HUNTER ENVIRONMENTAL CONSULTING

HAZMAT Assessment

36-38 Maitland Street, Muswellbrook

Report Ref: E0032-HAZ-001-Rev0

Written by: Jake Duck

Reviewed by: Gilles Renda

Email: office@hunterenviro.com.au

Client: Rohit Mahajan

23 February 2023

Prepared for

Rohit Mahajan
Ph: 0430 024 720
Email: rohit_mahajan2002@yahoo.com

Prepared by

Hunter Environmental Consulting
ABN 16 661 108 014
3/62 Sandringham Avenue
PO Box 3127
Thornton NSW 2322
Ph: (02) 4067 4151
Email: office@hunterenviro.com.au
Web: hunterenviro.com.au

Project Details

Site Address:	36-38 Maitland Street, Muswellbrook	
Project Type:	HAZMAT Assessment	
Project no	**Report type**	**Report no**
E0032	HAZ	001

Report Register

Revision Number	Reported By	Reviewed By	Date
Rev0	JD	GR	22/02/2023

We confirm that the following report has been produced for Rohit Mahajan, based on the described methods and conditions within.

For and on behalf of Hunter Environmental Consulting,

Gilles Renda
Environmental Scientist
Bachelor of Science, Geology
Licenced Asbestos Assessor (LAA001268)

Table of Contents

Annex List:

Annex A Risk Assessment Table and Register
Annex B Laboratory Reports

List of Abbreviations

ABN	Australian Business Number
AC	Asbestos Cement
ACM	Asbestos-containing Material
ARCP	Asbestos Removal Control Plan
AS	Australian Standard
ASET	Australian Safer Environment and Technology
HAZMAT	Hazardous Material
HEC	Hunter Environmental Consulting
LAA	Licenced Asbestos Assessor
LCP	Lead-containing Paint
NATA	National Association and Testing Authority
NOHSC	National Occupational Health and Safety Committee
NSW	New South Wales
NZS	New Zealand Standard
PCB	Polychlorinated Biphenyls
PPE	Personal Protective Equipment
SMF	Synthetic Mineral Fibre
WHS	Work, Health and Safety

1 Introduction

1.1 Background & Objective

Hunter Environmental Consulting (HEC) was engaged by Rohit Mahajan to complete a Hazardous Materials (HAZMAT) Survey and management plan for the properties located at 36-38 Maitland Street, Muswellbrook (here-in referred to as the Site).

Site structures comprise of two (2) single storey residential dwellings (one per lot). These structures combined cover an area of approximately 590m^2.

Both Sites contained steel construction external garages which were locked and inaccessible for the purposes of this investigation.

The objective of the survey was to facilitate demolition of the existing structures by providing an assessment of potentially hazardous building materials as well as management requirements associated with the handling and disposal of such materials if identified.

1.2 Regulatory Guidance

In accordance with the *Australian Standard for Demolition AS 2601: The Demolition of Structures (AS 2601)*, any buildings or structures built prior to 31st December 2003 planned for demolition or major refurbishment, must be surveyed for the presence of hazardous materials including (Australian Government, 2001):

1. Asbestos
2. Lead
3. Polychlorinated biphenyls (PCBs)
4. Synthetic Mineral Fibres (SMFs)

Furthermore, *SafeWork NSW (2019)* stipulate within the *Demolition Work Code of Practice* that risk associated with exposure to such materials must be managed in accordance with Work Health and Safety (WHS) Regulations.

1.2.1 Asbestos

Projects that may result in the disturbance of asbestos-containing material (ACM) are defined by WHS Regulations as high-risk construction works and as such must satisfy the following acts and codes of practice:

1. *WHS Act 2011* (Australian Government Federal Register of Legislation, 2021);
2. SafeWork NSW, *How to manage and control asbestos in the workplace* Code of Practice (SafeWork NSW, 2022a);
3. SafeWork NSW, *How to Safely Remove Asbestos* Code of Practice (SafeWork NSW, 2022b); and
4. SafeWork NSW, *Demolition Work* Code of Practice (SafeWork NSW, 2019).

Asbestos can be characterised as friable or non-friable (bonded). Friable asbestos is any material that, when dry, can be crumbled or powdered by hand pressure or material that is crumbled or powdered and which contains asbestos.

Bonded asbestos is asbestos that has been bonded with a compound such as cement to create a solid product that is non-friable. Bonded asbestos products typically contain less than 15% asbestos and cannot be crumbled or powdered by hand pressure.

1.2.2 Lead

Lead can be found in paint, old water pipes and other plumbing fittings. Public and residential buildings constructed prior to the 1940s were often painted using materials containing lead concentrations between 10 and 20 percent. Since the 1970s, lead concentrations in paints manufactured for residential purposes would not have exceeded one percent, however, it is possible that industrial paints containing higher lead levels may have been applied to residential dwellings. **Table 1.1** below has been sourced from the *Code of Practice Demolition Work* (SafeWork NSW, 2019) and provides a guide to the potential lead sources within a building with respect to its date of construction.

Table 1.1 - Lead sources

Date of Construction	Lead Source
1920 – 1978	Paint
1920 – 1978	Plumbing
1923 – 1986	Automobile exhaust (may accumulate as ceiling dust)

Codes of Practice and Australian Standards that apply to lead risks associated with demolitions works include:

1. *WHS Act 2011* (Australian Government Federal Register of Legislation, 2021)*;*
2. SafeWork NSW, *Demolition Work* Code of Practice (SafeWork NSW, 2019); and
3. *AS/NZS 4361.2-2017 - Guide to hazardous paint management, Part 2: Lead paint in residential, public and commercial buildings* Standards Australia (2017).

1.2.3 Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) have commonly been used in oils found in electrical capacitors and transformers but can also be found in fluorescent light capacitors and ballasts, and older style air-conditioner units.

1.2.4 Synthetic Mineral Fibres

Synthetic Mineral Fibres (SMF) have commonly been used in insultation materials in insulation batts, roof sarking and hot water heaters. The standards and guidelines used in NSW for the management of SMF are specified in the following documents:

- *National Standard for Synthetic Mineral Fibres [NOHSC:1004(1990)]* (National Occupational Health and Safety Commission (NOHSC), 1990)*; and*
- *National Code of Practice for the Safe Use of Synthetic Mineral Fibres [NOHSC: 2006 (1990)]* (National Occupational Health and Safety Commission (NOHSC), 1990).

1.3 Scope of Works

To achieve the objective, the properties were surveyed for the presence of several types of hazardous materials. Works included:

- Sampling and analysis of suspected ACM and lead-containing paint (LCP);
- Visual inspection for potential PCB containing light ballasts and capacitors;
- Visual inspection for suspected SMF; and
- Recording of locations and conditions of identified hazardous materials.

1.4 Survey Limitations

The following limitations have been noted as part of this assessment:

- PCBs – for safety reasons, energised fluorescent light fixtures were not disassembled to examine ballasts and capacitors.

2 Building Descriptions

The Site consists of two (2) single storey residential dwellings. Details of construction materials used within the structures contained on-site are listed below:

- 36 Maitland Street considered of timber framed construction with corrugated steel roofing. The exterior of the dwelling consisted of a combination of rendered brick, weatherboard, corrugated steel sheeting and asbestos cement (AC) fibre cement sheeting with timber framed windows/doors. The front porch was internally clad with AC fibre cement sheeting. Fibre cement eaves were present to the front and rear veranda/porch. The interior comprises of a combination of plasterboard, plywood/Masonite and rendered brick to the walls with plasterboard ceiling and cornice throughout. The rear laundry consisted of AC fibre cement sheeting. Flooring consisted of tiles to the rear extension, floorboards, and carpet to the remainder of the house.
- 38 Maitland Street is of timber-framed construction with corrugated steel roofing. The exterior of the dwelling consisted of a combination of weatherboard/plasterboard to the front bedrooms and kitchen with plywood/Masonite to the rear bedrooms, cladding to all aspects, and timber framed windows to the exterior. The interior comprised of weatherboard, plasterboard cladding, with plywood/Masonite rear bedrooms and plasterboard ceiling and cornices throughout. Bathrooms and laundry were clad in fibreboard/plasterboard with the rear external bathroom room clad in fibre cement sheeting to all aspects. Internal flooring consisted of a combination of carpet, with hardwood floorboards to the kitchen and living spaces.

The Site structures are shown in the Figures below.

Figure 1 - View of 36 Maitland Road, Muswellbrook, as inspected on the 24/1/2023.

Figure 2 - View of 38 Maitland Street, Muswellbrook, as inspected on the 24/1/2023.

3 Fieldwork

The HAZMAT survey was undertaken on the 24th of January 2023. Procedures and methodologies associated with the survey are presented in the following sub-sections.

3.1 Asbestos Containing Material

HEC conducted a survey for suspected ACM at the Site which included collecting bulk samples of miscellaneous materials. Sample locations of identified suspected ACM were selected in safely accessible locations. The following sampling procedures were followed:

1. Personal protective equipment (PPE), including gloves, were donned prior to sample collection.
2. Sample containers were labelled with identification numbers, and sample locations and material types were documented on a sampling data form.
3. The area to be sampled was thoroughly sprayed with a bonding agent (i.e. polyvinyl acetate solution) to minimize dust generation during sampling.
4. Samples were extracted using a decontaminated chisel and hammer to break approximately one tablespoon of the material.
5. Each sample was placed in a resealable plastic bag, which was then sealed.
6. The exposed area of suspected ACM was sprayed with a bonding agent to prevent the release of fibres following sampling.
7. Sampling tools were decontaminated with wet wipes.
8. Sample bags were then placed in a larger, labelled, resealable bag for transport to Eurofins Laboratories (NATA accredited) using chain of custody protocols.

3.2 Lead Containing Paint

HEC conducted a survey for paint coatings at the Site which included the use of a chemical reagent on selected surfaces. Sample locations of identified painted surfaces were selected in accessible and discrete locations. The following sampling procedures were followed:

1. PPE including gloves, were donned prior to sample collection.
2. The surface to be sampled was scraped to uncover the bare material and ensure that all different layers of paint were visible (when present).
3. Swabs containing chemical reagents were rubbed on the exposed cross-section (where all layers were accessible) for a minimum of 30 seconds.
4. The sampling area was then assessed for a change in colour with red/pink colouration of the chemical reagent indicating the presence of lead in the surface tested.

3.3 Polychlorinated Biphenyls

HEC conducted a visual survey of fluorescent light fixtures that could potentially contain PCBs. Accessible rooms were inspected, and the fluorescent light fixtures and tubes were recorded on a field sheet. Energised fluorescent light fixtures were not disassembled to examine ballasts and capacitors during this assessment.

3.4 Synthetic Mineral Fibres

HEC conducted a visual survey of material that could potentially contain SMF. Accessible rooms were inspected, and assumed SMF were recorded.

4 Results

The results of this HAZMAT survey are presented in the attached Register as **Annex A** with copies of analytical reports provided in **Annex B**.

4.1 Asbestos

A total of eight samples were submitted for asbestos identification analysis to ASET, a NATA accredited laboratory following the survey. A summary of sample locations is shown in **Table 4.1** below.

Table 4.1 - Asbestos analytical results

Sample ID	Description of Sample	Asbestos Results
36 Maitland Street, Muswellbrook		
S1	36 Maitland Street – Rear External cladding	No Asbestos Detected
S2	Southwest extension internal wall	**Amosite & Chrysotile Asbestos Detected**
S3	Internal laundry walls	**Chrysotile Asbestos Detected**
S4	Internal wall	**Assumed Positive** – Appears similar to S7
S5	Front veranda eaves	**Amosite, Chrysotile & Crocidolite Asbestos Detected**
S6	Rear external eaves	No Asbestos Detected
S7	Internal kitchen /living space walls	**Chrysotile Asbestos Detected**
38 Maitland Street, Muswellbrook		
S8	Front Veranda internal cladding	**Chrysotile & Crocidolite Asbestos Detected**
S9	External eaves	No Asbestos Detected
S10	External toilet lower wall cladding	No Asbestos Detected
S11	Internal laundry wall	No Asbestos Detected

4.2 Lead

The presence of LCP was assessed in-situ with the use of chemical reagents. The assessment was targeted at predominant paint categories identified across site structures. A summary of sample locations is shown in **Table 4.2** below.

Table 4.2 - Lead paint screening results

Location	Colour	Result
36 Maitland Street – External Window Frame	External window frame (white)	**Detected**
36 Maitland Street – External House Paint	Light Pink	Not detected[1]
38 Maitland Street, Muswellbrook External House Paint	Cream/yellow	Not detected[1]
38 Maitland Street, Muswellbrook External Architrave Paint / veranda posts	White	Not detected[1]

In addition, the presence of lead within plumbing across the Site is considered likely due to the inferred year of construction.

4.3 Polychlorinated Biphenyls

Light fixtures were observed throughout the structures at the site. Each fixture should be disassembled to ensure that ballasts and capacitors do not contain PCBs. If PCBs are found to be present, the ballasts and capacitors should be removed and disposed of in accordance with **Section 5.3** of this report.

4.4 Synthetic Mineral Fibres

SMF was presumed present within the roof cavity at the 36 Maitland Street Site, in the form of insulation batts. No manhole was identified within the main dwelling at 38 Maitland Street. A manhole was accessed within the rear laundry. SMF was presumed present within the roof cavity of the rear laundry in the form of insulation batts.

SMF is presumed to be contained within hot water heater identified at the 38 Maitland Street Site. SMF should be removed if degraded or damaged or in the instance they may be disturbed by demolition works.

[1] Paint not detected to contain lead to 0.5%

5 Management Plans

This section outlines management and precautionary measures to be implemented during demolition works to adequately mitigate workers' risk of exposure to potential ACM, Lead, PCBs and SMFs as well as disposal requirements.

5.1 Asbestos Containing Material

Works involving the removal of more than 10m^2 of ACM would require to be undertaken by a qualified asbestos removalist holding a Class A or B license. In accordance with current WHS regulations, specific duties associated with this type of work are to:

1. Ensure an asbestos removalist supervisor is readily available or present when the work is being carried out.
2. Provide appropriate training and ensure the asbestos removal worker has undertaken the relevant units of competencies associated with the asbestos removal.
3. Inform relevant parties about the asbestos removal and provide them with appropriate information.
4. Obtain the asbestos register.
5. Prepare an asbestos removal control plan (ARCP).
6. Notify Safe Work Australia five working days prior to starting the work.
7. Limit access to the asbestos work area.
8. Ensure appropriate decontamination facilities are in place.
9. Ensure clearance inspections are conducted and issue clearance certificates.

Air monitoring for the above works should be considered given the proximity of the Site to residential receptors.

The above requirements apply to several duty holders including the licensed asbestos removalist and the person who commissioned the asbestos removal works. These duties are explained further in *Section 3* of the *Code of Practice*: *How to Safely Remove Asbestos* (SafeWork NSW, 2022b)

5.2 Lead

Appropriate management will be required to mitigate potential human and environmental risks associated with lead during demolition works.

The following precautions should be taken when demolishing structures that contain lead:

1. Dust generation should be kept to a minimum.
2. Appropriate PPE must be worn by all workers completing demolition works (including but not limited to respiratory protection).

5.3 Polychlorinated Biphenyls

As stated in **Section 4.3**, given the presence of fluorescent light fixtures, the potential for PCBs to exist in light ballasts and capacitors could not be excluded.

Workers undertaking demolition works can be exposed to PCBs when dismantling light fixtures. As such, appropriate control measures should be implemented when handling potentially damaged light ballasts and capacitors to ensure that any spillage does not come into contact with workers and is appropriately cleaned and disposed of.

Any equipment or parts containing PCBs should be placed in a polyethylene bag and then placed into a marked sealable metal container.

If PCBs cannot be transported immediately for disposal, all containers should be stored in a protected area that prevents any discharge of PCBs to the environment.

PPE including gloves made of materials that are resistant to PCBs (i.e. polyethylene, nitrile rubber or neoprene) should be provided to workers and worn when there is any likelihood of exposure to PCBs.

Confirm onsite at time of demolition.

5.4 Synthetic Mineral Fibres

Synthetic mineral fibres should be identified, and control measures put in place as per the manufacturer's instructions.

Prior to the removal of insulation materials, PPE should be provided to all workers involved in the removal process. Such PPE may include, but should not be limited to:

1. Suitable coveralls
2. Suitable respiratory protection
3. Eye protection
4. Gloves

6 Recommendations

Given the volume of ACM and lead-containing paint material, it is recommended that a site inspection be carried out by a suitably qualified consultant to provide a:

1. Visual clearance inspection from identified ACM locations following bonded asbestos removal works (prior to demolition); and
2. Visual inspection of the ground surface of the building footprints and general site area following demolition works.

7 Areas Not Accessed

Given the constraints of practicable access encountered during this Assessment, the following areas were not inspected. Assessments are restricted to those areas that are reasonably accessible at the time of our assessment with respect to the following:

- Without contravention of relevant statutory requirements or codes of practice.
- Without placing the consultant and/or others at undue risk.
- Excluding plant, structures and equipment that was 'in service' and operational.

The areas where there were access restrictions during the Assessment included the following:

- In crawl spaces and subfloor underneath the building at the site due to confined spaces.
- Underneath concrete slabs of all building structures at the site.
- Energised services, gas, electrical, pressurised vessel and chemical lines.
- Height restricted areas above 2.7m within building interiors.
- Areas inaccessible without the aid of scaffolding or lifting devices.
- Areas which require substantial demolition to access.
- Within cavities that cannot be accessed by the means of a manhole or inspection hatch.
- Within voids or internal areas of plant, equipment, air-conditioning ducts etc.
- Within service shafts, ducts etc., concealed within the building structure.
- Within those areas accessible only by dismantling equipment still in use.
- Within totally inaccessible areas such as voids and cavities present but intimately concealed within the building structure.
- Areas where access is restricted due to locked doors, safety risks, or being occupied at the time of the investigation.
- All areas outside the Scope of Work.

Further to the above, the following areas were inaccessible during the assessment:

- 36 Maitland Street, main building, interior, ground level, wall cavities and within wall partitioning, throughout – inaccessible due to electrical services still being connected to the building.
- 36 Maitland Street, main building, interior, ceiling cavity, throughout – Limited inspection from access hatch due to electrical services still being connected to the building.
- 38 Maitland Street, main building, interior, ground level, wall cavities and within wall partitioning, throughout – inaccessible due to electrical services still being connected to the building.
- 38 Maitland Street, main building, interior, ceiling cavity, throughout – inaccessible due to no access hatch. Limited inspection of ceiling cavity above the rear laundry from access hatch due to electrical services still being connected to the building.
- 36 Maitland Street, three site sheds, interior, ground level, throughout – inaccessible due to no key being provided at time of inspection.

- 38 Maitland Street, shed, interior, ground level, throughout – inaccessible due to no key being provided at time of inspection.

If proposed works entail possible disturbance of any suspect materials in the above locations, or any other location not mentioned within this report, further investigation may be required as part of a hazardous building materials management and abatement program prior to the commencement of such works.

8 Report Limitations

HEC considers that the objectives of the original scope as presented in quote EQ0064 of the investigation have been achieved.

The analytical data and recommendations within the above report are subjected to the specific sampling and testing that was undertaken at the time of the current investigation. It should be noted that underlying site soil conditions can vary significantly across a site and the environment can change over time. If conditions encountered during intrusive works are different to those contained in this report HEC should be contacted immediately for site reassessment.

If you have any further questions about this report, please contact the undersigned.

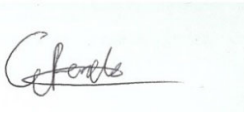
For and on behalf of

Hunter Environmental Consulting

Reported by:

Jake Duck
Environmental Scientist
Bachelor of Environmental Science and Management

Reviewed by:



Gilles Renda
Environmental Scientist
Bachelor of Science, Geology
Licenced Asbestos Assessor (LAA001268)

References

Australian Government. (2001). *Australian Standard for Demolition AS 2601: The Demolition of Structures (AS 2601).*

Australian Government Federal Register of Legislation. (2021). *Work Health and Safety Act 2011.* Canberra: Australian Government.

National Occupational Health and Safety Commission (NOHSC). (1989). *Guidance Note on the Membrane Filter Method for the Estimation of Airborne Synthetic Mineral Fibres [NOHSC:3006(1989)].* Canberra: Australian Government Publishing Service.

National Occupational Health and Safety Commission (NOHSC). (1990). *National Code of Practice for the Safe Use of Synthetic Mineral Fibres.* Canberra: Australian Government Publishing Service.

Safe Work Australia. (2019). *Code of Practice: Demolition Work.* Sydney: NSW Government.

Safe Work Australia. (2020). *Code of Practice: How to Manage and Control Asbestos in the Workplace.* Sydney: NSW Government.

Safe Work Australia. (2020). *Code of Practice: How to Safely Remove Asbestos.* Sydney: NSW Government.

Standards Australia. (2017). *AS/NZS 4361.1:2017 - Guide to hazardous paint management, Part 1: Lead and other hazardous metallic pigments in industrial applications.*

Standards Australia. (2017). *AS/NZS 4361.2-2017 - Guide to hazardous paint management, Part 2: Lead paint in residential, public and commercial buildings.*

HUNTER
ENVIRONMENTAL CONSULTING

Annex A

Location - Description	Hazardous Material	Condition	Sample ID	Signage
36 Maitland Street, Exterior roof gable cladding	Presumed Asbestos	Good	N/A	No

Survey Findings and Hazard Management Recommendations

R4 – Minimal Risk – The material is in good condition and is unlikely to be disturbed during site activity.

Location - Description	Hazardous Material	Condition	Sample ID	Signage
36 Maitland Street – front porch internal cladding	Amosite, Chrysotile & Crocidolite Asbestos	Good	S5	No

Survey Findings and Hazard Management Recommendations

R4 – Minimal Risk – The material is in good condition and is unlikely to be disturbed during site activity.

Location - Description	Hazardous Material	Condition	Sample ID	Signage
36 Maitland Street - Internal walls (rear extension kitchen and living space)	Amosite & Chrysotile Asbestos Detected	Good	S2, S5 and S7	No

Survey Findings and Hazard Management Recommendations

R4 – Minimal Risk – The material is in good condition and is unlikely to be disturbed during site activity.

Location - Description	Hazardous Material	Condition	Sample ID	Signage
36 Maitland Street – Electrical Switchboard backing board **(Zelemite)**	Assumed Asbestos	Good	N/A	No

Survey Findings and Hazard Management Recommendations

R4 – Minimal Risk – The material is in good condition and is unlikely to be disturbed during site activity.

Location - Description	Hazardous Material	Condition	Sample ID	Signage
38 Maitland Street – Veranda internal cladding	Chrysotile & Crocidolite Asbestos Detected	Good	S8	No

Survey Findings and Hazard Management Recommendations

R4 – Minimal Risk – The material is in good condition and is unlikely to be disturbed during site activity.

Location - Description	Hazardous Material	Condition	Sample ID	Signage
38 Maitland Street – Electrical Switchboard backing board **(Zelemite)**	Presumed Asbestos	Good	N/A	No

Survey Findings and Hazard Management Recommendations

R4 – Minimal Risk – The material is in good condition and is unlikely to be disturbed during site activity.

Location - Description	Hazardous Material	Condition	Sample ID	Signage
38 Maitland Street – Hot Water System	Synthetic Mineral Fibre (SMF)	Good	-	-

Survey Findings and Hazard Management Recommendations

R4 – Minimal Risk – The material is in good condition and is unlikely to be disturbed during site activity.

Location - Description	Hazardous Material	Condition	Sample ID	Signage
38 Maitland Street – Rear/external bathroom – skillion roof insulation	Synthetic Mineral Fibre (SMF)	-	-	-

Survey Findings and Hazard Management Recommendations

R4 – Minimal Risk – The material is in good condition and is unlikely to be disturbed during site activity.

ACM Risk Assessment Tables

Risk Factor Description			Hazard Level
Asbestos Classification	Bonded or Non-Friable	Materials containing asbestos in a bonded or cemented matrix using any mix of applicable resins or binding agents, which cannot be crushed by hand strength when dry	2
	Friable	ACM which, when dry, is or may become crumbled, pulverised or reduced to powder by hand pressure.	5
Condition	Good	No damage or degradation.	1
	Moderate	Slightly damaged or degraded.	2
	Poor	Highly damaged or degraded.	3
Accessibility	Low	Material is totally enclosed or encapsulated and not likely to be disturbed during day to day activities	1
	Moderate	Partially protected by encapsulation or enclosure.	2
	High	No encapsulation or enclosure.	4
Fibre Release Potential	Low	Material with a low risk of fibre release	1
	Moderate	Material with a moderate risk of fibre release	2
	High	Material with a high risk of fibre release	3
Exposure Potential	Low	Regular activities undertaken in the area are not likely to disturb, damage or cause further deterioration of ACM	1
	Moderate	Regular activities undertaken in the area could potentially result in further damage or degradation of the ACM.	2
	High	Activities undertaken within the area are highly likely to result in additional damage or degradation of the ACM	3

ACM Risk Assessment Tables

Rating		Rating
Health Risk	**Minimal**	Products or Bonded ACM that pose negligible health risk to Site users, such as painted ACM cement sheeting, laminated vinyl floor tiles etc. They consist of materials that currently are in a good condition within a low accessibility. The ACM poses a minimal health risk unless disturbed by destructive work such as drilling, cutting, or use of abrasives. Identified ACM should be clearly labelled. Material should be periodically inspected and re-assessed, especially in circumstances where refurbishment or repair works have been undertaken within the area.
Hazard Level	0 – 3	
Action Rating	R4	
Health Risk	**Low**	Products or materials that pose a minimal health risk to Site users. Applicable material is ACM in a non-friable, stable matrix (either in boned material or encapsulated). ACM material should be appropriately labelled, and high visibility signage should be used to identify the risk to any persons who may come into contact with the ACM. ACM in this category does not present an immediate health risk to occupants unless it is disturbed by destructive work such as drilling, cutting, or use of abrasives or if the ACM is damaged.
Hazard Level	4 – 19	
Action Rating	R3	
Health Risk	**Moderate**	Products or materials that are degraded and in a poor state that pose a risk to site users. They consist of materials that are mild to moderately damaged, at least partially friable and accessible to site users. These materials should be removed by a licensed asbestos removalist or encapsulated and regularly inspected for changes that may affect the sealing coat on the surface of the materials.
Hazard Level	20-49	
Action Rating	R2	
Health Risk	**High**	Products or materials that highly damaged or degraded and pose a high risk to site users. They consist of materials that are readily accessible, in poor or friable condition. These materials require immediate action and should be removed by a licensed asbestos removalist. In the event that the material cannot be removed, an alternative strategy can be employed such as encapsulation with a sealant (e.g. Paint).
Hazard Level	>50	
Action Priority	R1	

HUNTER
ENVIRONMENTAL CONSULTING

Annex B

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Jake Duck
Client	HUNTER ENVIRONMENTAL CONSULTING PTY LTD
Address	PO BOX 3127 THORNTON NSW 2322
Telephone	61 2 49661844
Facsimile	(Not specified)
Email	jd@hunterenviro.com.au
Project	**E0032 (Muswellbrook)**
Order Number	**HEC0060**
Samples	9

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE242290 R0**
Date Received	27 Jan 2023
Date Reported	03 Feb 2023

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

Sampels # 13,17,,20-22 : No trace asbestos fibres detected using trace analysis technique.
Asbestos analysed by Approved Identifier Ravee Sivasubramaniam .

SIGNATORIES

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

RESULTS

Fibre ID in bulk materials — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE242290.013	S1 (rear cladding)	Other	Approx 2g Cement Sheet Fragments	24 Jan 2023	No Asbestos Detected Organic Fibres Detected	
SE242290.014	S2 (int. walls)	Other	20x20x3mm Cement Sheet Fragments	24 Jan 2023	Amosite & Chrysotile Asbestos Detected Organic Fibres Detected	
SE242290.015	S3 (int. laundry walls)	Other	25x15x5mm Cement Sheet Fragments	24 Jan 2023	Chrysotile Asbestos Detected	
SE242290.016	S5 (F. verandah eave)	Other	30x30x3mm Cement Sheet Fragment	24 Jan 2023	Amosite, Chrysotile & Crocidolite Asbestos Detected	
SE242290.017	S6 (rear ext eaves)	Other	Approx 1g Cement Sheet Fragments	24 Jan 2023	No Asbestos Detected Organic Fibres Detected	
SE242290.018	S7 (int. kitchenwall)	Other	Approx 2g Cement Sheet Fragments	24 Jan 2023	Chrysotile Asbestos Detected Organic Fibres Detected	
SE242290.020	S9 (ext. eaves)	Other	Approx 1g Cement Sheet Fragment	24 Jan 2023	No Asbestos Detected Organic Fibres Detected	
SE242290.021	S11 (ext toilet wall)	Other	40x20x3mm Cement Sheet Fragment	24 Jan 2023	No Asbestos Detected Organic Fibres Detected	
SE242290.022	S11 (int. laundry wall)	Other	25x15x3mm Cement Sheet Fragments	24 Jan 2023	No Asbestos Detected Organic Fibres Detected	

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN602/AS4964	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602/AS4964	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf). The fibres detected may or may not be asbestos fibres.
AN602/AS4964	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service .
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.
			***	-	Indicates that both * and ** apply.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Jake Duck
Client	HUNTER ENVIRONMENTAL CONSULTING PTY LTD
Address	PO BOX 3127 THORNTON NSW 2322
Telephone	61 2 49661844
Facsimile	(Not specified)
Email	jd@hunterenviro.com.au
Project	**E0032 (Muswellbrook)**
Order Number	**HEC0060**
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE242290A R0**
Date Received	06 Feb 2023
Date Reported	13 Feb 2023

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam .

SIGNATORIES

S. Ravee

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

RESULTS

Fibre ID in bulk materials — Method AN602/AS4964

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE242290A.019	S8 (F. verandah int. cladding)	Other	10x10x3mm Cement Sheet Fragments	24 Jan 2023	Chrysotile & Crocidolite Asbestos Detected	

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN602/AS4964	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602/AS4964	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf). The fibres detected may or may not be asbestos fibres.
AN602/AS4964	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service .
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.
			***	-	Indicates that both * and ** apply.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.