



Health Infrastructure NSW
Pre-Demolition Hazardous Building Materials Survey

Broken Hill Hospital Redevelopment
Mental Health Unit and Emergency Department
Upgrade
Broken Hill Hospital,
Broken Hill NSW

22 February 2023
63879/150,077 (Rev A)
JBS&G Australia Pty Ltd

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Table of Contents

Abbreviations.....	v
1. Introduction.....	1
1.1 Background.....	1
1.2 Objectives.....	1
1.3 Hazardous Materials Survey Limitations.....	2
2. Methodology.....	4
2.1 Hazardous Materials.....	4
2.1.1 Asbestos Containing Materials and Asbestos Containing Dust.....	4
2.1.2 Lead Based Paint.....	4
2.1.3 Lead Containing Dust.....	4
2.1.4 Polychlorinated Biphenyls.....	4
2.1.5 Synthetic Mineral Fibres.....	4
2.2 Inaccessible Areas.....	5
3. Site Description.....	6
3.1 Mental Health Unit Interface.....	6
3.2 Emergency Department Upgrade.....	8
4. Results.....	9
4.1 Hazardous Materials.....	9
4.1.1 Asbestos Containing Materials.....	9
4.1.2 Asbestos Containing Dust.....	9
4.1.3 Lead Containing Dust.....	10
4.1.4 Lead Based Paints.....	10
4.1.5 Polychlorinated Biphenyls.....	10
4.1.6 Synthetic Mineral Fibres.....	10
4.2 Inaccessible Areas.....	11
5. Conclusions and Recommendations.....	12
5.1 Hazardous Materials.....	12
5.1.1 Asbestos Containing Materials.....	12
5.1.2 Lead Containing Dust.....	12
5.1.3 Lead Based Paints.....	12
5.1.4 Synthetic Mineral Fibres.....	12
5.1.5 Polychlorinated Biphenyls.....	12
5.2 Unexpected Finds.....	12
6. Limitations.....	13

List of Tables

Table 4.1: Asbestos Results Summary Table.....	9
Table 4.2: Asbestos Dust Results Summary Table	9
Table 4.3: Lead Dust Results Summary Table	10
Table 4.4: Lead Paint Results Summary Table	10

List of Figures

Figure 1	Site location
Figure 2	Site layout
Figure 3	Mental Health Unit
Figure 4	Emergency Department

Appendices

Appendix A	Hazardous Materials Registers
Appendix B	Photographs
Appendix C	Laboratory Analysis Reports and Chain of Custody Documentation

Abbreviations

Term	Definition
AC	Asbestos Cement
ACM	Asbestos Containing Material
ACD	Asbestos Containing Dust
ANZECC	Australian and New Zealand Environment Conservation Council
AMP	Asbestos Management Plan
COC	Chain of Custody
EPA NSW	Environmental Protection Authority, New South Wales
FA	Friable Asbestos
HIL	Health Investigation Levels
HSL	Health Screening Levels
JBS&G	JBS&G Australia Pty Ltd
LAA	Licensed Asbestos Assessor
LCD	Lead Containing Dust
LOR	Limit of Reporting
LP	Lead Paint
NATA	National Association of Testing Authorities, Australia
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
PCB	Polychlorinated Biphenyls
PPE	Personal Protective Equipment
SMF	Synthetic Mineral Fibre
SWA	Safe Work Australia
SWNSW	SafeWork New South Wales
WHS (WH&S)	Workplace Health and Safety

1. Introduction

1.1 Background

JBS&G Australia Pty Ltd (JBS&G) was engaged by Health Infrastructure NSW (HI, the client), to undertake a pre-demolition hazardous building materials survey (HBMS) of proposed interface/redevelopment areas of current hospital infrastructure effected by the proposed Mental Health Unit (MHU) building construction and a new/extended Emergency Department (ED) building at The Broken Hill Hospital, located at 170-320 Thomas Street, Broken Hill, NSW (the site).

It is understood that a number of internal areas within the existing hospital are proposed to be impacted by the proposed MHU building interface and ED building construction. This HBMS was requested to identify the presence of hazardous materials within nominated areas of the current hospital infrastructure that will potentially be impacted by the MHU and ED construction.

A previous Hazardous Building Materials Survey was completed by GHD Pty Ltd (GHD) in April 2016 (GHD 2016¹) and was provided to JBS&G prior to undertaking the survey. Based on the review of GHD 2016 it was noted that the report was only relevant to the proposed emergency department upgrade and was not clear on what areas had been inspected as part of the 'Ambulatory Wing'.

This HBMS was requested to re-assess the data gaps identified in the previous hazardous materials assessments and undertake a HBMS of the structures to assist with the planning and demolition phase of the proposed redevelopment works.

The nominated interface/redevelopment areas are detailed further in **Section 3**, and were inspected for the following hazardous materials:

- Asbestos containing materials (ACMs);
- Asbestos containing dust (ACD);
- Lead based paints (LP);
- Lead containing Dust (LCD)
- Synthetic mineral fibres (SMF); and
- Polychlorinated biphenyls (PCB).

This advice presents the outcomes of the inspection undertaken by JBS&G personnel and provides recommendations on requirements for the removal of identified hazardous materials in accordance with regulations and guidance in force at the time of the inspection.

1.2 Objectives

The objective of the HBMS was to determine the presence, quantity and condition of any hazardous materials within the buildings prior to proposed refurbishment works.

The HBMS and production of this report have been undertaken in accordance with the requirements of:

- *Work Health and Safety Act (2011);*
- *Work Health and Safety Regulation (2017);*
- *How to Safely Remove Asbestos Code of Practice, SafeWork NSW, (2022) (SWNSW 2022a);*

¹ Broken Hill Hospital Kincumber House and Ambulatory Wing Hazardous Building Materials Survey. GHD Pty Ltd, Reference No. 21/25413, issued 10 May 2016 (GHD 2016)

- *How to Manage and Control Asbestos in the Workplace Code of Practice*, SafeWork NSW (2022) (SWNSW 2022b);
- Australian Standard 4361.2 (1998) *Guide to Lead Paint Management - Part 2: Residential and Commercial Buildings* (AS4361.2-1998);
- Australian Standard 4361.2 (2017) *Guide to Hazardous Paint Management - Part 2: Lead Paint in Residential, Public and Commercial Buildings* (AS4361.2-2017);
- National Occupational Health and Safety Commission's *National Standard for Synthetic Mineral Fibres* [NOHSC:1004(1990)];
- National Occupational Health and Safety Commission's *National Code of Practice for the Safe Use of Synthetic Mineral Fibres*, [NOHSC:2006(1990)]; and
- Australian and New Zealand Environment Conservation Council's *Identification of PCB-containing Capacitors: An information booklet for Electricians and Electrical Contractors*, (ANZECC 1997).

1.3 Hazardous Materials Survey Limitations

Whilst all reasonable care has been taken by JBS&G during the completed HBMS, this report is limited due to:

- Only safely accessible areas of the site were surveyed.
- Access restrictions to operational areas such as energised services, gas, air conditioning/heating, pressurised vessels, chemical lines etc.
- Potential materials located in areas in which they could not reasonably be envisaged or anticipated.
- Limited access to internal building components e.g. set floor, walls, ceiling cavities etc., in which case only representative areas were inspected with the hand tools available to the JBS&G consultants for destructive investigation.
- Access restrictions to areas above 3 metres or any area deemed inaccessible without the use of specialised equipment.
- Access to restrictions to areas of structures where the structural integrity for the floor and/or ceiling has been compromised.
- Service pits, confined spaces, voids, cavities within the building structure and internal areas of plant and equipment that could not be safely accessed.

It should be noted that buildings built between the 1930s - 1980s may have general occurrences of ACMs in areas which are not readily accessible with the hand tools available for the survey. These areas and materials include, inter alia:

- Fibre Cement Sheeting (FCS) used as packing to bearers and joists in the underfloor void or as boxing/shuttering to concrete formwork;
- FCS packing between window/door frames and timber studs; and
- Compressed FCS underneath tiled floor areas.

Whilst all care is taken by the consultants to uncover hidden materials, not all areas can be accessed within the allowable timeframe without more industrial (power) tools. As such, only minor destructive sampling techniques were employed to gain access. Consequently, without substantial demolition of the building, it is not possible to guarantee that every source of hazardous material has been detected. JBS&G recommends that areas inaccessible during the survey be inspected as the

demolition progresses. If suspected hazardous materials are observed, confirm the presence or absence of hazardous materials through laboratory testing.

In the event suspected hazardous materials are identified during strip out or demolition which are not included in this report, JBS&G recommends that works should cease and an assessment of the materials undertaken by a competent person for further appropriate recommendations.

No one section or part of a section of this report is to be taken as giving an overall idea of this report. Each section is to be read in conjunction with the whole of this report, including the appendices and attachments.

2. Methodology

2.1 Hazardous Materials

2.1.1 Asbestos Containing Materials and Asbestos Containing Dust

Representative samples of suspected ACMs and ACDs were collected where possible and placed into a zip-lock bags. These were subsequently delivered to a NATA accredited laboratory for analysis using polarised light microscopy in conjunction with dispersion staining techniques. Similar materials to those analysed or other materials known to contain asbestos from the consultant's experience (e.g. Electrical backing boards, corrugated asbestos cement roofs and older fibre cement sheeting) or materials not accessible may also be assumed to contain asbestos as per the relevant Code of Practice.

At the time of inspection, the following details were recorded:

- Location;
- Type of material;
- Accessibility;
- Condition;
- Friability; and
- Volume/dimensions.

2.1.2 Lead Based Paint

Australian Standard AS4361.2 (2017) *Guide to Hazardous Paint Management - Part 2: Lead Paint in Residential, Public and Commercial Buildings* defines lead paints as those in which the lead content (calculated as lead metal) is in excess of 0.1 percent by weight of the dry film. This can be determined by field spot tests, laboratory testing or the use of portable X-ray fluorescence (XRF) field tests. Representative samples of suspected lead based paints were collected where possible and delivered to a NATA accredited laboratory for analysis using inductively coupled plasma optical emission spectrometry (ICP-OES).

2.1.3 Lead Containing Dust

Representative samples of accumulated or settled dust were collected and delivered to a NATA accredited laboratory for analysis via ICP-OES. A conservative assessment criteria was adopted for this investigation given the potential for human exposure and the readily disturbed and uncontained nature of accumulated or settled dust.

Concentrations of lead within accumulated or settled dust were compared against the health investigation level (HIL) for residential sites with garden/accessible soil of 300 mg/kg as outlined in National Environment Protection Measure (NEPC 2013) guidelines.

2.1.4 Polychlorinated Biphenyls

Old fluorescent light fittings and other appliances which may contain capacitors containing PCB dielectric oil are identified by inspection and evaluation with the consultant's experience of similar light fittings and appliances. Alternatively, where possible and when it was safe to do so, a representative light fitting was opened to reveal the capacitor and the make and model recorded to be compared against the ANZECC (1997) list of PCB containing capacitors.

2.1.5 Synthetic Mineral Fibres

SMF containing materials were either sampled as per the asbestos methodology or assumed to contain SMF from the consultant's experience of similar materials.

2.2 Inaccessible Areas

As per SWNSW 2019b, any areas not accessible must be recorded as such. Where hazardous materials are suspected to be contained within inaccessible areas, these shall be documented in this report and the associated Hazardous Materials Register (**Appendix A**).

3. Site Description

The HBMS was conducted on 30 January 2023 by Robert Sharp, one of JBS&G's experienced hazardous materials surveyors and Licensed Asbestos Assessors (LAA001343).

The inspection areas were restricted to the proposed interface/redevelopment areas for the proposed MHU building and ED upgrade within the current hospital infrastructure of the Broken Hill Hospital (refer **Figures 1 to 4**).

The type, location, friability, accessibility, and approximate quantities of identified and suspected hazardous materials are provided in the Hazardous Materials Register in **Appendix A**. Photographs taken during the HBMS are presented in **Appendix B**. A summary of the observations made during the HBMS is included in the following sections.

3.1 Mental Health Unit Interface

The Mental Health Unit building redevelopment proposes several walkways and interface areas with the current hospital. As the final design and layout of the new building had not been finalised at the time of the HBMS, all areas of potential interface were inspected. The proposed interface comprised the western portion of the Oncology Unit, the western offices of the mental health service, the northern portion of the Sub-acute Rehabilitation Unit and the external BBQ area, as shown on **Figure 3**.

At the time of inspection, all areas off the hospital were occupied and operational. The inspection areas comprised a mix of patient rooms, offices and staff amenities. Typical construction materials comprised a mix of exposed brick and fibre cement panelled walls, steel roof sheets, mixed plaster, cement and cement rendered brick walls, mixed suspended tiles and plaster ceilings and concrete floors with various floor coverings, primarily vinyl sheeting.

A summary of the significant observations made during the HBMS of the MHU interface areas is as follows:

- Non-asbestos containing fibre cement sheeting (A01) was identified to the eaves to the Oncology ward.
- Non-asbestos containing compressed fibre cement sheeting (A02) was identified to the external window covers of the Oncology ward.
- Non-asbestos containing fibre cement sheeting (A03) was identified to the ceiling lining for the western entrance way to the hospital adjacent the Oncology ward.
- Non-asbestos containing fibre cement sheeting (A04) was identified to the infill panels between the eaves and roof of the awning, west of the Mental Health Service offices.
- Non-asbestos containing fibre cement sheeting (A05) was identified to the box cover of the external awning rafters to the Oncology ward and Mental Health Service offices.
- Assumed non-asbestos containing fibre cement sheeting (as per A05) was identified to the infill panel to the southern glass wall and awning ceiling to the corridor to the sub-acute rehabilitation unit.
- Non-asbestos containing compressed fibre cement sheeting (A06) was identified to the external cladding of the Sub-acute Rehabilitation unit.
- Assumed non-asbestos containing compressed fibre cement sheeting (as per A06) was identified to the BBQ area internal cladding.
- Non-asbestos containing compressed fibre cement sheeting (A07) was identified to the northern external boardwalk to the Sub-acute Rehabilitation Unit and BBQ area adjacent.

- Assumed non-asbestos containing compressed fibre cement sheeting (as per A07) was identified to the northern Sub-acute Rehabilitation unit entrance way soffit lining.
- Various colour vinyl flooring was identified throughout the internal areas of the Mental Health Unit Interface. Representative samples were collected as follows:
 - Non-asbestos containing grey speckled vinyl sheet flooring (A08) was identified to the corridors of the Oncology unit and Mental Health Service offices.
 - Non-asbestos containing white speckled vinyl sheet flooring (A09) was identified to the Oncology unit ward.
 - Non-asbestos containing blue speckled vinyl sheet flooring (A10) was identified to the corridor edging of the Oncology unit and Mental Health Services.
 - Non-asbestos containing beige speckled vinyl sheet flooring (A11) was identified throughout the Oncology unit, Mental Health Services office and Sub-acute Rehabilitation ward.
 - Non-asbestos containing maroon speckled vinyl sheet flooring (A12) was identified to the Sub-acute Rehabilitation patient bathrooms.

Based on the results of the representative vinyl flooring samples collected, all vinyl flooring within the proposed Mental Health Unit interface is assumed to be non-asbestos containing.

- Lead concentrations within settled dust above the adopted site criteria (LD01, 430mg/kg) was identified atop the sliding door motor housing to the corridor between Mental Health Services office and Sub-acute Rehabilitation ward. This dust was also found not to contain asbestos (AD01).
- Non-lead based blue paint (L01, <0.01% w/w) was identified to the external downpipes, steel framework and I beams to the Oncology ward and Mental Health Services.
- Non-lead based grey paint (L02, <0.01% w/w) was identified to the steel frame, downpipes and bollards of the Sub-acute Rehabilitation unit.
- Non-lead based white paint (L03, <0.01% w/w) was identified to the internal walls and window frames throughout the proposed mental health unit interface.
- Non-lead based blue paint (L04, <0.01% w/w) was identified to the door and door frames throughout the proposed mental health unit interface.
- Assumed SMF materials were identified throughout the structure in various forms as follows:
 - Internal insulation to instant hot water systems within kitchenette;
 - Insulation to the roof sarking;
 - Suspended ceiling tiles;
 - Insulation to flexible air conditioning ducting within ceiling cavities; and
 - Insulation lagging to pipework.

3.2 Emergency Department Upgrade

The proposed Emergency Department upgrade comprised the current Emergency Department patient rooms, consultation rooms and the staff station, as shown on **Figure 4**. The Emergency Department was observed to be of consistent appearance and construction materials to the current Oncology Unit and current mental health services office.

At the time of inspection, the Emergency Department was occupied and operational with all patient rooms occupied. It comprised exposed brick external walls, steel roof sheets, mixed plaster, cement and cement rendered brick walls, mixed suspended tiles and plaster ceiling and concrete floor with various vinyl flooring.

A summary of the significant observations made during the HBMS of the Emergency Department upgrade area is as follows:

- Assumed non-asbestos containing fibre cement sheeting (as per A01) was identified to the eaves.
- Assumed non-asbestos containing compressed fibre cement sheeting (as per A02) was identified to the external window covers.
- Various colour vinyl sheet flooring was identified throughout the internal areas of the Emergency Department upgrade including:
 - Assumed non-asbestos containing grey speckled vinyl sheet flooring (as per A08) was identified to the ambulance entranceway to the Emergency department.
 - Assumed non-asbestos containing white speckled vinyl sheet flooring (as per A09) was identified to the emergency department floor.
 - Assumed non-asbestos containing blue speckled vinyl sheet flooring (as per A10) was identified to the corridor edging to the emergency department.
 - Non-asbestos containing beige speckled vinyl sheet flooring (As per A11) was identified throughout the Emergency department.

Based on the consistent appearance of vinyl sheet flooring with those observed and sampled in the MHU interface areas, all vinyl sheet flooring within the proposed Emergency department upgrade is assumed to be non-asbestos containing.

- Assumed non-lead based blue paint (as per L01) was identified to the external downpipes, steel framework and I-beams to the Emergency department.
- Assumed non-lead based blue paint (as per L04) was identified to the door and door frames throughout the emergency department.
- Lead concentrations within settled dust above the adopted site criteria (LD02, 360mg/kg) was identified to the ceiling cavity of the emergency department. This dust was also found not to contain asbestos (AD02).
- Assumed SMF materials were identified throughout the emergency department in various forms as follows:
 - Insulation to the roof sarking;
 - Suspended ceiling tiles;
 - Insulation to flexible air conditioning ducting within ceiling cavities; and
 - Insulation lagging to pipework.

4. Results

4.1 Hazardous Materials

All identified hazardous materials are recorded in the Hazardous Materials Register in **Appendix A** with relevant photographs in **Appendix B**. NATA accredited laboratory analysis reports and chain of custody are provided in **Appendix C**.

4.1.1 Asbestos Containing Materials

ACM were identified by testing at an accredited NATA laboratory and/or visual inspection using the experience of the hazardous materials surveyor. A summary of the results of laboratory testing for asbestos are provided in **Table 4.1** below.

Table 4.1: Asbestos Results Summary Table

Sample ID	Lab ID	Ward	Sample Location	Results	Observed Condition
<u>Mental Health Unit Interface</u>					
A01	S23-Fe0017118	Oncology	External eaves – fibre cement sheeting	No asbestos detected	N/A
A02	S23-Fe0017119	Oncology	External window cover – compressed fibre cement sheeting	No asbestos detected	N/A
A03	S23-Fe0017120	Oncology	Ceiling lining at western entrance way – fibre cement sheeting	No asbestos detected	N/A
A04	S23-Fe0017121	Mental Health Services/ Mental Health Services	External infill panel between eaves and awning roof – fibre cement sheeting	No asbestos detected	N/A
A05	S23-Fe0017122	Oncology/ Mental Health Services	External box cover to awning rafters – fibre cement sheeting	No asbestos detected	N/A
A06	S23-Fe0017123	Sub-acute Rehabilitation	External wall cladding – compressed fibre cement sheeting	No asbestos detected	N/A
A07	S23-Fe0017124	Sub-acute Rehabilitation	External boardwalk – compressed fibre cement sheeting	No asbestos detected	N/A
A08	S23-Fe0017125	Oncology	Internal patient room floor – grey speckled vinyl	No asbestos detected	N/A
A09	S23-Fe0017126	Oncology	Internal corridor floor – white speckled vinyl	No asbestos detected	N/A
A10	S23-Fe0017127	Oncology	Internal corridor floor – blue speckled vinyl	No asbestos detected	N/A
A11	S23-Fe0017128	Sub-acute Rehabilitation	Internal corridor floor – beige speckled vinyl	No asbestos detected	N/A
A12	S23-Fe0017129	Sub-acute Rehabilitation	Internal patient room bathroom – maroon speckled vinyl flooring	No asbestos detected	N/A
<u>Emergency Department Upgrade</u>					
No material samples were collected at the time of inspection					

4.1.2 Asbestos Containing Dust

Representative dust samples were collected throughout the site. A summary of the results of the laboratory testing for asbestos are provided in **Table 4.2** below:

Table 4.2: Asbestos Dust Results Summary Table

Sample ID	Lab ID	Refurbishment Area	Sample Location	Results	Observed Condition
<u>Mental Health Unit Interface</u>					
AD01	S23-Fe0017135	Sub-acute Rehabilitation	Atop the sliding door motor cover – settled dust	No Asbestos Detected	N/A
<u>Emergency Department Upgrade</u>					

Sample ID	Lab ID	Refurbishment Area	Sample Location	Results	Observed Condition
AD02	S23-Fe0017137	Emergency Department	Ceiling cavity – settled dust	No Asbestos Detected	N/A

4.1.3 Lead Containing Dust

Representative dust samples were collected throughout the site. A summary of the results of the laboratory testing for lead are provided in **Table 4.3** below:

Table 4.3: Lead Dust Results Summary Table

Sample ID	Lab ID	Refurbishment Area	Sample Location	Results	Observed Condition
<u>Mental Health Unit Interface</u>					
LD01	S23-Fe0017136	Sub-acute Rehabilitation	Atop the sliding door motor cover – settled dust	430mg/kg	Poor
<u>Emergency Department Upgrade</u>					
LD02	S23-Fe0017138	Emergency Department	Ceiling cavity – settled dust	360mg/kg	Poor

4.1.4 Lead Based Paints

Representative paint samples were collected throughout the site. A summary of the results of the laboratory testing for lead are provided in **Table 4.4** below:

Table 4.4: Lead Paint Results Summary Table

Sample ID	Lab ID	Refurbishment Area	Sample Location	Results	Observed Condition
<u>Mental Health Unit Interface</u>					
L01	S23-Fe0017130	Oncology/ Mental Health Services	External down pipe – blue paint	< 0.01% w/w	N/A
L02	S23-Fe0017131	Sub-acute Rehabilitation	External bollard – grey paint	< 0.01% w/w	N/A
L03	S23-Fe0017132	Oncology	Internal window frame – white paint	< 0.01% w/w	N/A
L04	S23-Fe0017133	Oncology	Internal door frame – blue paint	< 0.01% w/w	N/A
<u>Emergency Department Upgrade</u>					
No paint samples were collected at the time of inspection					

4.1.5 Polychlorinated Biphenyls

Fluorescent light fittings were of modern age and appearance. Based on the year of building construction (circa 1990 and 2010) these light fittings are not suspected to contain PCB containing capacitors.

4.1.6 Synthetic Mineral Fibres

Suspected SMF materials were identified in various forms throughout the site. Full details of all identified SMF materials are provided in the Hazardous Materials Register (**Appendix A**). The typical forms of SMF identified are summarised below:

- Internal insulation to instant hot water systems within kitchens;
- Insulation to the roof sarking;
- Suspended ceiling tiles;
- Insulation to flexible air conditioning ducting within ceiling cavities; and
- Insulation lagging to pipework.

4.2 Inaccessible Areas

At the time of inspection, there were no areas of the refurbishment areas deemed to be inaccessible areas in accordance with SWNSW 2022b.

5. Conclusions and Recommendations

Based on the scope of this assessment and with reference to the limitations included in **Section 6**, the following conclusions are made with respect to the Hazardous Materials Survey completed.

5.1 Hazardous Materials

Identified and suspected hazardous materials were observed throughout the building as a result of visual identification and laboratory analysis.

The following recommendations are made for the removal of the identified hazardous materials to potentially mitigate harmful effects as a result of the proposed works program. The person with management or control of the site, must ensure so far as is reasonably practicable that the identified hazardous materials are removed prior to the commencement of demolition works.

The identified and suspected hazardous materials are presented in the Hazardous Materials Register included as **Appendix A**.

5.1.1 Asbestos Containing Materials

No asbestos containing materials were identified at the time of inspection.

5.1.2 Lead Containing Dust

Slightly elevated lead levels were identified within both upgrade areas, due to the minor level of elevated lead detected, it is recommended that all ground workers wear P2 respiratory protection during demolition activities of this structure. Plant operators must also keep cabin doors closed and air conditioning set to recycle during the completion of demolition of these structures. Care should also be taken to minimise dust generation during demolition activities.

5.1.3 Lead Based Paints

No lead based paints were identified at the time of inspection.

5.1.4 Synthetic Mineral Fibres

The synthetic mineral fibres encountered during this inspection were generally contained and deemed to be low risk. These SMF materials can be removed with the building and demolition waste with care taken not to generate fibres. Appropriate PPE is recommended including the use of P2 respirator as minimum and appropriate removal methodology as outlined in [NOHSC: 1004(1990)] and [NOHSC: 2006(1990)].

5.1.5 Polychlorinated Biphenyls

No polychlorinated biphenyls were identified at the time of inspection.

5.2 Unexpected Finds

Any materials deemed to be consistent with those detailed in the Hazardous Materials Register that have not been previously identified should be assumed to have the same content and be treated accordingly.

Should any additional suspected hazardous materials be observed during or prior to demolition works, works should cease until a suitably qualified occupational hygienist can assess the suspected hazardous material and provide appropriate recommendations for management and/or removal.

6. 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 enquiries.

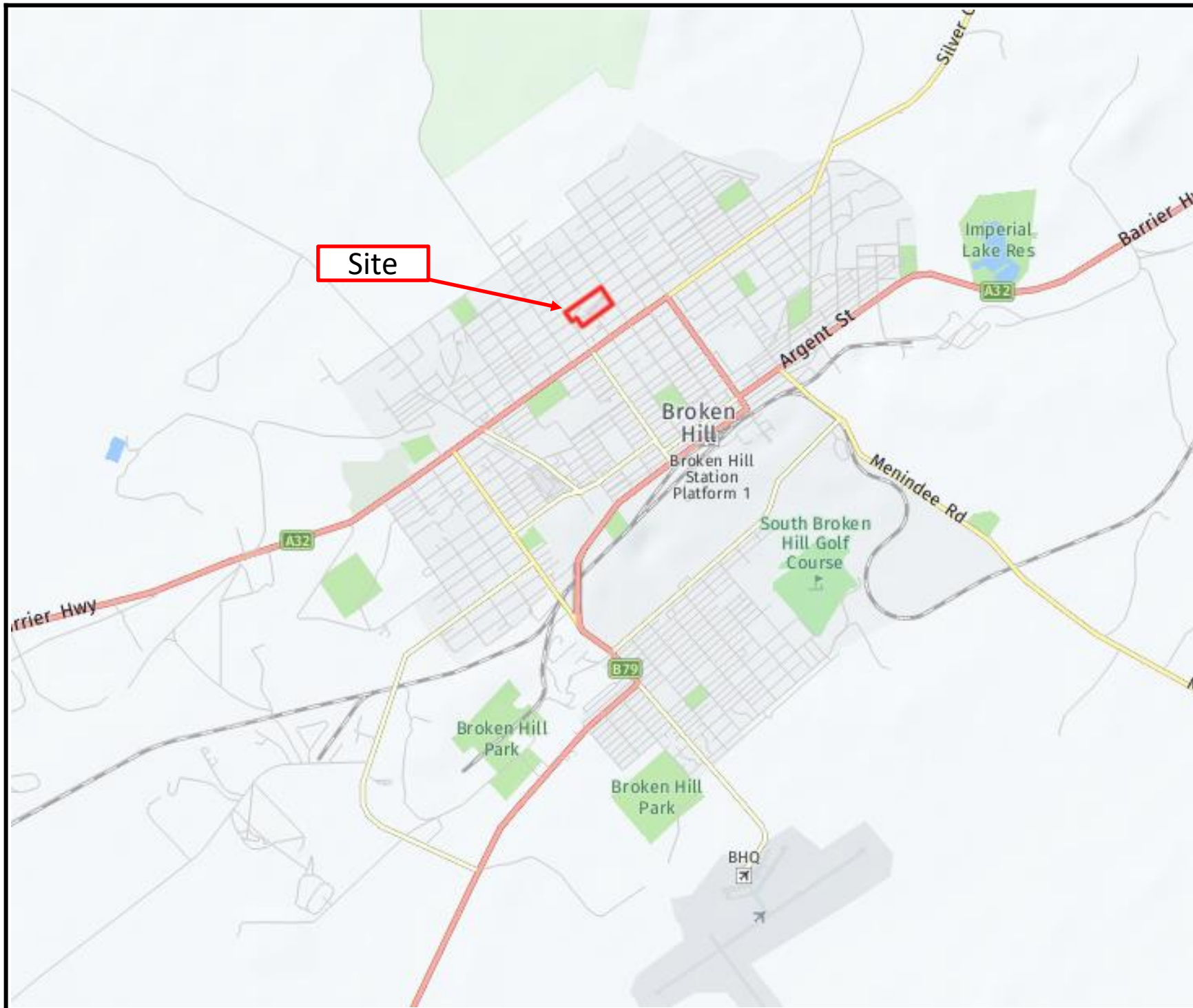
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the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

Figures



Legend:
 Approximate Site Boundary



Job No: 62673

Client: Health Infrastructure

Version: Rev A

Date: 13/02/2023

Drawn By: RS

Checked By: MS

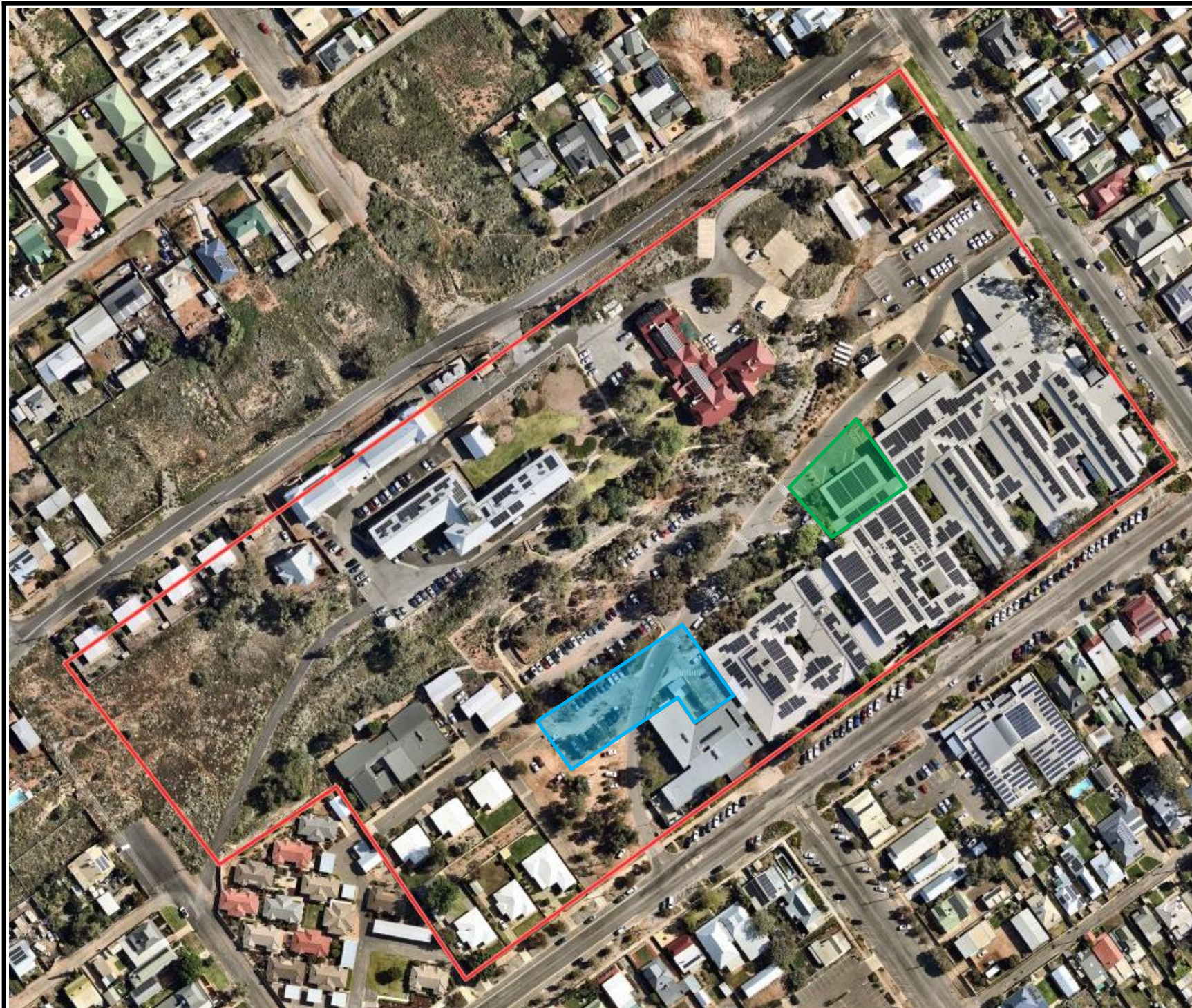


Broken Hill Hospital

**170-320 Thomas Street
Broken Hill, NSW**

SITE LOCATION

FIGURE 1



- Legend:**
- ▬ Approximate Site Boundary
 - ▬ Proposed Mental Health Unit
 - ▬ Proposed Emergency Department



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Date: 13/02/2023

Drawn By: RS

Checked By: MS



Broken Hill Hospital

**170-320 Thomas Street
Broken Hill, NSW**

SITE LAYOUT

FIGURE 2



- Legend:**
- ▬ Approximate Site Boundary
 - ▬ Proposed Mental Health Unit
 - ▬ Proposed Emergency Department



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Drawn By: RS

Checked By: MS



Broken Hill Hospital

**170-320 Thomas Street
Broken Hill, NSW**

MENTAL HEALTH UNIT

FIGURE 3



Legend:

- Approximate Site Boundary
- Proposed Mental Health Unit
- Proposed Emergency Department



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Date: 13/02/2023

Drawn By: RS

Checked By: MS



Broken Hill Hospital

**170-320 Thomas Street
Broken Hill, NSW**

EMERGENCY DEPARTMENT

FIGURE 4

Appendix A Hazardous Materials Registers

JBS&G SAMPLE NO.	LOCATION	MATERIAL DESCRIPTION	PHOTO NUMBER	ACCESSIBLE AREA?	FRIABILITY	ANALYTICAL RESULT	MATERIAL CONDITION	APPROX. QUANTITY	ACTION REQUIRED	DATE OF LAST INSPECTION (INCL. COMPANY NAME AND INITIALS)	DATE OF CONTROL ACTION &/OR REMOVAL
No Asbestos Detected (NAD)											
A01	Oncology ward, external – eaves	Fibre cement sheeting	2	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
A02	Oncology ward, external – window covers	Compressed Fibre cement sheeting	3	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
A03	Oncology ward, external to internal western entrance way – ceiling lining	Fibre cement sheeting	4	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
A04	West of mental health services office, external awning – infill panel between eaves and awning roof	Fibre cement sheeting	5	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
A05	West of mental health services office, external awning – box cover to rafters	Fibre cement sheeting	6	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
As per A05	Southern external glass wall of corridor to sub-acute rehabilitation unit and awning roof – infill panel	Fibre cement sheeting	7	Yes	-	Assumed non-asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
A06	Sub-acute rehabilitation unit, external wall – cladding	Compressed fibre cement sheeting	8	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
As per A06	BBQ area, internal wall – cladding	Compressed fibre cement sheeting	9	Yes	-	Assumed non asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
A07	Sub-acute rehabilitation unit to BBQ area, northern external floor	Compressed fibre cement sheeting	10 & 11	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
As per A07	Sub-acute rehabilitation unit, northern entrance way – soffit lining	Compressed fibre cement sheeting	12	Yes	-	Assumed non-asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
A08	Oncology unit and mental health service office, corridors – floor	Grey speckled vinyl sheeting	13	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
A09	Oncology unit, ward – floor	White speckled vinyl sheeting	14	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
A10	Oncology unit and mental health service office, corridors – edging	Blue speckled vinyl sheeting	15	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-

Hazardous Materials Register (Rev 0)
170-320 Thomas Street, Broken Hill NSW
Mental Health Unit Interface
Date of Production – 13 February 2023



JBS&G SAMPLE NO.	LOCATION	MATERIAL DESCRIPTION	PHOTO NUMBER	ACCESSIBLE AREA?	FRIABILITY	ANALYTICAL RESULT	MATERIAL CONDITION	APPROX. QUANTITY	ACTION REQUIRED	DATE OF LAST INSPECTION (INCL. COMPANY NAME AND INITIALS)	DATE OF CONTROL ACTION &/OR REMOVAL
A11	Oncology unit, mental health service office and sub-acute rehabilitation unit – floor throughout	Beige speckled vinyl sheeting	16	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
A12	Sub-acute rehabilitation unit, patient room – bathroom floor	Maroon speckled vinyl sheet sheeting	17	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
As per A08, A09, A10, A11, A12	Floor throughout	Various coloured vinyl sheeting	-	Yes	-	Assumed non-asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
AD01	Corridor between mental health services office and sub-acute rehabilitation ward – atop sliding door motor housing	Settled dust	18	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
Lead Containing Dust											
LD01	Corridor between mental health services office and sub-acute rehabilitation ward – atop sliding door motor housing	Settled dust	18	Yes	Friable	430 mg/kg	Poor	<1m ²	During the refurbishment/demolition of the structure ensure dust control methods are utilised and all ground workers use a P2 respirator.	30/01/2023 JBS&G RS	
As per LD01	Cavities and surfaces throughout mental health unit interface	Settled dust	-	Partially	Friable	Assumed elevated concentrations	Poor	Unknown	During the refurbishment/demolition of the structure ensure dust control methods are utilised and all ground workers use a P2 respirator.	30/01/2023 JBS&G RS	
Non-lead Based Paints											
L01	Oncology ward and mental health services offices, external – downpipes, steel framework and I beams	Blue paint	19	Yes	-	<0.01% w/w	-	-	No further action required	30/01/2023 JBS&G RS	-
L02	Sub-acute rehabilitation unit, external – steel frame, downpipes and bollards	Grey paint	20	Yes	-	<0.01% w/w	-	-	No further action required	30/01/2023 JBS&G RS	-
L03	Throughout mental health unit interface, internal – window and walls	White paint	21	Yes	-	<0.01% w/w	-	-	No further action required	30/01/2023 JBS&G RS	-
L04	Throughout mental health unit interface, internal – door and door frame	Blue paint	22	Yes	-	<0.01% w/w	-	-	No further action required	30/01/2023 JBS&G RS	-
Polychlorinated Biphenyls (PCBs)											

JBS&G SAMPLE NO.	LOCATION	MATERIAL DESCRIPTION	PHOTO NUMBER	ACCESSIBLE AREA?	FRIABILITY	ANALYTICAL RESULT	MATERIAL CONDITION	APPROX. QUANTITY	ACTION REQUIRED	DATE OF LAST INSPECTION (INCL. COMPANY NAME AND INITIALS)	DATE OF CONTROL ACTION &/OR REMOVAL
No Polychlorinated Biphenyls were identified at the time of inspection.									No further action required	30/01/2023 JBS&G RS	-
Synthetic Mineral Fibres (SMF)											
-	Oncology ward, kitchenette – zip instant hot water unit	Insulation core	23	No	Non-friable	Assumed SMF	Good	<1m ²	Remove in accordance with NOHSC:2006 (1990)	30/01/2023 JBS&G RS	
-	Throughout Mental Heal Unit interface, ceiling cavity – underside of roof	Sarking	24	Yes	Non-friable	Assumed SMF	Good	200m ²	Remove in accordance with NOHSC:2006 (1990)	30/01/2023 JBS&G RS	
-	Throughout Mental Heal Unit interface, ceiling	Suspended ceiling tiles	25	Yes	Non-friable	Assumed SMF	Good	150m ²	Remove in accordance with NOHSC:2006 (1990)	30/01/2023 JBS&G RS	
-	Throughout Mental Heal Unit interface, ceiling cavity – ducting	Insulation core	26	Partially	Non-friable	Assumed SMF	Good	50m lineal	Remove in accordance with NOHSC:2006 (1990)	30/01/2023 JBS&G RS	
-	Throughout Mental Heal Unit interface, ceiling cavity – pipework	Insulation	26	Yes	Non-friable	Assumed SMF	Good	20m lineal	Remove in accordance with NOHSC:2006 (1990)	30/01/2023 JBS&G RS	

Hazardous Materials Register (Rev 0)
170-320 Thomas Street, Broken Hill NSW
Emergency Department Upgrade
Date of Production – 13 February 2023



JBS&G SAMPLE NO.	LOCATION	MATERIAL DESCRIPTION	PHOTO NUMBER	ACCESSIBLE AREA?	FRIABILITY	ANALYTICAL RESULT	MATERIAL CONDITION	APPROX. QUANTITY	ACTION REQUIRED	DATE OF LAST INSPECTION (INCL. COMPANY NAME AND INITIALS)	DATE OF CONTROL ACTION &/OR REMOVAL
No Asbestos Detected (NAD)											
As per A01	Emergency department, external – eaves	Fibre cement sheeting	28	Yes	-	Assumed non-asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
As per A02	Emergency department, external – window covers	Compressed Fibre cement sheeting	29	Yes	-	Assumed non-asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
As per A08	Emergency department, corridors – floor	Grey speckled vinyl sheeting	30	Yes	-	Assumed non-asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
As per A09	Emergency department, ward – floor	White speckled vinyl sheeting	-	Yes	-	Assumed non-asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
As per A10	Emergency department, corridors – edging	Blue speckled vinyl sheeting	31	Yes	-	Assumed non-asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
As per A11	Emergency department – floor throughout	Beige speckled vinyl sheeting	31	Yes	-	Assumed non-asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
As per A08, A09, A10, A11	Floor throughout	Various coloured vinyl sheeting	-	Yes	-	Assumed non-asbestos	-	-	No further action required	30/01/2023 JBS&G RS	-
AD02	Emergency department, ambulance entrance waiting area – ceiling cavity	Settled dust	32	Yes	-	No asbestos detected	-	-	No further action required	30/01/2023 JBS&G RS	-
Lead Containing Dust											
LD02	Emergency department, ambulance entrance waiting area – ceiling cavity	Settled dust	32	Yes	Friable	360 mg/kg	Poor	4m ²	During the refurbishment/demolition of the structure ensure dust control methods are utilised and all ground workers use a P2 respirator.	30/01/2023 JBS&G RS	
As per LD02	Cavities and surfaces throughout mental health unit interface	Settled dust	-	Partially	Friable	Assumed elevated concentrations	Poor	Unknown	During the refurbishment/demolition of the structure ensure dust control methods are utilised and all ground workers use a P2 respirator.	30/01/2023 JBS&G RS	
Non-lead Based Paints											
L01	Emergency department, external – downpipes, gutters and I beams	Blue paint	33	Yes	-	<0.01% w/w	-	-	No further action required	30/01/2023 JBS&G RS	-
L04	Emergency department, internal – door and door frame	Blue paint	34	Yes	-	<0.01% w/w	-	-	No further action required	30/01/2023 JBS&G RS	-

JBS&G SAMPLE NO.	LOCATION	MATERIAL DESCRIPTION	PHOTO NUMBER	ACCESSIBLE AREA?	FRIABILITY	ANALYTICAL RESULT	MATERIAL CONDITION	APPROX. QUANTITY	ACTION REQUIRED	DATE OF LAST INSPECTION (INCL. COMPANY NAME AND INITIALS)	DATE OF CONTROL ACTION &/OR REMOVAL
Polychlorinated Biphenyls (PCBs)											
No Polychlorinated Biphenyls were identified at the time of inspection.									No further action required	30/01/2023 JBS&G RS	-
Synthetic Mineral Fibres (SMF)											
-	Emergency department, ceiling cavity – underside of roof	Sarking	36	Yes	Non-friable	Assumed SMF	Good	200m ²	Remove in accordance with NOHSC:2006 (1990)	30/01/2023 JBS&G RS	
-	Emergency department, ceiling	Suspended ceiling tiles	37	Yes	Non-friable	Assumed SMF	Good	130m ²	Remove in accordance with NOHSC:2006 (1990)	30/01/2023 JBS&G RS	
-	Emergency department, ceiling cavity	Loose insulation	-	Yes	Non-friable	Assumed SMF	Good	20m ²	Remove in accordance with NOHSC:2006 (1990)	30/01/2023 JBS&G RS	
-	Emergency department, ceiling cavity – ducting	Insulation core	36	Partially	Non-friable	Assumed SMF	Good	20m lineal	Remove in accordance with NOHSC:2006 (1990)	30/01/2023 JBS&G RS	
-	Emergency department, ceiling cavity – pipework	Insulation	-	Yes	Non-friable	Assumed SMF	Good	5m lineal	Remove in accordance with NOHSC:2006 (1990)	30/01/2023 JBS&G RS	

Appendix B Photographs



Photo 1: Overview Mental Health Unit Interface



Photo 2: Oncology Ward, external eaves – Non-asbestos containing fibre cement sheeting



Photo 3: Oncology Ward, external window covers – Non-asbestos containing compressed fibre cement sheeting



Photo 4: Oncology ward, western entrance way external and internal ceiling lining – Non-asbestos containing fibre cement sheeting



Photo 5: West of mental health services office, external awning infill panel between awning roof and eaves – Non-asbestos containing fibre cement sheeting



Photo 6: West of mental health service office, box cover to rafters of awning – Non-asbestos containing fibre cement sheeting

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Source:			
A	Original Issue -	RS	14/02/2023
Rev	Description	Drn.	Date



Appendix B: Photographs

Client: Heath Infrastructure

Project: MHU & ED Upgrade, Broken Hill Hospital HBMS

Job No: 63879

File Name: Rev A App B - Photo Log



Photo 7: Southern external gill wall of corridor to sub-acute rehabilitation unit and roof, infill panel – Non-asbestos containing fibre cement sheeting



Photo 8: Sub-acute rehabilitation unit, external wall cladding – Non-asbestos containing compressed fibre cement



Photo 9: Level 1 ceiling cavity – Asbestos containing fibre cement debris



Photo 10: Sub-acute rehabilitation unit northern entrance way, floor – Non-asbestos containing compressed fibre cement



Photo 11: BBQ area, floor – Non-asbestos containing compressed fibre cement



Photo 12: Sub-acute rehabilitation unit northern entrance way, soffit lining – Non-asbestos containing compressed fibre cement

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Source:			
A	Original Issue -	RS	14/02/2023
Rev	Description	Drn.	Date



Appendix B: Photographs

Client: Heath Infrastructure

Project: MHU & ED Upgrade, Broken Hill Hospital HBMS

Job No: 63879

File Name: Rev A App B - Photo Log



Photo 13: Oncology unit and mental health service office, floor – Non-asbestos containing grey speckled vinyl floor sheeting



Photo 14: Oncology unit ward, floor – Non-asbestos containing white speckled vinyl sheeting



Photo 15: Oncology unit and mental health service office corridor, floor – blue speckled vinyl sheeting

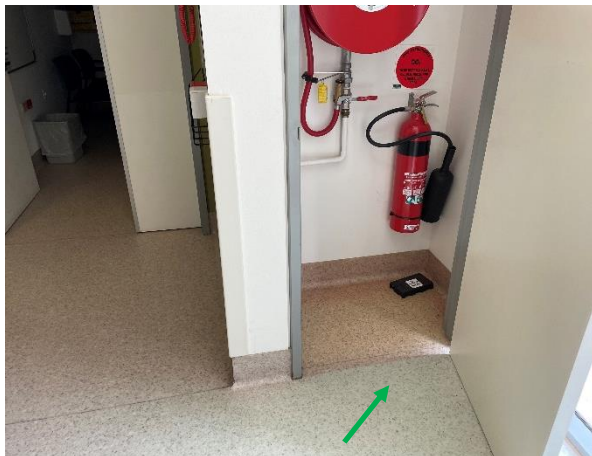


Photo 16: Oncology unit, mental health service office and sub-acute rehabilitation unit, floor throughout – Non-asbestos containing beige speckled vinyl sheeting

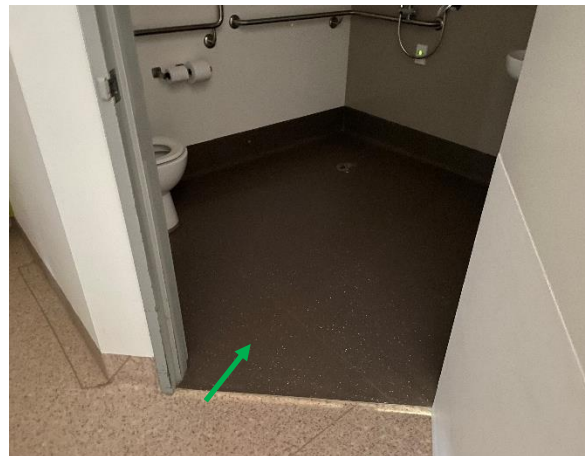


Photo 17: Sub-acute rehabilitation unit, patient bathroom floor – Non-asbestos containing maroon speckled vinyl sheeting



Photo 18: Corridor between mental health services office and sub-acute rehabilitation ward, atop sliding door motor housing – elevated levels of lead within settled dust, it is noted this dust does not contain asbestos

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Source:			
A	Original Issue -	RS	14/02/2023
Rev	Description	Drn.	Date



Appendix B: Photographs

Client: Heath Infrastructure

Project: MHU & ED Upgrade, Broken Hill Hospital HBMS

Job No: 63879

File Name: Rev A App B - Photo Log



Photo 19: Oncology ward and mental health services offices, external downpipes, steel framework and I beams – Non-lead based blue paint



Photo 20: Sub-acute rehabilitation unit, external steel frame, down pipes and bollards – Non-lead based grey paint

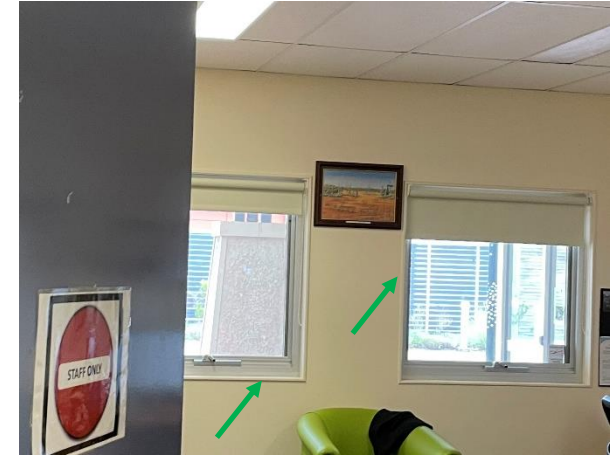


Photo 21: Throughout mental health unit interface, walls and window frames – Non-lead based white paint



Photo 22: Throughout mental health unit interface, doors and door frames – Non-lead based blue paint



Photo 23: Oncology ward kitchenette, zip instant hot water – Assumed SMF insulation core



Photo 24: Throughout Mental Heal Unit interface, ceiling cavity underside of roof – Assumed SMF sarking

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Source:			
A	Original Issue -	RS	14/02/2023
Rev	Description	Drn.	Date



Appendix B: Photographs

Client: Heath Infrastructure

Project: MHU & ED Upgrade, Broken Hill Hospital HBMS

Job No: 63879

File Name: Rev A App B - Photo Log



Photo 25: Throughout Mental Heal Unit interface, ceiling – Assumed SMF suspended ceiling tiles



Photo 26: Throughout Mental Heal Unit interface, ceiling cavity ducting and pipework – Assumed SMF insulation



Photo 27: Overview of Emergency Department Upgrade



Photo 28: Emergency department, external eaves – Non-asbestos containing fibre cement sheeting



Photo 29: Emergency department, external window covers – Non-asbestos containing compressed fibre cement sheeting

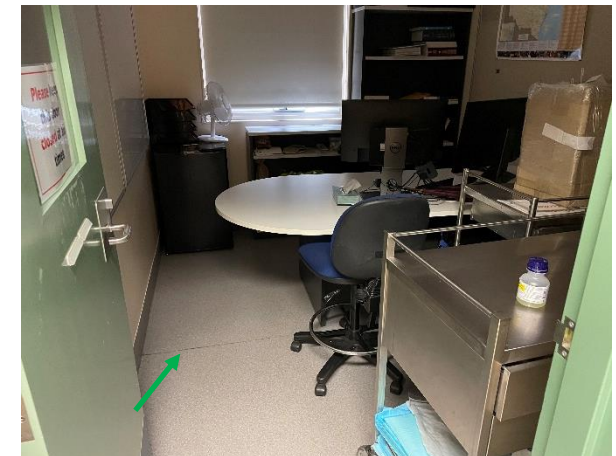


Photo 30: Emergency department, internal floors – Assumed non-asbestos containing grey speckled vinyl sheeting

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Source:			
A	Original Issue -	RS	14/02/2023
Rev	Description	Drn.	Date



Appendix B: Photographs

Client: Heath Infrastructure

Project: MHU & ED Upgrade, Broken Hill Hospital HBMS

Job No: 63879

File Name: Rev A App B - Photo Log



Photo 31: Emergency department, internal floors – Assumed non-asbestos containing beige and blue speckled vinyl sheeting



Photo 32: Emergency department ceiling cavity – elevated levels of lead within settled dust, it is noted this dust does not contain asbestos



Photo 33: Emergency department, external downpipes, gutters and I beams
External ground surface – Assumed non-lead based blue paint



Photo 34: Emergency department, door and door frame – Assumed non-lead based blue paint



Photo 35: Emergency department, ceiling cavity – Assumed SMF sarking and ducting



Photo 36: Emergency department, ceiling – Assumed SMF suspended ceiling tiles

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Source:			
A	Original Issue -	RS	14/02/2023
Rev	Description	Drn.	Date



Appendix B: Photographs

Client: Heath Infrastructure

Project: MHU & ED Upgrade, Broken Hill Hospital HBMS

Job No: 63879

File Name: Rev A App B - Photo Log

Appendix C Laboratory Analysis Reports and Chain of Custody Documentation

Chain of Custody



PROJECT NO.: 63879						LABORATORY BATCH NO.: 961786																																										
PROJECT NAME: Broken Hill						SAMPLERS: Robert Sharp																																										
DATE NEEDED BY: STD TAT						QC LEVEL: NEPM (2013)																																										
PHONE: Sydney 02 8245 0300 Perth 08 9488 0100 Brisbane 07 3112 2688 Melbourne 03 9642 0599 Adelaide 08 8431 7113																																																
SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) rsharp@jbsg.com.au; (3) Mhodgins@jbsg.com.au																																																
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:						<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td rowspan="2">Lead Paint</td> <td rowspan="2">Lead Dust</td> <td rowspan="2">Asbestos ID</td> <td colspan="11"></td> <td colspan="2">TYPE OF ASBESTOS ANALYSIS</td> </tr> <tr> <td colspan="11"></td> <td>IDENTIFICATION</td> <td>NEPM/WA</td> </tr> </table>														Lead Paint	Lead Dust	Asbestos ID												TYPE OF ASBESTOS ANALYSIS													IDENTIFICATION	NEPM/WA
																							Lead Paint	Lead Dust	Asbestos ID												TYPE OF ASBESTOS ANALYSIS											
											IDENTIFICATION	NEPM/WA																																				
SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH																																											
A01	Mat	30/01		Bag																																												
A02	Mat	30/01		Bag																																												
A03	Mat	30/01		Bag																																												
A04	Mat	30/01		Bag																																												
A05	Mat	30/01		Bag																																												
A06	Mat	30/01		Bag																																												
A07	Mat	30/01		Bag																																												
A08	Mat	30/01		Bag																																												
A09	Mat	30/01		Bag																																												
A10	Mat	30/01		Bag																																												
A11	Mat	30/01		Bag																																												
A12	Mat	30/01		Bag																																												
L01	Paint	30/01		Bag		X																																										
L02	Paint	30/01		Bag		X																																										
L03	Paint	30/01		Bag		X																																										
L04	Paint	30/01		Bag		X																																										
L05	Paint	30/01		Bag		X																																										
AD01	Dust	30/01		Bag																																												
LD01	Dust	30/01		Bag																																												
AD02	Dust	30/01		Bag																																												
LD02	Dust	30/01		Bag		X																																										

RELINQUISHED BY:		METHOD OF SHIPMENT:		RECEIVED BY:		FOR RECEIVING LAB USE ONLY:	
NAME: Robert Sharp	DATE: 7/2/2023	CONSIGNMENT NOTE NO.		NAME: [Signature]	DATE: 5/50	COOLER SEAL - Yes [X] No [] Intact [] Broken []	
OF: JBS&G		TRANSPORT CO.		OF: [Signature]		COOLER TEMP: [] deg C	

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

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

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

Eurofins ARL Pty Ltd

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Perth
46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Christchurch
35 O'Rourke Road Penrose, Auckland 1061 Tel: +64 9 526 45 51 IANZ# 1327	43 Detroit Drive Rolleston, Christchurch 7675 Tel: 0800 856 450 IANZ# 1290

Sample Receipt Advice

Company name:	JBS & G Australia (NSW) P/L
Contact name:	Rob Sharp
Project name:	BROKEN HILL
Project ID:	63879
Turnaround time:	5 Day
Date/Time received	Feb 7, 2023 5:50 PM
Eurofins reference	961786

Sample Information

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

Notes

Samples received by the laboratory after 5.30pm are deemed to have been received the following working day.

Contact

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

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Rob Sharp - RSharp@jbsg.com.au.

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
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: Rob Sharp
Report 961786-AID
Project Name **BROKEN HILL**
Project ID **63879**
Received Date Feb 07, 2023
Date Reported Feb 13, 2023

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 AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w).

The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk).

NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "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". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.

Project Name BROKEN HILL
Project ID 63879
Date Sampled Jan 30, 2023
Report 961786-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
A01	23-Fe0017118	Jan 30, 2023	Approximate Sample <1g / 15x10x2mm Sample consisted of: Brown fibre plaster cement material and green coating	No asbestos detected. Organic fibre detected. No trace asbestos detected.
A02	23-Fe0017119	Jan 30, 2023	Approximate Sample <1g / 12x7x2mm Sample consisted of: Grey fibre plaster cement material and amber coating	No asbestos detected. Organic fibre detected. No trace asbestos detected.
A03	23-Fe0017120	Jan 30, 2023	Approximate Sample <1g / 10x7x2mm Sample consisted of: Brown fibre plaster cement and green coating	No asbestos detected. Organic fibre detected. No trace asbestos detected.
A04	23-Fe0017121	Jan 30, 2023	Approximate Sample 1g / 20x10x5mm Sample consisted of: Grey layered fibre cement material and green coating	No asbestos detected. Organic fibre detected. No trace asbestos detected.
A05	23-Fe0017122	Jan 30, 2023	Approximate Sample 1g / 20x7x2mm Sample consisted of: Grey layered fibre cement material and green coating	No asbestos detected. Organic fibre detected. No trace asbestos detected.
A06	23-Fe0017123	Jan 30, 2023	Approximate Sample <1g / 12x10x3mm Sample consisted of: Grey fibre plaster cement material and brown coating	No asbestos detected. Organic fibre detected. No trace asbestos detected.
A07	23-Fe0017124	Jan 30, 2023	Approximate Sample <1g / 10x5x2mm Sample consisted of: Grey fibre plaster cement material	No asbestos detected. Organic fibre detected. No trace asbestos detected.
A08	23-Fe0017125	Jan 30, 2023	Approximate Sample 1g / 20x4x2mm Sample consisted of: White flexible linoleum and amber glue	No asbestos detected. Synthetic mineral fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
A09	23-Fe0017126	Jan 30, 2023	Approximate Sample 1g / 20x5x2mm Sample consisted of: Off-white flexible vinyl sheet and amber glue	No asbestos detected. No trace asbestos detected.
A10	23-Fe0017127	Jan 30, 2023	Approximate Sample 1g / 15x10x2mm Sample consisted of: Grey flexible vinyl sheet and amber glue	No asbestos detected. No trace asbestos detected.
A11	23-Fe0017128	Jan 30, 2023	Approximate Sample 3g / 15x10x2mm Sample consisted of: Dark brown flexible linoleum and amber glue	No asbestos detected. Synthetic mineral fibre detected. No trace asbestos detected.
A12	23-Fe0017129	Jan 30, 2023	Approximate Sample 1g / 15x8x2mm Sample consisted of: Brown flexible linoleum and amber glue	No asbestos detected. Synthetic mineral fibre detected. No trace asbestos detected.
AD01	23-Fe0017135	Jan 30, 2023	Approximate Sample 1g Sample consisted of: Dust particles, plaster fragments and in powder form, paint flakes, soft fibrous material and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Synthetic mineral fibre detected. Organic fibre detected. No trace asbestos detected.
AD02	23-Fe0017137	Jan 30, 2023	Approximate Sample 4g Sample consisted of: Dust particles, fragments of plaster cement, paint flakes, fibre plaster cement, soft fibrous material and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Synthetic mineral fibre detected. Organic fibre detected. No trace asbestos detected.

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Feb 08, 2023	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Feb 08, 2023	Indefinite

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

Project Name: BROKEN HILL
Project ID: 63879

Order No.:
Report #: 961786
Phone: 02 8245 0300
Fax:

Received: Feb 7, 2023 5:50 PM
Due: Feb 10, 2023
Priority: 3 Day
Contact Name: Rob Sharp

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	Asbestos Absence / Presence	CANCELLED	Lead	Lead (% w/w)
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	A01	Jan 30, 2023		Building Materials	S23-Fe0017118		X			
2	A02	Jan 30, 2023		Building Materials	S23-Fe0017119		X			
3	A03	Jan 30, 2023		Building Materials	S23-Fe0017120		X			
4	A04	Jan 30, 2023		Building Materials	S23-Fe0017121		X			
5	A05	Jan 30, 2023		Building Materials	S23-Fe0017122		X			
6	A06	Jan 30, 2023		Building Materials	S23-Fe0017123		X			
7	A07	Jan 30, 2023		Building Materials	S23-Fe0017124		X			
8	A08	Jan 30, 2023		Building Materials	S23-Fe0017125		X			

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

Project Name: BROKEN HILL
Project ID: 63879

Order No.:
Report #: 961786
Phone: 02 8245 0300
Fax:

Received: Feb 7, 2023 5:50 PM
Due: Feb 10, 2023
Priority: 3 Day
Contact Name: Rob Sharp

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	Asbestos Absence / Presence	CANCELLED	Lead	Lead (% w/w)
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X
9	A09	Jan 30, 2023		Building Materials	S23-Fe0017126		X			
10	A10	Jan 30, 2023		Building Materials	S23-Fe0017127		X			
11	A11	Jan 30, 2023		Building Materials	S23-Fe0017128		X			
12	A12	Jan 30, 2023		Building Materials	S23-Fe0017129		X			
13	L01	Jan 30, 2023		Paint	S23-Fe0017130					X
14	L02	Jan 30, 2023		Paint	S23-Fe0017131					X
15	L03	Jan 30, 2023		Paint	S23-Fe0017132					X
16	L04	Jan 30, 2023		Paint	S23-Fe0017133					X
17	L05	Jan 30, 2023		Paint	S23-Fe0017134			X		
18	AD01	Jan 30, 2023		Dust	S23-Fe0017135	X				
19	LD01	Jan 30, 2023		Dust	S23-Fe0017136				X	
20	AD02	Jan 30, 2023		Dust	S23-Fe0017137	X				
21	LD02	Jan 30, 2023		Dust	S23-Fe0017138				X	

Company Name:	JBS & G Australia (NSW) P/L	Order No.:		Received:	Feb 7, 2023 5:50 PM
Address:	Level 1, 50 Margaret St Sydney NSW 2000	Report #:	961786	Due:	Feb 10, 2023
		Phone:	02 8245 0300	Priority:	3 Day
		Fax:		Contact Name:	Rob Sharp
Project Name:	BROKEN HILL				
Project ID:	63879				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail	Asbestos - AS4964	Asbestos Absence / Presence	CANCELLED	Lead	Lead (% w/w)
Sydney Laboratory - NATA # 1261 Site # 18217	X	X	X	X	X
Test Counts	2	12	1	2	4

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. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. Information identified on this report with the colour **orange** indicates sections of the report not covered by the laboratory's scope of NATA accreditation.
6. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).

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:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (% w/w)
F/ffd	Airborne fibre filter loading as Fibres (N) per Fields counted (n)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (C)
g, kg	Mass, e.g. of whole sample (M) or asbestos-containing find within the sample (m)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (V = r x t)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (r)
min	Time (t), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration:
$$C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right) \times \left(\frac{1}{r}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$$

Asbestos Content (as asbestos):
$$\% w/w = \frac{(m \times P_A)}{M}$$

Weighted Average (of asbestos):
$$\%_{WA} = \frac{\sum (m \times P_A) \times x}{x}$$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix. May be derived from knowledge or experience of the material, informed by HSG264 <i>Appendix 2</i> , else assumed to be 15% in accordance with WA DOH <i>Appendix 2 (PA)</i> .
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to "non-bonded / friable".
AFM	Airborne Fibre Monitoring, e.g. by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total % w/w asbestos content in asbestos-containing finds in a soil sample (% w/w).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory's remit to assess degree of friability.
HSG248	UK HSE HSG248, <i>Asbestos: The Analysts Guide</i> , 2nd Edition (2021).
HSG264	UK HSE HSG264, <i>Asbestos: The Survey Guide</i> (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (K) as derived from the effective filter area of the given AFM membrane used for collecting the sample (A) and the projected eyepiece graticule area of the specific microscope used for the analysis (a).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, <i>Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres</i> , 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, <i>Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia</i> (updated 2021), including Appendix Four: <i>Laboratory analysis</i>
Weighted Average	Combined average % w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (%_{WA}).

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

Asbestos Counter/Identifier:

Chamath JHM Annakkage Senior Analyst-Asbestos

Authorised by:

Sayeed Abu Senior Analyst-Asbestos



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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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
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: **Rob Sharp**

Report **961786-S**
 Project name **BROKEN HILL**
 Project ID **63879**
 Received Date **Feb 07, 2023**

Client Sample ID			L01	L02	L03	L04
Sample Matrix			Paint	Paint	Paint	Paint
Eurofins Sample No.			S23-Fe0017130	S23-Fe0017131	S23-Fe0017132	S23-Fe0017133
Date Sampled			Jan 30, 2023	Jan 30, 2023	Jan 30, 2023	Jan 30, 2023
Test/Reference	LOR	Unit				
Lead (% w/w)	0.01	%	< 0.01	< 0.01	< 0.01	< 0.01

Client Sample ID			LD01	LD02
Sample Matrix			Dust	Dust
Eurofins Sample No.			S23-Fe0017136	S23-Fe0017138
Date Sampled			Jan 30, 2023	Jan 30, 2023
Test/Reference	LOR	Unit		
Heavy Metals				
Lead	5	mg/kg	430	360

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Lead (% w/w) - Method: LTM-MET-3040 Metals in Waters Soils & Sediments by ICP-MS	Sydney	Feb 09, 2023	6 Months
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Feb 09, 2023	28 Days

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000
Project Name: BROKEN HILL
Project ID: 63879

Order No.:
Report #: 961786
Phone: 02 8245 0300
Fax:

Received: Feb 7, 2023 5:50 PM
Due: Feb 14, 2023
Priority: 5 Day
Contact Name: Rob Sharp

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	Asbestos Absence / Presence	Lead	Lead (% w/w)
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X
External Laboratory									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID				
1	A01	Jan 30, 2023		Building Materials	S23-Fe0017118		X		
2	A02	Jan 30, 2023		Building Materials	S23-Fe0017119		X		
3	A03	Jan 30, 2023		Building Materials	S23-Fe0017120		X		
4	A04	Jan 30, 2023		Building Materials	S23-Fe0017121		X		
5	A05	Jan 30, 2023		Building Materials	S23-Fe0017122		X		
6	A06	Jan 30, 2023		Building Materials	S23-Fe0017123		X		
7	A07	Jan 30, 2023		Building Materials	S23-Fe0017124		X		
8	A08	Jan 30, 2023		Building Materials	S23-Fe0017125		X		

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

Project Name: BROKEN HILL
Project ID: 63879

Order No.:
Report #: 961786
Phone: 02 8245 0300
Fax:

Received: Feb 7, 2023 5:50 PM
Due: Feb 14, 2023
Priority: 5 Day
Contact Name: Rob Sharp

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	Asbestos Absence / Presence	Lead	Lead (% w/w)
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X
9	A09	Jan 30, 2023		Building Materials	S23-Fe0017126		X		
10	A10	Jan 30, 2023		Building Materials	S23-Fe0017127		X		
11	A11	Jan 30, 2023		Building Materials	S23-Fe0017128		X		
12	A12	Jan 30, 2023		Building Materials	S23-Fe0017129		X		
13	L01	Jan 30, 2023		Paint	S23-Fe0017130				X
14	L02	Jan 30, 2023		Paint	S23-Fe0017131				X
15	L03	Jan 30, 2023		Paint	S23-Fe0017132				X
16	L04	Jan 30, 2023		Paint	S23-Fe0017133				X
17	L05	Jan 30, 2023		Paint	S23-Fe0017134				X
18	AD01	Jan 30, 2023		Dust	S23-Fe0017135	X			
19	LD01	Jan 30, 2023		Dust	S23-Fe0017136			X	
20	AD02	Jan 30, 2023		Dust	S23-Fe0017137	X			
21	LD02	Jan 30, 2023		Dust	S23-Fe0017138			X	

Company Name: JBS & G Australia (NSW) P/L
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Sydney
NSW 2000

Project Name: BROKEN HILL
Project ID: 63879

Order No.:
Report #: 961786
Phone: 02 8245 0300
Fax:

Received: Feb 7, 2023 5:50 PM
Due: Feb 14, 2023
Priority: 5 Day
Contact Name: Rob Sharp

Eurofins Analytical Services Manager : Andrew Black

Sample Detail				Asbestos - AS4964	Asbestos Absence / Presence	Lead	Lead (% w/w)
Sydney Laboratory - NATA # 1261 Site # 18217				X	X	X	X
Test Counts				2	12	2	5

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

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

Terms

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

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

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

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

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

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

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

QC Data General Comments

- 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.
- 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.
- 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.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank										
Lead (% w/w)				%	< 0.01			0.01	Pass	
Method Blank										
Heavy Metals										
Lead				mg/kg	< 5			5	Pass	
LCS - % Recovery										
Heavy Metals										
Lead				%	92			80-120	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Heavy Metals										
Lead					Result 1					
Lead				%	86			75-125	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
Heavy Metals										
Lead					Result 1	Result 2	RPD			
Lead				mg/kg	200	220	8.3	30%	Pass	

Comments

Sample Integrity

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

Authorised by:

Bonnie Pu	Analytical Services Manager
Mickael Ros	Senior Analyst-Metal
Sayed Abu	Senior Analyst-Asbestos



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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		Name	Name	Signature	Date
A	Robert Sharp	Michael Samuel	Michael Samuel		22/02/2023

