remediation or management works in that area have taken place, including the placement of shotcrete over exposed surfaces in the basement assumed to have been undertaken for the purpose of encapsulation of residual asbestos contamination in the area. No documented records of asbestos remediation works were held by the hospital.

Additional asbestos contamination has also been encountered surrounding the former structure as the ongoing demolition works have progressed.

This preliminary sub surface soil assessment was requested to attempt to identify any occurrences of contamination beneath and surrounding the OHB prior to demolition works commencing so that appropriate management and/or additional investigations may be undertaken to appropriately characterise the condition of the site to assist in future planning for the sites redevelopment and for the information of demolition contractors and their employees.

This investigation is preliminary in nature and is not intended to provide a statement on proposed land use suitability. Additional investigation works may be required in the future to determine land use suitability.

**2. Objective**

The objective of the investigation was to identify, if any, the presence of asbestos impact and other contaminants of potential concern (COPC) in readily accessible areas in the vicinity of the existing Old Hospital Building prior to proposed demolition works.

### 3. Scope of Works

The following scope of works was undertaken:

- Collection of representative soil samples from 14 locations via hand auger to a depth of 1m below ground surface (bgs) or refusal, whichever was shallower, in readily accessible areas in the vicinity of the Old Hospital Building including 2 samples within the building footprint. Of the 14 sample locations, 5 were located within existing unsealed areas, 7 were located in areas of existing concrete hardstand and 2 were located within the existing OHB and associated building footprints;
- Collection of duplicate samples for quality assurance / quality control purposes;
- Laboratory analysis of selected soil samples by Eurofins | mgt, a National Association of Testing Authorities (NATA) accredited laboratory to assess for the presence of asbestos containing material (ACM), friable asbestos (FA) and asbestos fines (AF) in accordance with NEPC (2013)<sup>1</sup>;
- Laboratory analysis of selected soil samples by Eurofins | mgt, a NATA accredited laboratory to assess for the presence of COCP including heavy metals, total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCBs) and organochlorine pesticides (OCPs).
- Comparison of soil analytical results against NEPC (2013) health-based investigation levels (HILs) applicable to the hospital use of the site and development works; and
- Preparation of this letter report documenting the findings of the assessment, conclusions and recommendations (if any).

### 4. Relevant Site Assessment Criteria

Soil data as generated by this preliminary assessment has been compared to investigation levels advised by NEPC (2013) for residential land uses with minimal access to soils (HIL/HSL-B) Though a hospital is used for a commercial/industrial purpose, the selection of these criteria is consistent with NEPC (2013) guidance.

Schedule B7 of NEPC 2013 states “... the HILs developed for the commercial/industrial land use scenario are not applicable to a site used frequently by more sensitive groups such as children (within childcare centres, hospitals and hotels) and the elderly (within hospitals, aged care facilities and hospices).” Therefore, given the frequent site use by sensitive receptor groups (i.e., children, elderly and immunocompromised), the use of the generic commercial / industrial land use scenario provided in NEPC 2013 is considered inappropriate for the long term site use as a health services facility (i.e., hospital and associated services).

### 5. Site Works – 5 and 6 June 2017

The field inspection and sampling activities were undertaken by Alex Finney, one of JBS&G’s experienced environmental consultants, on 5 and 6 June 2017. Alex is also deemed a competent person with reference to asbestos related investigations as defined in the Work Health and Safety Regulation (2011).

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<sup>1</sup> National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1), National Environment Protection Council, 2013 (NEPC 2013).

A summary of the completed works is as follows:

- The OHB was observed to comprise a two level predominantly brick structure in the north west portion of the Wagga Wagga Base Hospital.
- The OHB was surrounded by grassed and other unsealed areas to the north and partially to the south and concrete paved areas to the west and partially to the south.
- No access was available to the eastern front of the OHB as it adjoined the former ward tower site demolition area.
- Hand augers HA01, HA02, HA09, HA11 and HA12 were installed in unsealed areas surrounding the OHB (**Attachment 2 – Figure 3**).
- Hand augers HA03 – HA08 and HA11 were installed following concrete coring through overlying concrete hardstand surrounding the OHB (**Attachment 2 – Figure 3**).
- Hand auger HA13 was installed in unsealed surfaces beneath overlying floorboards within the former Medical Records Storage Building (Room ID WA 01138).
- Hand auger HA14 was installed following the removal of overlying shotcrete materials within the sub floor area of the former Biomedical Engineers Workshop (Room ID WA 01133).
- Soil profiles at HA01 – HA12 were observed to be generally consistent across all sample locations comprising red/brown sandy clay fill materials with some occurrences of ash and slag observed, overlying brown silty gravelly clay materials and red/brown natural clay materials. HA10 encountered refusal on suspected concrete hardstand at approximately 0.6 m below ground surface.
- Fill materials at HA01 – HA12 ranged in depths from 0.2 to 0.6 m below ground surface, with natural clay materials encountered between 0.4 and 0.6 m below ground surface.
- HA13 was observed to comprise crushed brick debris overlying brown silty sand fill materials to approximately 0.3 m below ground surface and orange sandy gravelly clay below this. Refusal was met at approximately 0.5 m below ground surface.
- HA14 was observed to comprise light red silty sand encountered beneath the shotcrete surface and refusal met at approximately 0.2 m below the shotcrete.
- Representative samples were collected from all hand auger locations from the surface soils and also at any changes of lithology or where suspected contamination may occur.
- A duplicate sample was collected at HA10\_0-0.1 for quality assurance purposes.
- Selected samples were forwarded to the NATA accredited testing laboratory for analysis (**Attachment 4**).

Hand auger locations are provided on **Figure 3** in **Attachment 2**. Representative photographs of the site condition and select samples are provided in **Attachment 3**.

## 6. Results

Detailed laboratory reports and chain of custody documentation is provided in **Attachment 4**. Sampling locations are provided on the schematic site layout, **Figure 3**.

A summary of notable results is as follows:

- ACM was reported below the LOR and HIL-B threshold in all samples selected for analyses.

- Friable asbestos (Asbestos Fines and Fibrous Asbestos) was reported above the HIL-B threshold (0.001% w/w) in sample HA14\_0-0.05 with a concentration of 0.0041% w/w.
- Lead concentrations were reported above the HIL-B threshold in sample HA10\_0-0.1 and duplicate sample QA20170606 with concentrations of 1800 mg/kg and 3700 mg/kg respectively.
- Carcinogenic PAH above the HIL-B criteria in samples HA10\_0-0.1 and QA20170606 with concentrations of 4.2 mg/kg and 10 mg/kg respectively.
- The duplicate sample (QA20170606) reported results that were considered to be generally consistent with those reported from the primary sample (HA10\_0-0.1).

## 7. Conclusions & Recommendations

Based on the observations made during the completed site works, the data obtained from this investigation and subject to the limitations in **Attachment 1**, the following conclusions are made:

- Friable asbestos contamination was identified within the sub surface materials sampled from below the shotcrete surface within the OHB footprint (HA14\_0-0.05). Other areas within the OHB footprint where shotcrete is observed should be assumed to also be contaminated with friable asbestos, unless additional investigation and sampling works can prove otherwise.
  - Elevated levels of lead and PAHs in soils pose a potential risk to demolition workers whom are potentially directly exposed to site soils. In addition to controls anticipated with mitigation of asbestos fibre exposures, potential direct contact to affect soils will require to be controlled throughout the redevelopment of the site.
  - Lead impacted fill materials at HA10 may present a potential issue for future land use suitability, however, additional investigation is likely to be required to determine the sites suitability for the proposed future land use in line with NEPC 2013 requirements. Lead impact is most likely associate with the historical use of lead based paints on the site.
  - Carcinogenic PAHs (as B(a)P TEQ) may present a potential issue for future land use suitability, however, additional investigation is likely to be required to determine the sites suitability for the proposed future land use in line with NEPC 2013 requirements.
  - Detections of contaminants at the site are likely to affect future waste classification results in the event that excess materials are required to be disposed off site. Additional targeted soil sampling of proposed waste materials is recommended to be undertaken prior to any off site disposal.
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Should you require clarification, please contact the undersigned on 02 8245 0300 or by email [msamuel@jbsg.com.au](mailto:msamuel@jbsg.com.au).

Yours sincerely:



Michael Samuel  
Senior Project Manager  
**JBS&G Australia Pty Ltd**

Reviewed/Approved by:



Matthew Bennett  
Principal – Contaminated Land  
**JBS&G Australia Pty Ltd**

Attachments

- 1) Limitations
- 2) Figures
- 3) Photographs
- 4) Results Summary Table
- 5) Laboratory Analysis Reports

## **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.

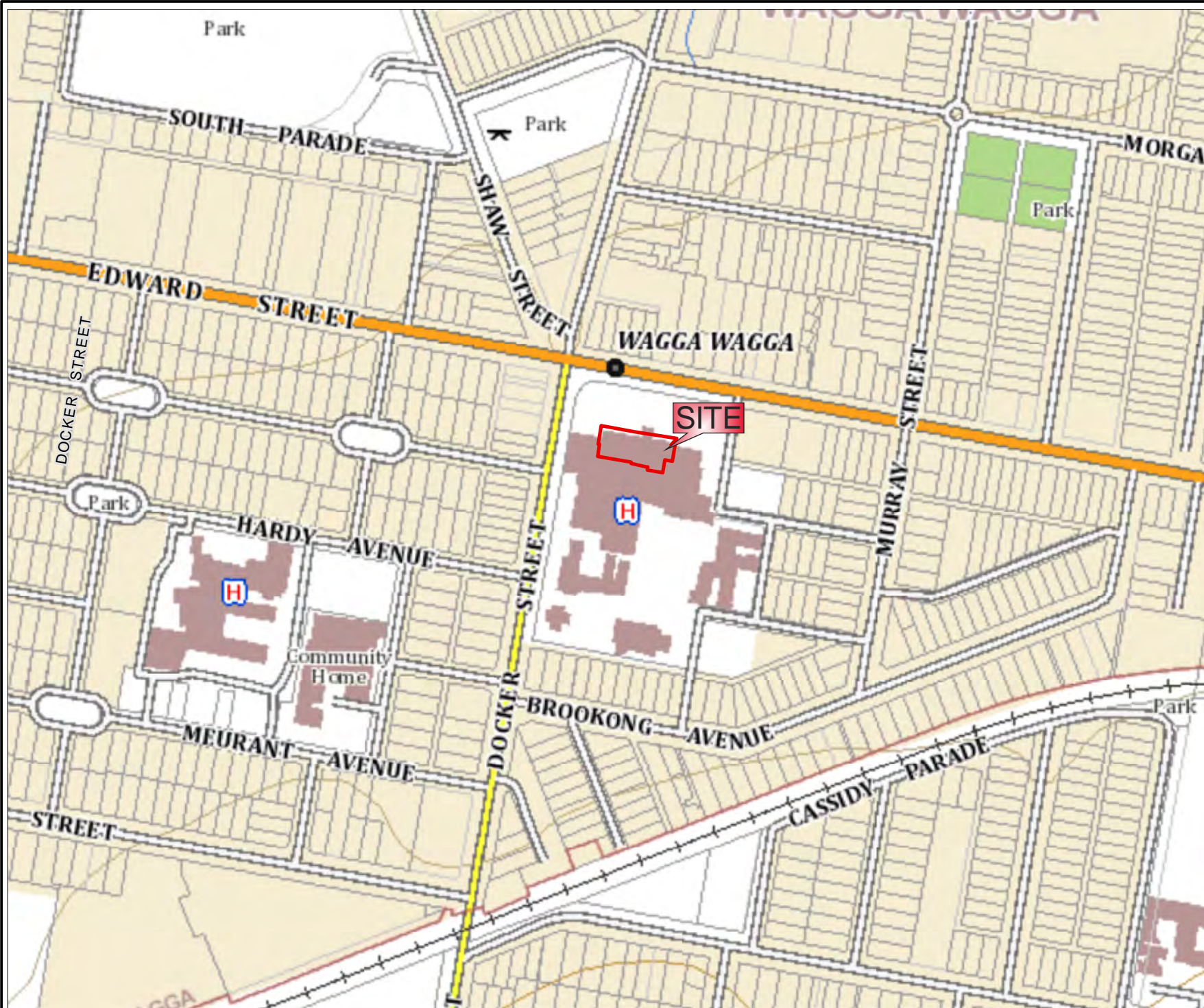
Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information 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 – Figures**





**Legend:**

 Approximate Site Boundary



Job No: 52480

Client: Health Infrastructure

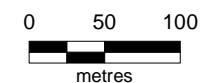
Version: L002 Rev 0

Date: 15-Jun-2017

Drawn By: BC

Checked By: AF

Scale 1:5,000



Coor. Sys. GDA 1994 MGA Zone 55

**Sturt Highway & Docker Street  
Wagga Wagga, NSW**

**SITE LOCATION**

**FIGURE 1**





# Legend:

Approximate Site Boundary



Job No: 52480

Client: Health Infrastructure

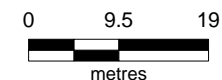
Version: L002 Rev 0

Date: 15-Jun-2017

Drawn By: BC

Checked By: AF

Scale 1:800



Coor. Sys. GDA 1994 MGA Zone 55

**Sturt Highway & Docker Street  
Wagga Wagga, NSW**

**SITE LAYOUT**

**FIGURE 2**





#### Legend:

- Approximate Site Boundary
- + Hand Auger Sample Location



Job No: 52480

Client: Health Infrastructure

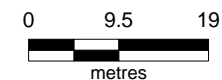
Version: L002 Rev 0

Date: 15-Jun-2017

Drawn By: BC

Checked By: AF

Scale 1:800



Coor. Sys. GDA 1994 MGA Zone 55

**Sturt Highway & Docker Street  
Wagga Wagga, NSW**

**SAMPLE LOCATIONS**

**FIGURE 3**



### Attachment 3 – Photographs

	
<p><b>Photo 1 – HA06 installed beneath existing concrete hardstand to west of OHB</b></p>	<p><b>Photo 2 – HA10 installed in unsealed surfaces to south of OHB</b></p>
	
<p><b>Photo 3 – HA14 installed beneath shotcrete layer within sub floor space of OHB footprint</b></p>	<p><b>Photo 4 – Typical example of soil types encountered at the site with shallower fill materials to the left and natural clay materials at bottom right</b></p>

**Attachment 4 – Results Summary Table**


Table A: Soil Analytical Data  
Project Number: 52480  
Project Name: Wagga Wagga

[illegible][illegible][illegible]



Table A: Soil Analytical Data  
Project Number: 52480  
Project Name: Wagga Wagga



	BTEX							Polychlorinated Biphenyls								Organochlorine Pesticides																Ionic Bal.						
	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)	Hexachlorobenzene	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Total)	4,4-DDE	Aldrin	alpha-BHC	beta-BHC	Dieldrin	DDD	DDT	Chlordane	delta-BHC	Endosulfan alpha	Endosulfan beta	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Lindane	Methoxychlor	Toxaphene	Cation Exchange Capacity	EC 1:5 soil:water	
EQL	0.10	0.10	0.10	0.10	0.20	0.30	0.05	0.50	0.10	0.50	0.50	0.50	0.50	0.50	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.20	1.00	0.05	10.00	
NEPM 2013 Soil HIL B							15								1								90					20				10			500	30		

[illegible][illegible]

Table A: Soil Analytical Data  
Project Number: 52480  
Project Name: Wagga Wagga

[illegible]

Sample ID	Depth	Date	Laboratory																						
HA01_0.2-0.3	0.2-0.3	6-06-2017	549452	535	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	-				
HA02_0.1-0.2	0.1-0.2	6-06-2017	549452	425	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	9.7				
HA03_0.3-0.4	0.3-0.4	6-06-2017	549452	808	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	11				
HA04_0.5-0.6	0.5-0.6	6-06-2017	549452	586	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	13				
HA05_0.2-0.3	0.2-0.3	6-06-2017	549452	603	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	8.8	11				
HA06_0.2-0.3	0.2-0.3	6-06-2017	549452	736	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	-				
HA07_0.1-0.2	0.1-0.2	6-06-2017	549452	672	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	13				
HA08_0.1-0.2	0.1-0.2	6-06-2017	549452	703	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	19				
HA09_0-0.1	0-0.1	6-06-2017	549452	661	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	10				
HA10_0-0.1	0-0.1	6-06-2017	549452	505	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	11	16				
QA20170606 - duplicate of HA10_0-0.1	0-0.1	6-06-2017	549452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16				
HA11_0.1-0.2	0.1-0.2	6-06-2017	549452	364	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	-				
HA12_0.2-0.3	0.2-0.3	5-06-2017	549452	627	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	13				
HA13_0.2-0.3	0.2-0.3	5-06-2017	549452	432	0	0	0	0	0	0	0	0	0	Nil	Nil	Nil	Organic fibres detected.	No respirable fibres detected	Nil	-	-				
HA14_0-0.05	0-0.05	5-06-2017	549452	459	0	0.0041	0	0	0.0454	0.0182	0.0005	0.0005	0.0187	Nil	AF: Amosite asbestos detected in the form of loose fibre bundles.	FA: Amosite asbestos detected in insulation-like material.	Organic fibres detected.	No respirable fibres detected	Nil	-	4.1				

[illegible]

**Attachment 5 – Laboratory Analysis Reports**

## Sample Receipt Advice

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

Contact name: Michael Samuel

Project name: WAGGA WAGGA

Project ID: 52480

COC number: Not provided

Turn around time: 2 Day

Date/Time received: Jun 8, 2017 12:59 PM

Eurofins | mgt reference: **549452**

### 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 | mgt Sample Receipt : 5.8 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.
- ☒ 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:

Nibha Vaidya on Phone : +61 (2) 9900 8400 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Michael Samuel - msamuel@jbsg.com.au.

EUROFINS

## CHAIN OF CUSTODY

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549452

PROJECT NO.: 52480					LABORATORY BATCH NO.:																																																																																																																																																																																																																																																																																																																																																																							
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SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) msamuel@jbsg.com.au; (3) a.finney@jbsg.com.au / mitchell hodgins																																																																																																																																																																																																																																																																																																																																																																												
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<tr> <td>HA12 0.4-0.5m</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td> </tr> <tr> <td>HA13 0-0.1m</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>HA13 0.2-0.3m</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>HA13 0.4-0.5m</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>HA14 0-0.05m</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td> </tr> <tr> <td>HA01 0-0.1m</td> <td></td> <td>06/06</td> <td>-</td> <td></td> <td></td> <td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>HA01 0.2-0.3m</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>HA01 0.5-0.6m</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>HA02 0-0.1m</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td> </tr> <tr> <td>HA02 0.1-0.2m</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td> </tr> <tr> <td>HA02 0.4-0.5m</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> 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EUROFINS

## CHAIN OF CUSTODY

Page 2 of 3



PROJECT NO.: 524.80						LABORATORY BATCH NO.:													
PROJECT NAME: Wagga Wagga						SAMPLERS: AF													
DATE NEEDED BY: 2 day TAT						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) mscmirel@jbsg.com.au; (3) afinney@jbsg.com.au   mitch H.																			
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:																			
2 day TAT						Sample schedule to follow via email													
SAMPLE ID		MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	Asbestos	Heavy Metals	TRH	BTEX	PAH	PCB	OCF	TCLP	EcoParam	TYPE OF ASBESTOS ANALYSIS		NOTES:	
HA05 0.2-0.3m		Soil	06/06	/	Bag, Jar, Ice		X	X	X	X	X	X	X	X	X		IDENTIFICATION		
HA05 0.4-0.5m				/			X										NEPM/NA		
HA06 0.2-0.3m				/			X												
HA06 0.5-0.6m				/															
HA06 0.9-1.0m				/															
HA07 0.1-0.2m				/			X	X	X	X	X	X	X	X	X				
HA07 0.3-0.4m				/															
HA07 0.5-0.6m				/															
HA08 0.1-0.2m				/			X	X	X	X	X	X	X	X	X				
HA08 0.3-0.4m				/															
HA08 0.6-0.7m				/															
HA09 0-0.1m				/			X	X	X	X	X	X	X	X	X				
HA09 0.3-0.4m				/															
HA09 0.5-0.6m				/			X	X	X	X	X	X	X	X	X				
HA10 0-0.1m				/			X	X	X	X	X	X	X	X	X				
HA10 0.3-0.4m				/															
HA10 0.5-0.6m				/															
HA11 0.1-0.2m				/			X												
HA11 0.3-0.4m				/															
RELINQUISHED BY:						METHOD OF SHIPMENT:						RECEIVED BY:				FOR RECEIVING LAB USE ONLY:			
NAME: A Finney DATE: 6/6/17						CONSIGNMENT NOTE NO.						NAME: Luper DATE: 1259 PM				COOLER SEAL - Yes..... No ..... Intact ..... Broken .....			
OF: JBS&G						TRANSPORT CO.						OF: DATE: 08/06				COOLER TEMP ..... deg C			
NAME:						CONSIGNMENT NOTE NO.						NAME:				COOLER SEAL - Yes..... No ..... Intact ..... Broken .....			
DATE:						TRANSPORT CO.						DATE:				COOLER TEMP ..... deg C			
OF:												OF:							

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

[illegible]

# 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:** **Michael Samuel**

**Report** **549452-S**  
Project name WAGGA WAGGA  
Project ID 52480  
Received Date Jun 08, 2017

Client Sample ID			HA12_0.2-0.3	HA14_0-0.05	HA02_0.1-0.2	HA03_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			S17-Jn07746	S17-Jn07748	S17-Jn07750	S17-Jn07751
Date Sampled			Jun 05, 2017	Jun 05, 2017	Jun 06, 2017	Jun 06, 2017
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	120	73	90	< 50
TRH C29-C36	50	mg/kg	73	60	81	< 50
TRH C10-36 (Total)	50	mg/kg	193	133	171	< 50
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	66	65	66	67
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	170	120	140	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	3.1	< 0.5	1.3	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	3.3	0.6	1.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	3.6	1.2	1.8	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	1.1	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	1.7	< 0.5	0.7	< 0.5
Benz(a)anthracene	0.5	mg/kg	2.6	< 0.5	1.2	< 0.5
Benzo(a)pyrene	0.5	mg/kg	2.3	< 0.5	1.0	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	2.2	< 0.5	0.9	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	0.9	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	1.6	< 0.5	0.6	< 0.5
Chrysene	0.5	mg/kg	2.7	< 0.5	1.2	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			HA12_0.2-0.3	HA14_0-0.05	HA02_0.1-0.2	HA03_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			S17-Jn07746	S17-Jn07748	S17-Jn07750	S17-Jn07751
Date Sampled			Jun 05, 2017	Jun 05, 2017	Jun 06, 2017	Jun 06, 2017
Test/Reference	LOR	Unit				
<b>Polycyclic Aromatic Hydrocarbons</b>						
Fluoranthene	0.5	mg/kg	4.7	< 0.5	2.0	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	3.8	< 0.5	1.5	< 0.5
Pyrene	0.5	mg/kg	5.0	< 0.5	2.2	< 0.5
Total PAH*	0.5	mg/kg	29.4	< 0.5	11.3	< 0.5
2-Fluorobiphenyl (surr.)	1	%	106	97	110	103
p-Terphenyl-d14 (surr.)	1	%	76	78	80	73
<b>Organochlorine Pesticides</b>						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	0.13	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	1.0	0.08	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Dibutylchlorendate (surr.)	1	%	INT	INT	INT	INT
Tetrachloro-m-xylene (surr.)	1	%	INT	INT	INT	INT
<b>Polychlorinated Biphenyls</b>						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	INT	INT	INT	INT
Tetrachloro-m-xylene (surr.)	1	%	INT	INT	INT	INT
% Moisture	1	%	13	4.1	9.7	11

<b>Client Sample ID</b>			<b>HA12_0.2-0.3</b>	<b>HA14_0-0.05</b>	<b>HA02_0.1-0.2</b>	<b>HA03_0.3-0.4</b>
<b>Sample Matrix</b>			<b>Soil</b>	<b>Soil</b>	<b>Soil</b>	<b>Soil</b>
<b>Eurofins   mgt Sample No.</b>			<b>S17-Jn07746</b>	<b>S17-Jn07748</b>	<b>S17-Jn07750</b>	<b>S17-Jn07751</b>
<b>Date Sampled</b>			<b>Jun 05, 2017</b>	<b>Jun 05, 2017</b>	<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>
Test/Reference	LOR	Unit				
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	6.6	4.6	6.4	25
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	18	17	19	31
Copper	5	mg/kg	13	35	9.8	23
Lead	5	mg/kg	43	110	300	53
Mercury	0.1	mg/kg	0.1	2.1	0.2	< 0.1
Nickel	5	mg/kg	9.2	9.4	11	35
Zinc	5	mg/kg	40	130	71	79

<b>Client Sample ID</b>			<b>HA04_0.5-0.6</b>	<b>HA05_0.2-0.3</b>	<b>HA07_0.1-0.2</b>	<b>HA08_0.1-0.2</b>
<b>Sample Matrix</b>			<b>Soil</b>	<b>Soil</b>	<b>Soil</b>	<b>Soil</b>
<b>Eurofins   mgt Sample No.</b>			<b>S17-Jn07752</b>	<b>S17-Jn07753</b>	<b>S17-Jn07755</b>	<b>S17-Jn07756</b>
<b>Date Sampled</b>			<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	110	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	280	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	390	< 50	< 50
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	65	65	55	66
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	280	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	220	< 100	< 100
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.1	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.4	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	0.7	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	0.7	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID			HA04_0.5-0.6	HA05_0.2-0.3	HA07_0.1-0.2	HA08_0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			S17-Jn07752	S17-Jn07753	S17-Jn07755	S17-Jn07756
Date Sampled			Jun 06, 2017	Jun 06, 2017	Jun 06, 2017	Jun 06, 2017
Test/Reference	LOR	Unit				
<b>Polycyclic Aromatic Hydrocarbons</b>						
Chrysene	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	1.4	0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	1.3	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	1.5	0.6	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	7	1.1	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	102	103	96	109
p-Terphenyl-d14 (surr.)	1	%	72	69	69	80
<b>Organochlorine Pesticides</b>						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	1.7	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Dibutylchlorendate (surr.)	1	%	65	75	72	68
Tetrachloro-m-xylene (surr.)	1	%	82	101	80	88
<b>Polychlorinated Biphenyls</b>						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	65	75	72	68
Tetrachloro-m-xylene (surr.)	1	%	82	101	80	88
% Clay	1	%	-	8.8	-	-
Conductivity (1:5 aqueous extract at 25°C)	10	uS/cm	-	93	-	-
% Moisture	1	%	13	11	13	19

<b>Client Sample ID</b>			<b>HA04_0.5-0.6</b>	<b>HA05_0.2-0.3</b>	<b>HA07_0.1-0.2</b>	<b>HA08_0.1-0.2</b>
<b>Sample Matrix</b>			<b>Soil</b>	<b>Soil</b>	<b>Soil</b>	<b>Soil</b>
<b>Eurofins   mgt Sample No.</b>			<b>S17-Jn07752</b>	<b>S17-Jn07753</b>	<b>S17-Jn07755</b>	<b>S17-Jn07756</b>
<b>Date Sampled</b>			<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>
Test/Reference	LOR	Unit				
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	8.4	48	15	7.2
Cadmium	0.4	mg/kg	< 0.4	0.6	< 0.4	< 0.4
Chromium	5	mg/kg	28	37	39	38
Copper	5	mg/kg	16	87	24	38
Lead	5	mg/kg	31	760	32	69
Mercury	0.1	mg/kg	< 0.1	0.4	< 0.1	< 0.1
Nickel	5	mg/kg	15	42	27	25
Zinc	5	mg/kg	39	410	52	89
<b>Cation Exchange Capacity</b>						
Cation Exchange Capacity	0.05	meq/100g	-	13	-	-

<b>Client Sample ID</b>			<b>HA09_0-0.1</b>	<b>HA10_0-0.1</b>	<b>QA20170606</b>
<b>Sample Matrix</b>			<b>Soil</b>	<b>Soil</b>	<b>Soil</b>
<b>Eurofins   mgt Sample No.</b>			<b>S17-Jn07757</b>	<b>S17-Jn07758</b>	<b>S17-Jn07760</b>
<b>Date Sampled</b>			<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>
Test/Reference	LOR	Unit			
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	35	34
TRH C15-C28	50	mg/kg	75	240	540
TRH C29-C36	50	mg/kg	60	180	280
TRH C10-36 (Total)	50	mg/kg	135	455	854
<b>BTEX</b>					
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	64	64	61
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>					
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	120	350	720
TRH >C34-C40	100	mg/kg	< 100	110	170
<b>Polycyclic Aromatic Hydrocarbons</b>					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	3.7	10
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	4.0	10
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	4.2	10
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	1.2	2.9
Anthracene	0.5	mg/kg	< 0.5	2.3	5.6
Benz(a)anthracene	0.5	mg/kg	< 0.5	3.3	8.9
Benzo(a)pyrene	0.5	mg/kg	< 0.5	2.8	7.2
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	2.7	7.3

Client Sample ID			HA09_0-0.1	HA10_0-0.1	QA20170606
Sample Matrix			Soil	Soil	Soil
Eurofins   mgt Sample No.			S17-Jn07757	S17-Jn07758	S17-Jn07760
Date Sampled			Jun 06, 2017	Jun 06, 2017	Jun 06, 2017
Test/Reference	LOR	Unit			
<b>Polycyclic Aromatic Hydrocarbons</b>					
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	0.9	2.2
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	2.1	4.4
Chrysene	0.5	mg/kg	< 0.5	3.3	8.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	0.7
Fluoranthene	0.5	mg/kg	0.7	6.2	15
Fluorene	0.5	mg/kg	< 0.5	0.6	0.9
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	0.9	2.3
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	7.1	15
Pyrene	0.5	mg/kg	0.7	6.4	16
Total PAH*	0.5	mg/kg	1.4	39.8	96.9
2-Fluorobiphenyl (surr.)	1	%	100	101	103
p-Terphenyl-d14 (surr.)	1	%	68	70	70
<b>Organochlorine Pesticides</b>					
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	0.2
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	0.07	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	0.09	0.28
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	0.06
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1
Dibutylchloroendate (surr.)	1	%	83	81	92
Tetrachloro-m-xylene (surr.)	1	%	102	88	85
<b>Polychlorinated Biphenyls</b>					
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Dibutylchloroendate (surr.)	1	%	83	81	92
Tetrachloro-m-xylene (surr.)	1	%	102	88	85

<b>Client Sample ID</b>			<b>HA09_0-0.1</b>	<b>HA10_0-0.1</b>	<b>QA20170606</b>
<b>Sample Matrix</b>			<b>Soil</b>	<b>Soil</b>	<b>Soil</b>
<b>Eurofins   mgt Sample No.</b>			<b>S17-Jn07757</b>	<b>S17-Jn07758</b>	<b>S17-Jn07760</b>
<b>Date Sampled</b>			<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>	<b>Jun 06, 2017</b>
<b>Test/Reference</b>	<b>LOR</b>	<b>Unit</b>			
% Clay	1	%	-	11	-
Conductivity (1:5 aqueous extract at 25°C)	10	uS/cm	-	39	-
% Moisture	1	%	10.0	16	16
<b>Heavy Metals</b>					
Arsenic	2	mg/kg	5.7	7.3	7.3
Cadmium	0.4	mg/kg	0.7	1.4	1.3
Chromium	5	mg/kg	20	30	29
Copper	5	mg/kg	670	220	340
Lead	5	mg/kg	300	1800	3700
Mercury	0.1	mg/kg	3.4	0.9	1.4
Nickel	5	mg/kg	13	13	15
Zinc	5	mg/kg	370	1100	1200
<b>Cation Exchange Capacity</b>					
Cation Exchange Capacity	0.05	meq/100g	-	13	-

## Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Sydney	Jun 08, 2017	14 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Jun 08, 2017	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Jun 08, 2017	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Jun 08, 2017	14 Day
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2140 PAH and Phenols in Soils by GCMS	Sydney	Jun 08, 2017	14 Days
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Jun 08, 2017	14 Day
Polychlorinated Biphenyls - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Jun 08, 2017	28 Days
% Clay - Method: LTM-GEN-7040	Brisbane	Jun 09, 2017	6 Day
Metals M8 - Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS	Sydney	Jun 08, 2017	28 Day
Conductivity (1:5 aqueous extract at 25°C) - Method: LTM-INO-4030	Melbourne	Jun 09, 2017	7 Day
Cation Exchange Capacity - Method: LTM-MET-3060 - Cation Exchange Capacity (CEC) & Exchangeable Sodium Percentage (ESP)	Melbourne	Jun 13, 2017	180 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Jun 08, 2017	14 Day



**Company Name:** JBS & G Australia (NSW) P/L  
**Address:** Level 1, 50 Margaret St  
Sydney  
NSW 2000  
**Project Name:** WAGGA WAGGA  
**Project ID:** 52480

**Order No.:**  
**Report #:** 549452  
**Phone:** 02 8245 0300  
**Fax:**

**Received:** Jun 8, 2017 12:59 PM  
**Due:** Jun 13, 2017  
**Priority:** 2 Day  
**Contact Name:** Michael Samuel

**Eurofins | mgt Analytical Services Manager : Nibha Vaidya**

Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271															X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X											
Perth Laboratory - NATA Site # 18217																	
External Laboratory																	
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID												
1	HA12_0.2-0.3	Jun 05, 2017		Soil	S17-Jn07746		X		X	X	X	X	X	X		X	
2	HA13_0.2-0.3	Jun 05, 2017		Soil	S17-Jn07747		X										
3	HA14_0-0.05	Jun 05, 2017		Soil	S17-Jn07748		X		X	X	X	X	X	X		X	
4	HA01_0.2-0.3	Jun 06, 2017		Soil	S17-Jn07749		X										
5	HA02_0.1-0.2	Jun 06, 2017		Soil	S17-Jn07750		X		X	X	X	X	X	X		X	
6	HA03_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07751		X		X	X	X	X	X	X		X	
7	HA04_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07752		X		X	X	X	X	X	X		X	
8	HA05_0.2-0.3	Jun 06, 2017		Soil	S17-Jn07753	X	X		X	X	X	X	X	X	X	X	
9	HA06_0.2-0.3	Jun 06, 2017		Soil	S17-Jn07754		X										

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Melbourne Laboratory - NATA Site # 1254 & 14271															X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X											
Perth Laboratory - NATA Site # 18217																	
10	HA07_0.1-0.2	Jun 06, 2017		Soil	S17-Jn07755		X		X	X	X	X	X	X		X	
11	HA08_0.1-0.2	Jun 06, 2017		Soil	S17-Jn07756		X		X	X	X	X	X	X		X	
12	HA09_0-0.1	Jun 06, 2017		Soil	S17-Jn07757		X		X	X	X	X	X	X		X	
13	HA10_0-0.1	Jun 06, 2017		Soil	S17-Jn07758	X	X		X	X	X	X	X	X	X	X	
14	HA11_0.1-0.2	Jun 06, 2017		Soil	S17-Jn07759		X										
15	QA20170606	Jun 06, 2017		Soil	S17-Jn07760				X	X	X	X	X	X		X	
16	TRIP SPIKE	Jun 06, 2017		Water	S17-Jn07761												X
17	TRIP BLANK	Jun 06, 2017		Water	S17-Jn07762												X
18	RINSATE	Jun 06, 2017		Water	S17-Jn07763				X	X	X	X	X			X	
19	HA12_0-0.1	Jun 05, 2017		Soil	S17-Jn07764			X									
20	HA12_0.4-0.5	Jun 05, 2017		Soil	S17-Jn07765			X									
21	HA13_0-0.1	Jun 05, 2017		Soil	S17-Jn07766			X									

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Sample Detail						% Clay	Asbestos - W/A guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271															X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X											
Perth Laboratory - NATA Site # 18217																	
22	HA13_0.4-0.5	Jun 05, 2017		Soil	S17-Jn07767			X									
23	HA01_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07768			X									
24	HA02_0-0.1	Jun 06, 2017		Soil	S17-Jn07769			X									
25	HA02_0.4-0.5	Jun 06, 2017		Soil	S17-Jn07770			X									
26	HA03_0.1-0.2	Jun 06, 2017		Soil	S17-Jn07771			X									
27	HA03_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07772			X									
28	HA04_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07773			X									
29	HA04_0.8-0.9	Jun 06, 2017		Soil	S17-Jn07774			X									
30	HA01_0-0.1	Jun 06, 2017		Soil	S17-Jn07775			X									
31	HA05_0.4-0.5	Jun 06, 2017		Soil	S17-Jn07776			X									
32	HA06_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07777			X									
33	HA06_0.9-1.0	Jun 06, 2017		Soil	S17-Jn07778			X									

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Sample Detail						% Clay	Asbestos - W/A guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271															X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X											
Perth Laboratory - NATA Site # 18217																	
34	HA07_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07779			X									
35	HA07_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07780			X									
36	HA08_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07781			X									
37	HA08_0.6-0.7	Jun 06, 2017		Soil	S17-Jn07782			X									
38	HA09_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07783			X									
39	HA09_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07784			X									
40	HA10_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07785			X									
41	HA10_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07786			X									
42	HA11_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07787			X									
43	QA20170606A	Jun 06, 2017		Soil	S17-Jn07788			X									
Test Counts						2	14	25	12	12	12	12	12	11	2	12	2

## Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota 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.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

### Holding Times

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

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

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.

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

### Units

**mg/kg:** milligrams per kilogram

**mg/L:** milligrams per litre

**ug/L:** micrograms per litre

**ppm:** Parts per million

**ppb:** Parts per billion

**%:** Percentage

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

**NTU:** Nephelometric Turbidity Units

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

### Terms

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

### QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

### QC Data General Comments

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

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
<b>Method Blank</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
<b>Method Blank</b>							
<b>Organochlorine Pesticides</b>							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	



Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
<b>Method Blank</b>							
<b>Polychlorinated Biphenyls</b>							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
<b>Method Blank</b>							
% Clay	%	< 1			1	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
<b>Method Blank</b>							
<b>Cation Exchange Capacity</b>							
Cation Exchange Capacity	meq/100g	< 0.05			0.05	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	%	96			70-130	Pass	
TRH C10-C14	%	91			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>BTEX</b>							
Benzene	%	106			70-130	Pass	
Toluene	%	104			70-130	Pass	
Ethylbenzene	%	106			70-130	Pass	
m&p-Xylenes	%	104			70-130	Pass	
o-Xylene	%	104			70-130	Pass	
Xylenes - Total	%	104			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	%	106			70-130	Pass	
TRH C6-C10	%	90			70-130	Pass	
TRH >C10-C16	%	90			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	%	86			70-130	Pass	
Acenaphthylene	%	85			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	88			70-130	Pass	
Benzo(a)pyrene	%	97			70-130	Pass	
Benzo(b&j)fluoranthene	%	95			70-130	Pass	
Benzo(g,h,i)perylene	%	71			70-130	Pass	
Benzo(k)fluoranthene	%	123			70-130	Pass	
Chrysene	%	110			70-130	Pass	
Dibenz(a,h)anthracene	%	71			70-130	Pass	
Fluoranthene	%	90			70-130	Pass	
Fluorene	%	92			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	71			70-130	Pass	
Naphthalene	%	101			70-130	Pass	
Phenanthrene	%	90			70-130	Pass	
Pyrene	%	94			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Organochlorine Pesticides</b>							
Chlordanes - Total	%	94			70-130	Pass	
4,4'-DDD	%	103			70-130	Pass	
4,4'-DDE	%	100			70-130	Pass	
4,4'-DDT	%	99			70-130	Pass	
a-BHC	%	70			70-130	Pass	
Aldrin	%	92			70-130	Pass	
b-BHC	%	93			70-130	Pass	
d-BHC	%	111			70-130	Pass	
Dieldrin	%	94			70-130	Pass	
Endosulfan I	%	95			70-130	Pass	
Endosulfan II	%	99			70-130	Pass	
Endosulfan sulphate	%	109			70-130	Pass	
Endrin	%	84			70-130	Pass	
Endrin aldehyde	%	103			70-130	Pass	
Endrin ketone	%	99			70-130	Pass	
g-BHC (Lindane)	%	88			70-130	Pass	
Heptachlor	%	91			70-130	Pass	
Heptachlor epoxide	%	103			70-130	Pass	
Hexachlorobenzene	%	76			70-130	Pass	
Methoxychlor	%	89			70-130	Pass	
Toxaphene	%	109			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Polychlorinated Biphenyls</b>							
Aroclor-1260	%	121			70-130	Pass	
<b>LCS - % Recovery</b>							
% Clay	%	93			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Heavy Metals</b>							
Arsenic	%	125			70-130	Pass	
Cadmium	%	123			70-130	Pass	
Chromium	%	122			70-130	Pass	
Copper	%	120			70-130	Pass	
Lead	%	126			70-130	Pass	
Mercury	%	118			70-130	Pass	
Nickel	%	116			70-130	Pass	
Zinc	%	121			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
<b>Polycyclic Aromatic Hydrocarbons</b>				Result 1					
Acenaphthene	S17-Jn03379	NCP	%	87			70-130	Pass	
Acenaphthylene	S17-Jn03379	NCP	%	95			70-130	Pass	
Anthracene	S17-Jn03379	NCP	%	101			70-130	Pass	
Benz(a)anthracene	S17-Jn03379	NCP	%	97			70-130	Pass	
Benzo(a)pyrene	S17-Jn03379	NCP	%	98			70-130	Pass	
Benzo(b&j)fluoranthene	S17-Jn03379	NCP	%	92			70-130	Pass	
Benzo(g,h,i)perylene	S17-Jn08050	NCP	%	71			70-130	Pass	
Benzo(k)fluoranthene	S17-Jn03379	NCP	%	102			70-130	Pass	
Chrysene	S17-Jn03379	NCP	%	107			70-130	Pass	
Dibenz(a,h)anthracene	S17-Jn03379	NCP	%	72			70-130	Pass	
Fluoranthene	S17-Jn03379	NCP	%	104			70-130	Pass	
Fluorene	S17-Jn03379	NCP	%	97			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S17-Jn03379	NCP	%	72			70-130	Pass	
Naphthalene	S17-Jn03379	NCP	%	98			70-130	Pass	
Phenanthrene	S17-Jn03379	NCP	%	99			70-130	Pass	
Pyrene	S17-Jn03379	NCP	%	107			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Organochlorine Pesticides</b>				Result 1					
Chlordanes - Total	S17-Jn05172	NCP	%	82			70-130	Pass	
4,4'-DDD	S17-Jn05172	NCP	%	95			70-130	Pass	
4,4'-DDE	S17-Jn05172	NCP	%	88			70-130	Pass	
4,4'-DDT	S17-Jn05172	NCP	%	75			70-130	Pass	
a-BHC	S17-Jn05172	NCP	%	86			70-130	Pass	
Aldrin	S17-Jn05172	NCP	%	82			70-130	Pass	
b-BHC	S17-Jn05172	NCP	%	82			70-130	Pass	
d-BHC	S17-Jn05172	NCP	%	94			70-130	Pass	
Dieldrin	S17-Jn05172	NCP	%	84			70-130	Pass	
Endosulfan I	S17-Jn05172	NCP	%	82			70-130	Pass	
Endosulfan II	S17-Jn05172	NCP	%	81			70-130	Pass	
Endosulfan sulphate	S17-Jn05172	NCP	%	74			70-130	Pass	
Endrin	S17-Jn05172	NCP	%	72			70-130	Pass	
Endrin aldehyde	S17-Jn05172	NCP	%	76			70-130	Pass	
Endrin ketone	S17-Jn05172	NCP	%	75			70-130	Pass	
g-BHC (Lindane)	S17-Jn05172	NCP	%	73			70-130	Pass	
Heptachlor	S17-Jn05172	NCP	%	72			70-130	Pass	
Heptachlor epoxide	S17-Jn05172	NCP	%	87			70-130	Pass	
Methoxychlor	S17-Jn04915	NCP	%	91			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Polychlorinated Biphenyls</b>				Result 1					
Aroclor-1260	S17-Jn04912	NCP	%	96			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1					
TRH C6-C9	S17-Jn07748	CP	%	108			70-130	Pass	
TRH C10-C14	S17-Jn07748	CP	%	101			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>BTEX</b>				Result 1					
Benzene	S17-Jn07748	CP	%	108			70-130	Pass	
Toluene	S17-Jn07748	CP	%	105			70-130	Pass	
Ethylbenzene	S17-Jn07748	CP	%	106			70-130	Pass	
m&p-Xylenes	S17-Jn07748	CP	%	104			70-130	Pass	
o-Xylene	S17-Jn07748	CP	%	106			70-130	Pass	
Xylenes - Total	S17-Jn07748	CP	%	104			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1					
Naphthalene	S17-Jn07748	CP	%	91			70-130	Pass	
TRH C6-C10	S17-Jn07748	CP	%	110			70-130	Pass	
TRH >C10-C16	S17-Jn07748	CP	%	101			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic	S17-Jn07748	CP	%	100			70-130	Pass	
Cadmium	S17-Jn07748	CP	%	102			70-130	Pass	
Chromium	S17-Jn07748	CP	%	96			70-130	Pass	
Copper	S17-Jn07748	CP	%	94			70-130	Pass	
Lead	S17-Jn07748	CP	%	93			70-130	Pass	
Mercury	S17-Jn07748	CP	%	110			70-130	Pass	
Nickel	S17-Jn07748	CP	%	88			70-130	Pass	
Zinc	S17-Jn07748	CP	%	88			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	S17-Jn07746	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S17-Jn07746	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S17-Jn07746	CP	mg/kg	120	95	24	30%	Pass	
TRH C29-C36	S17-Jn07746	CP	mg/kg	73	65	12	30%	Pass	
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	S17-Jn07746	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S17-Jn07746	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S17-Jn07746	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S17-Jn07746	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S17-Jn07746	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S17-Jn07746	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
Naphthalene	S17-Jn07746	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S17-Jn07746	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S17-Jn07746	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S17-Jn07746	CP	mg/kg	170	140	21	30%	Pass	
TRH >C34-C40	S17-Jn07746	CP	mg/kg	< 100	< 100	<1	30%	Pass	
<b>Duplicate</b>									
<b>Organochlorine Pesticides</b>				Result 1	Result 2	RPD			
Chlordanes - Total	S17-Jn07746	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4,4'-DDD	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4,4'-DDE	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4,4'-DDT	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
g-BHC (Lindane)	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S17-Jn07746	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S17-Jn07746	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Toxaphene	S17-Jn07746	CP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S17-Jn07746	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1221	S17-Jn07746	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	S17-Jn07746	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S17-Jn07746	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1248	S17-Jn07746	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S17-Jn07746	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S17-Jn07746	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S17-Jn07746	CP	%	13	11	13	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S17-Jn07746	CP	mg/kg	6.6	6.3	6.0	30%	Pass
Cadmium	S17-Jn07746	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S17-Jn07746	CP	mg/kg	18	16	15	30%	Pass
Copper	S17-Jn08049	NCP	mg/kg	13	12	7.0	30%	Pass
Lead	S17-Jn08049	NCP	mg/kg	17	18	3.0	30%	Pass
Mercury	S17-Jn07746	CP	mg/kg	0.1	0.1	20	30%	Pass
Nickel	S17-Jn07746	CP	mg/kg	9.2	8.9	4.0	30%	Pass
Zinc	S17-Jn07746	CP	mg/kg	40	38	6.0	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S17-Jn07752	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S17-Jn07752	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S17-Jn07752	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S17-Jn07752	CP	mg/kg	0.7	0.6	24	30%	Pass
Benzo(a)pyrene	S17-Jn07752	CP	mg/kg	0.6	< 0.5	20	30%	Pass
Benzo(b&j)fluoranthene	S17-Jn07752	CP	mg/kg	0.7	< 0.5	26	30%	Pass
Benzo(g,h,i)perylene	S17-Jn07752	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S17-Jn07752	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S17-Jn07752	CP	mg/kg	0.8	0.7	18	30%	Pass
Dibenz(a,h)anthracene	S17-Jn07752	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S17-Jn07752	CP	mg/kg	1.4	1.2	13	30%	Pass
Fluorene	S17-Jn07752	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S17-Jn07752	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S17-Jn07752	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S17-Jn07752	CP	mg/kg	1.3	0.9	35	30%	Fail
Pyrene	S17-Jn07752	CP	mg/kg	1.5	1.3	12	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Clay	M17-Jn03470	NCP	%	8.8	7.7	12	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S17-Jn07760	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C10-C14	S17-Jn07760	CP	mg/kg	34	39	13	30%	Pass
TRH C15-C28	S17-Jn07760	CP	mg/kg	540	430	22	30%	Pass
TRH C29-C36	S17-Jn07760	CP	mg/kg	280	230	17	30%	Pass

Duplicate								
BTX				Result 1	Result 2	RPD		
Benzene	S17-Jn07760	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S17-Jn07760	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S17-Jn07760	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S17-Jn07760	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S17-Jn07760	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S17-Jn07760	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S17-Jn07760	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S17-Jn07760	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S17-Jn07760	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S17-Jn07760	CP	mg/kg	720	580	21	30%	Pass
TRH >C34-C40	S17-Jn07760	CP	mg/kg	170	140	18	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S17-Jn07760	CP	mg/kg	0.2	0.3	28	30%	Pass
4,4'-DDD	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S17-Jn07760	CP	mg/kg	< 0.05	0.08	55	30%	Fail
a-BHC	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S17-Jn07760	CP	mg/kg	0.28	0.29	4.0	30%	Pass
Endosulfan I	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S17-Jn07760	CP	mg/kg	0.06	0.07	21	30%	Pass
Endrin aldehyde	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S17-Jn07760	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S17-Jn07760	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Toxaphene	S17-Jn07760	CP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S17-Jn07760	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1221	S17-Jn07760	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	S17-Jn07760	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S17-Jn07760	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1248	S17-Jn07760	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S17-Jn07760	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S17-Jn07760	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S17-Jn07760	CP	%	16	17	3.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S17-Jn07760	CP	mg/kg	7.3	7.8	7.0	30%	Pass
Cadmium	S17-Jn07760	CP	mg/kg	1.3	1.3	<1	30%	Pass
Chromium	S17-Jn07760	CP	mg/kg	29	32	8.0	30%	Pass
Mercury	S17-Jn07760	CP	mg/kg	1.4	1.2	15	30%	Pass



Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Nickel	S17-Jn07760	CP	mg/kg	15	15	<1	30%	Pass
Zinc	S17-Jn07760	CP	mg/kg	1200	1300	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

### Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins   mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

### Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Jonathon Angell	Senior Analyst-Inorganic (QLD)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)
Ryan Hamilton	Senior Analyst-Inorganic (NSW)
Ryan Hamilton	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)



**Glenn Jackson**

### National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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# Certificate of Analysis



**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.

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

**Attention:** Michael Samuel  
**Report** 549452-AID  
**Project Name** WAGGA WAGGA  
**Project ID** 52480  
**Received Date** Jun 08, 2017  
**Date Reported** Jun 13, 2017

## Methodology:

Asbestos Fibre  
Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

*NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*

Unknown Mineral  
Fibres

Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity.

*NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*

Subsampling Soil  
Samples

The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed.

*NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*

Bonded asbestos-  
containing material  
(ACM)

The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964 - 2004.

*NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*

Limit of Reporting

The performance limitation of the AS4964 method is around 0.1 g/kg (0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis where required, this is considered to be at the nominal reporting limit of 0.01 % (w / w). The examination of large sample sizes (500 mL is recommended) may improve the likelihood of identifying ACM in the > 2mm fraction. The NEPM screening level of 0.001 % (w / w) asbestos in soil for FA (friable asbestos) and AF (asbestos fines) then applies where they are able to be quantified by gravimetric procedures. This quantitative screening is not generally applicable to FF (free fibres) and results of Trace Analysis are referred.

*NOTE: NATA News March 2014, p.7, states in relation to AS4964: "This is a qualitative method with a nominal reporting limit of 0.01%" and that currently in Australia "there is no validated method available for the quantification of asbestos". Accordingly, NATA Accreditation does not cover the performance of this service (indicated with an asterisk). This report is consistent with the analytical procedures and reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended) and the Western Australia Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2009, including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil, June 2011.*

**Project Name** WAGGA WAGGA  
**Project ID** 52480  
**Date Sampled** Jun 05, 2017 to Jun 06, 2017  
**Report** 549452-AID

Client Sample ID	Eurofins   mgt Sample No.	Date Sampled	Sample Description	Result
HA12_0.2-0.3	17-Jn07746	Jun 05, 2017	Approximate Sample 627g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA13_0.2-0.3	17-Jn07747	Jun 05, 2017	Approximate Sample 432g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA14_0-0.05	17-Jn07748	Jun 05, 2017	Approximate Sample 459g Sample consisted of: Light red fine grain soil and rocks	FA: Amosite asbestos detected in insulation-like material. Approximate raw weight of FA = 0.045g Estimated asbestos content in FA = 0.018g  AF: Amosite asbestos detected in the form of loose fibre bundles. Approximate raw weight of AF = 0.00050g* Estimated asbestos content in AF = 0.00049g*  Total estimated asbestos content in FA and AF = 0.019g* Total estimated asbestos concentration in FA and AF = 0.0041% w/w*  Organic fibre detected. <sup>M11</sup>
HA01_0.2-0.3	17-Jn07749	Jun 06, 2017	Approximate Sample 535g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA02_0.1-0.2	17-Jn07750	Jun 06, 2017	Approximate Sample 425g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA03_0.3-0.4	17-Jn07751	Jun 06, 2017	Approximate Sample 808g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA04_0.5-0.6	17-Jn07752	Jun 06, 2017	Approximate Sample 586g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>

Client Sample ID	Eurofins   mgt Sample No.	Date Sampled	Sample Description	Result
HA05_0.2-0.3	17-Jn07753	Jun 06, 2017	Approximate Sample 603g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA06_0.2-0.3	17-Jn07754	Jun 06, 2017	Approximate Sample 736g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA07_0.1-0.2	17-Jn07755	Jun 06, 2017	Approximate Sample 672g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA08_0.1-0.2	17-Jn07756	Jun 06, 2017	Approximate Sample 703g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA09_0-0.1	17-Jn07757	Jun 06, 2017	Approximate Sample 661g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA10_0-0.1	17-Jn07758	Jun 06, 2017	Approximate Sample 505g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>
HA11_0.1-0.2	17-Jn07759	Jun 06, 2017	Approximate Sample 364g Sample consisted of: Grey fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. <sup>M11</sup>

### Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Jun 08, 2017	Indefinite



**Company Name:** JBS & G Australia (NSW) P/L  
**Address:** Level 1, 50 Margaret St  
Sydney  
NSW 2000  
**Project Name:** WAGGA WAGGA  
**Project ID:** 52480

**Order No.:**  
**Report #:** 549452  
**Phone:** 02 8245 0300  
**Fax:**

**Received:** Jun 8, 2017 12:59 PM  
**Due:** Jun 13, 2017  
**Priority:** 2 Day  
**Contact Name:** Michael Samuel

**Eurofins | mgt Analytical Services Manager : Nibha Vaidya**

Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	BTEX and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271															X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X											
Perth Laboratory - NATA Site # 18217																	
External Laboratory																	
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID												
1	HA12_0.2-0.3	Jun 05, 2017		Soil	S17-Jn07746		X		X	X	X	X	X	X		X	
2	HA13_0.2-0.3	Jun 05, 2017		Soil	S17-Jn07747		X										
3	HA14_0-0.05	Jun 05, 2017		Soil	S17-Jn07748		X		X	X	X	X	X	X		X	
4	HA01_0.2-0.3	Jun 06, 2017		Soil	S17-Jn07749		X										
5	HA02_0.1-0.2	Jun 06, 2017		Soil	S17-Jn07750		X		X	X	X	X	X	X		X	
6	HA03_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07751		X		X	X	X	X	X	X		X	
7	HA04_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07752		X		X	X	X	X	X	X		X	
8	HA05_0.2-0.3	Jun 06, 2017		Soil	S17-Jn07753	X	X		X	X	X	X	X	X	X	X	
9	HA06_0.2-0.3	Jun 06, 2017		Soil	S17-Jn07754		X										

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Melbourne Laboratory - NATA Site # 1254 & 14271															X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X											
Perth Laboratory - NATA Site # 18217																	
10	HA07_0.1-0.2	Jun 06, 2017		Soil	S17-Jn07755		X		X	X	X	X	X	X		X	
11	HA08_0.1-0.2	Jun 06, 2017		Soil	S17-Jn07756		X		X	X	X	X	X	X		X	
12	HA09_0-0.1	Jun 06, 2017		Soil	S17-Jn07757		X		X	X	X	X	X	X		X	
13	HA10_0-0.1	Jun 06, 2017		Soil	S17-Jn07758	X	X		X	X	X	X	X	X	X	X	
14	HA11_0.1-0.2	Jun 06, 2017		Soil	S17-Jn07759		X										
15	QA20170606	Jun 06, 2017		Soil	S17-Jn07760				X	X	X	X	X	X		X	
16	TRIP SPIKE	Jun 06, 2017		Water	S17-Jn07761												X
17	TRIP BLANK	Jun 06, 2017		Water	S17-Jn07762												X
18	RINSATE	Jun 06, 2017		Water	S17-Jn07763				X	X	X	X	X			X	
19	HA12_0-0.1	Jun 05, 2017		Soil	S17-Jn07764			X									
20	HA12_0.4-0.5	Jun 05, 2017		Soil	S17-Jn07765			X									
21	HA13_0-0.1	Jun 05, 2017		Soil	S17-Jn07766			X									

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Melbourne Laboratory - NATA Site # 1254 & 14271															X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X											
Perth Laboratory - NATA Site # 18217																	
22	HA13_0.4-0.5	Jun 05, 2017		Soil	S17-Jn07767			X									
23	HA01_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07768			X									
24	HA02_0-0.1	Jun 06, 2017		Soil	S17-Jn07769			X									
25	HA02_0.4-0.5	Jun 06, 2017		Soil	S17-Jn07770			X									
26	HA03_0.1-0.2	Jun 06, 2017		Soil	S17-Jn07771			X									
27	HA03_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07772			X									
28	HA04_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07773			X									
29	HA04_0.8-0.9	Jun 06, 2017		Soil	S17-Jn07774			X									
30	HA01_0-0.1	Jun 06, 2017		Soil	S17-Jn07775			X									
31	HA05_0.4-0.5	Jun 06, 2017		Soil	S17-Jn07776			X									
32	HA06_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07777			X									
33	HA06_0.9-1.0	Jun 06, 2017		Soil	S17-Jn07778			X									

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Melbourne Laboratory - NATA Site # 1254 & 14271															X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X											
Perth Laboratory - NATA Site # 18217																	
34	HA07_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07779			X									
35	HA07_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07780			X									
36	HA08_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07781			X									
37	HA08_0.6-0.7	Jun 06, 2017		Soil	S17-Jn07782			X									
38	HA09_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07783			X									
39	HA09_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07784			X									
40	HA10_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07785			X									
41	HA10_0.5-0.6	Jun 06, 2017		Soil	S17-Jn07786			X									
42	HA11_0.3-0.4	Jun 06, 2017		Soil	S17-Jn07787			X									
43	QA20170606A	Jun 06, 2017		Soil	S17-Jn07788			X									
Test Counts						2	14	25	12	12	12	12	12	11	2	12	2



## Internal Quality Control Review and Glossary

### General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. 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 Sample Receipt Advice.

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.

### Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

### Terms

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis
<b>LOR</b>	Limit of Reporting
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>ISO</b>	International Standards Organisation
<b>AS</b>	Australian Standards
<b>WA DOH</b>	Western Australia Department of Health
<b>NOHSC</b>	National Occupational Health and Safety Commission
<b>ACM</b>	Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release.
<b>FA</b>	FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling).
<b>PACM</b>	Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.
<b>AF</b>	Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substantial degree of damage which increases the potential for fibre release.)
<b>AC</b>	Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

## Comments

Jn07747, Jn07748, Jn07750 and Jn07759: Sample received was less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

## 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
N/A	Not applicable
M11	NATA accreditation does not cover the performance of this service.

## Authorised by:

Nibha Vaidya

Senior Analyst-Asbestos (NSW)



**Glenn Jackson**

**National Operations Manager**

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Uncertainty data is available on request

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