QED Environmental Services

NATA
WORLD RECOGNISED ACCREDITATION
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Accreditation No: 18805

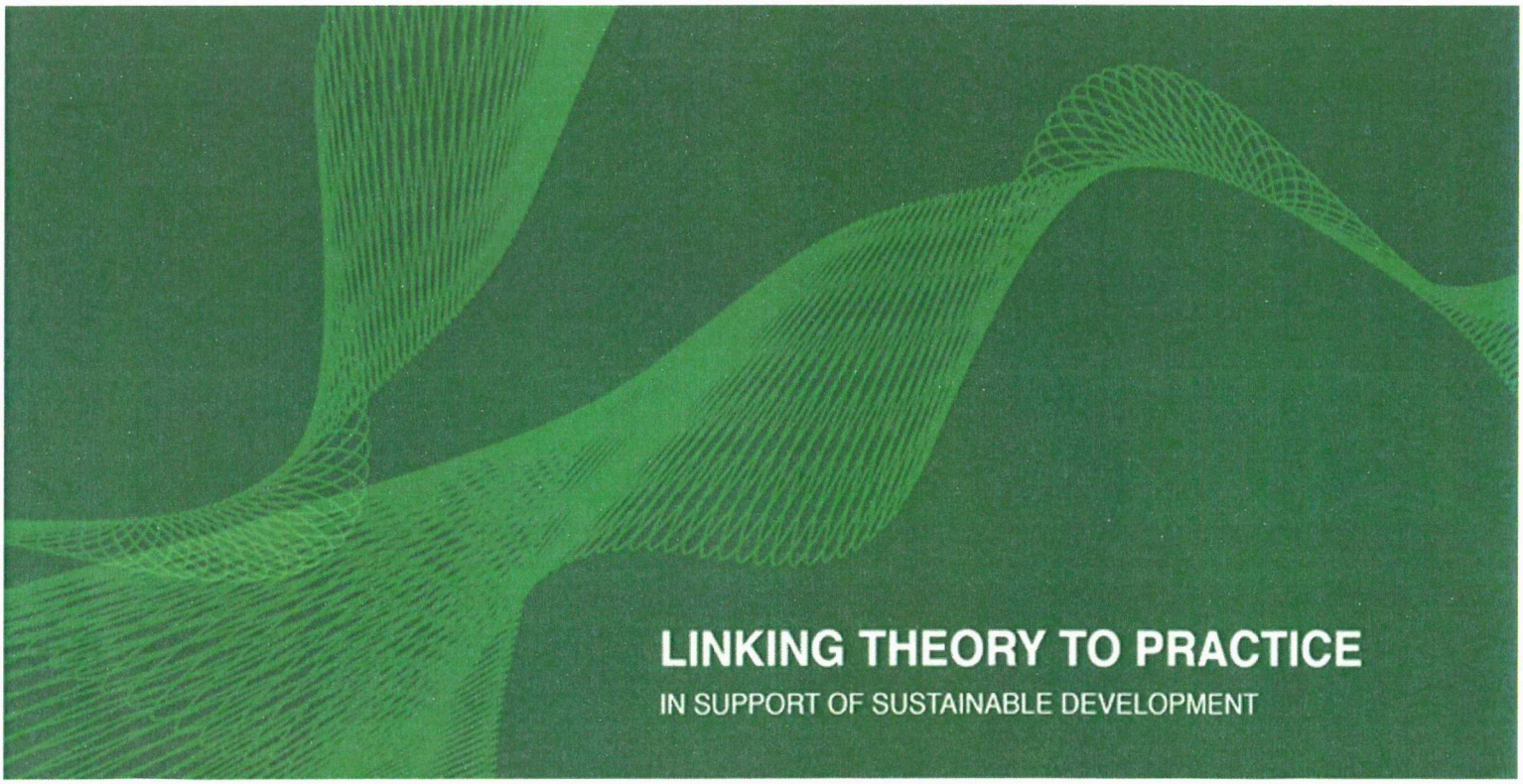
ASBESTOS AND HAZARDOUS MATERIALS REGISTER

10 William Street, Perth WA 6000

Report ID: **31730r0**

Prepared for: **Knight Frank Pty Ltd**

April 2022



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Document Revision and Updates

Author	Rev	Date of Issue	Revision Details	Authorised Recipient
Report Template Details: Hazardous Materials Register – v2. Last modified 31/03/2022				
Sarah Bailey	r0	18 May 2022	Original Documentation	Guy Jarrett Knight Frank Pty Ltd

Please contact QED Environmental Services on 1300 400 733, quoting Report ID 31730r0 to confirm that this is the latest revision.

The enclosed report has been authorised by the following QED Environmental Services Signatory

Chris Horan

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Senior Consultant

The inspection was completed by the following QED Environmental Services consultant

Sarah Bailey

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Executive Summary

QED Environmental Services was commissioned by Knight Frank Pty Ltd to audit 10 William Street, Perth WA 6000 (referred to as the "site"). Specifically, the scope of works includes the following:

- Asbestos Register - Management Re-survey
- Hazardous Materials Register (nominated materials – Synthetic Mineral Fibre (SMF), Lead-containing Paint and Polychlorinated biphenyls (PCB's) containing capacitors in electrical fittings.
- Asbestos Management Plan (separate document)

The assessment was conducted by Sarah Bailey on 13 April 2022.

The methodology employed by QED Environmental Services is consistent with the relevant statutory regulations and relevant Codes of Practice. The processes and procedures implemented for these works have been independently assessed by the National Association of testing Authorities, Australia (NATA).

The asbestos management plan has been provided to Knight Frank Pty Ltd and will need to be consulted if works are required that may disturb asbestos identified on site, or large scale works including refurbishments and demolition works.

The before mentioned Register will be due for review, at the latest, in April 2027.

In addition to the above date, a person with management or control of a workplace must ensure an asbestos register is reviewed and where necessary revised by the PCBU (or a competent person engaged by the PCBU) if:

- the asbestos management plan is reviewed
- further asbestos or ACM is identified at the workplace
- asbestos is removed from or disturbed, sealed or enclosed at the workplace, or
- refurbishment or demolition work is to be undertaken.

The register should be reviewed at least once every five years to ensure it is kept up to date.

Initial Findings and Recommendations

No asbestos risk Item(s) that require immediate attention were identified.

One synthetic mineral fibre risk that requires attention was identified in the following:

ID #	Product	Location
24	Loose, unsealed ceiling insulation	Level 7 Tenancy ceiling space and ceiling in plant room/penthouse above.
	IMMEDIATE ACTION REQUIRED. The insulation requires encapsulation or replacement with a non-loose style of insulation.	

Asbestos was identified, suspected or presumed in the following items. Ensure that these remain clearly labelled and regularly inspect to ensure they are not deteriorating or otherwise contributing to an unacceptable health risk:

ID #	Product	Location
1	Pale Green Vinyl Floor Tiles.	Basement Transformer Room.
2	HV Cable insulation.	Basement Transformer Room.
3	Cement cable sleeve.	Basement Transformer Room.
4	Fibre Cement Conduit	Basement communications cupboard.
5	Urinal Backing Membrane.	Rear surface of the urinals.

The vermiculite spray-on insulation located on steel beams throughout the building has been sampled through to the slab/steel and was found not to contain asbestos. Investigations conducted at other sites has shown that, in a building of this age, remnants of Limpet Asbestos (greyish in appearance) may be present beneath the vermiculite. Caution is required when disturbing the vermiculite and further investigation should be undertaken before any large-scale removal of the material. If, during routine works, inconsistencies in the make-up of the vermiculite are noticed work should stop immediately, controls be put in place and the material sampled and analysed for asbestos content.

Window mastics were observed within the window frames of the building. Due to the potential variety of mastics used throughout the building and the potential for variation in the installation dates, it is recommended that specific sampling be conducted prior to disturbance or removal of windows or if the condition of the material deteriorates.

Other hazardous materials were also identified, suspected or presumed in the following and assessed as posing a minor risk:

ID #	Material	Product	Location
6	Synthetic Mineral Fibres	Insulation	Chilled water storage tanks
7	Synthetic Mineral Fibres	Insulation	Roofs
8	Synthetic Mineral Fibres	Water proofing membrane	Roof
9	Synthetic Mineral Fibres	Lift Brakes	Lift Motor Room - Roof
10	Synthetic Mineral Fibres	Boiler gaskets and insulation	Boiler – Level 7 Plantroom
11	Synthetic Mineral Fibres	Hot water pipe insulation	Level 7 Plantroom and all floors
12	Synthetic Mineral Fibres	Chilled water pipe insulation	Level 7 Plant Room and all floors.
13	Synthetic Mineral Fibres	Chiller Insulation	Level 7 Plant Room.
14	Synthetic Mineral Fibres	Main AHU wall insulation	Level 7 Plantroom Return air + HVAC unit
15	Synthetic Mineral Fibres	Pipework Insulation	Suspected all floors – return air cupboards
16	Synthetic Mineral Fibres	Insulation	Fire Doors – all floors
17	Synthetic Mineral Fibres	Fire pillows	Risers and penetrations – all floors
18	Synthetic Mineral Fibres	Firestop material	Risers and penetrations – all floors
19	Synthetic Mineral Fibres	Hot water heater insulation	Plumbing ducts
20	Synthetic Mineral Fibres	Lift Door Thermal Insulation	Within the doors to the lift
21	Synthetic Mineral Fibres	Ceiling tiles and insulation	Tenancies – all floors
22	Synthetic Mineral Fibres	Boiling water heaters	Risers, Levels
23	Synthetic Mineral Fibres	Zip heaters	Under sinks in tenancies
25	Lead-containing paint	AHU paint	Level 7 Plantroom
26	Polychlorinated biphenyls	PCBs – Transformer Oil	Basement Transformer Room
27	Polychlorinated biphenyls	Fluorescent lighting capacitor	Basement transformer room

None of the materials identified appeared to be adversely impacting on the micro-environment; however, if at any such stage there is a possibility of disturbance before the next inspection (e.g. refits/upgrades to services) a monitoring and removal programme is recommended.

Recommendations

- All materials identified may remain in situ until requiring replacement although, where practicable, asbestos containing materials should be removed, consistent with the Federal Government's stated ultimate goal of the prohibition of asbestos, which is for "all workplaces to be free of asbestos".
- Asbestos Management Plan (AMP) implemented:
    - Knight Frank Pty Ltd site induction to include specific reference to AMP and Register.
    - Register and AMP document to be printed and kept onsite at the location where contractors sign-in, and made available via the internet for contractors to use when accessing the site or planning for works.
    - Emergency Response chart to be printed and kept onsite at the location where contractors sign-in.
    - Guy Jarrett nominated as Property Management contact for the site (principal custodian of the Asbestos Management Plan).
    - QED Environmental Services nominated as Asbestos Management Planner for the site (part of Emergency Response).
    - Register and management plan reviewed in accordance with relevant statutory regulations and Codes of Practice, or more frequent if works occur.
    - QED Environmental Services to review any procedures where works may disturb identified, presumed or suspected asbestos.

Limitations

QED Environmental Services Pty Ltd (QED) has endeavoured by best practice procedures to locate and identify the presence of Asbestos and the other nominated Hazardous Materials; however, the findings summarised in this report should not be deemed absolute.

This is a non-intrusive, presumptive survey report and is not to be used for any invasive activity that may result in the disturbance of unidentified asbestos. Such activities may include, but are not limited to: whole or part building demolition, rectification of the HVAC system, lift upgrades, electrical upgrades, slab penetrations, roofing works.

This report has been prepared for the use of Knight Frank Pty Ltd, and is not to be relied upon by any third party without prior consultation with QED. This report is not to be used as a contractual document.

The following areas specific to this site were inaccessible on this occasion and, therefore, are excluded from this Asbestos and Hazardous Materials Register:

- Area – not applicable

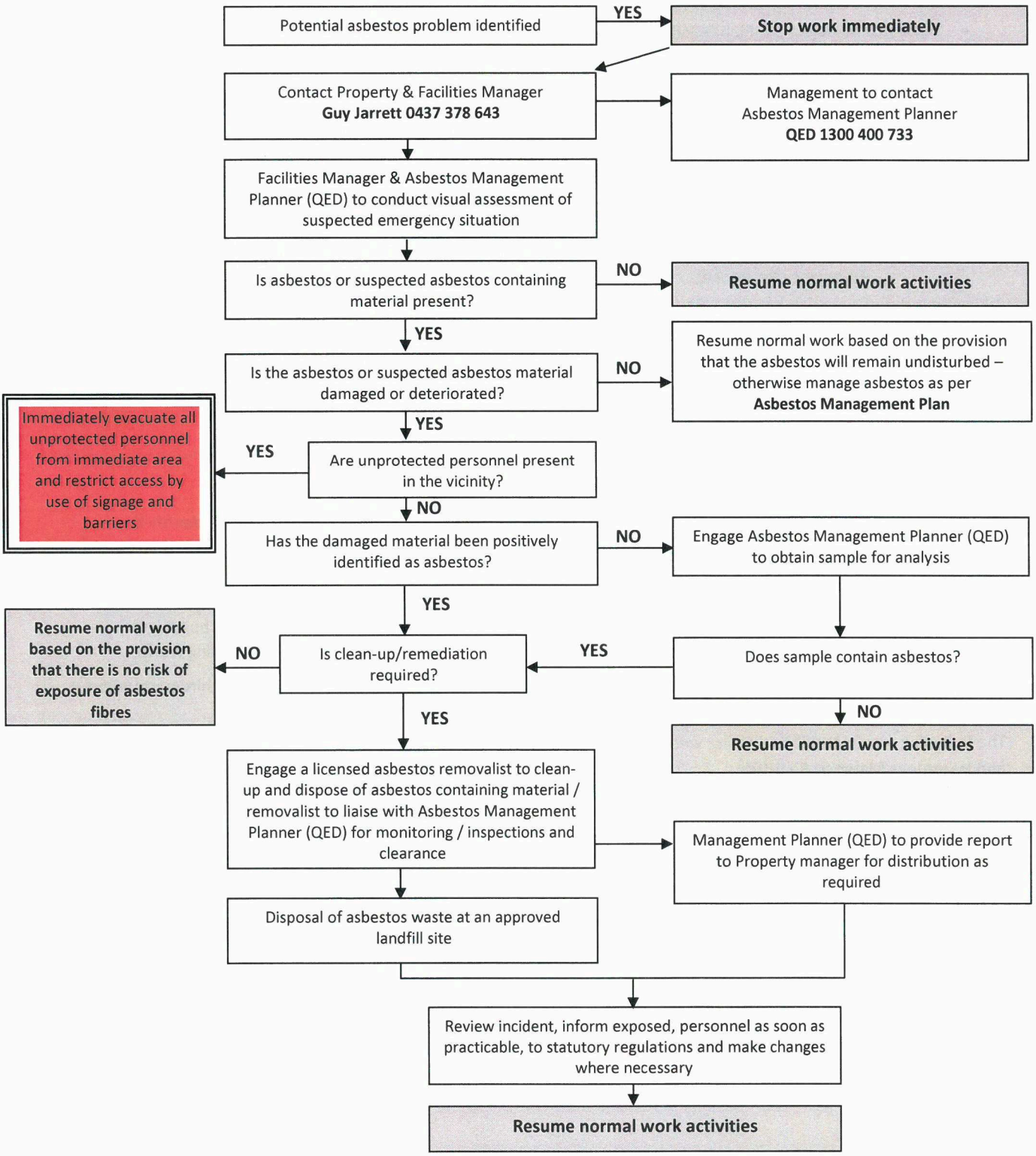
The vermiculite spray-on insulation located on steel beams throughout the building has been sampled through to the slab/steel and was found not to contain asbestos. Investigations conducted at other sites has shown that, in a building of this age, remnants of Limpet Asbestos (greyish in appearance) may be present beneath the vermiculite. Caution is required when disturbing the vermiculite and further investigation should be undertaken before any large-scale removal of the material. If, during routine works, inconsistencies in the make-up of the vermiculite are noticed work should stop immediately, controls be put in place and the material sampled and analysed for asbestos content.

Window mastics were observed within the window frames of the building. Due to the potential variety of mastics used throughout the building and the potential for variation in the installation dates, it is recommended that specific sampling be conducted prior to disturbance or removal of windows or if the condition of the material deteriorates.

Detailed information regarding the report limitations are described in the Introduction section.

Emergency Response Chart

Flow Chart to be Printed and Placed Onsite adjacent to Sign In



Introduction

Scope

In keeping with the appropriate State and Commonwealth Legislation, the scope of this report is to assess the nature and condition of in-situ asbestos-containing materials within the building fabric and general services, and to assess the potential for building occupants to be exposed to airborne asbestos fibres.

The scope of work specified for the site survey excludes invasive investigative techniques and subsequently this report is not to be used in the event of building demolition.

Class of Assessment

The United Kingdom has developed a minimum standard for the surveying and sampling of asbestos containing material in the commercial sector. The standard identifies two types of survey which may be used, depending on the purpose for which the results of the survey are to be used. The two types are:

- ***Management Survey (Baseline/Re-surveys & Re-inspections)***. The assessor locates, as far as reasonably practicable, the location, extent and condition of suspect asbestos containing material (ACM) that may be damaged or disturbed during normal occupancy or foreseeable maintenance activities. This type of survey may involve minor intrusive work and some disturbance. The materials are assessed in relation to their condition and their ability to release fibres into the air.
    - ***Baseline/Re-Survey***: - The building is treated as a Baseline Survey considering previous information from past audits (NATA lab certificates etc). It is expected that the consultant will carry out a thorough survey of the building whilst also reviewing previous identified asbestos materials. Resurveys take more time to conduct and are subsequently more expensive than a Re-Inspection.
    - ***Re-Inspection***: - The consultant reviews previously identified asbestos materials in the latest register, assessing condition and potential disturbance of the material to assess the risk category. The consultant would not generally enter new areas of the building but is expected to sample new suspected asbestos materials, enter them into the register as suspected and then archive the sample for future analysis when required.

- ***Refurbishment and Demolition Survey***. The assessor locates, as far as reasonably practicable, all asbestos containing materials in the area to be refurbished or demolished. The survey is fully intrusive and will involve destructive inspection. This type of inspection may also be necessary prior to more intrusive maintenance or repair work will be carried out, or where plant is to be removed or dismantled.

The surveys are completed by appropriately trained and experienced surveyors, who assess the following aspects of any ACM identified:

- product type
- location
- extent
- accessibility
- likelihood of disturbance
- amount of damage/deterioration (in the case of the *Refurbishment and Demolition Survey*, this is only required if the asbestos removal may not take place for some time.)

Source: HSG264 *Asbestos: The survey guide* (Health and Safety Executive (2012).

In this case a *Management Survey Re-surveys* has been used by QED Environmental Services to develop the appropriate Asbestos Register and Management Plan. Sampling of materials has been conducted wherever practical.

Methodology

The general methodology employed by QED Environmental Services is based on procedures developed by QED and which are accredited for compliance with ISO/IEC 17020, as assessed by the National Association of Testing Authorities (NATA), Accreditation No: 18805.

The sampling methodology employed is consistent with the following:

- QED PRO-007 - Hazardous Material Surveys
- QED PRO-008 – Formulation and Review of Asbestos Registers
- QED PRO-012 - Handling of Inspection Samples
- QED PRO-027 - Sampling Fire Door Cores
- The relevant statutory regulations and Codes of Practice (specific legislation listed in Appendix 5)

This involves 3 phases; Identification, Evaluation and the Control Phase. This report details the Identification and Evaluation Phases, and provides recommendations of the Control Phase. The sampling and assessment of suspect materials was conducted by QED Environmental Services personnel from visible building and plant materials with minimal disturbance, and samples sent to an independent NATA certified laboratory for analysis.

Limitations

Non-destructive sampling is restricted by physical, safety and security constraints of access, and a number of operational limitations, protocols and codes of practice that restrict any building inspection.

Note that no inspection can guarantee to identify all materials subject to investigation present in a building, thus due to accessibility and scope constraints there is a possibility that additional materials may exist within the building which are not identified in the registers. In some instances, materials subject to investigation may be present in inaccessible areas such as:

- Wall cavities
- Locked or blocked off areas
- Beneath floors
- Elevator shafts
- Slabs
- Integral parts of boilers, pumps, machinery, plant and pipework
- Reheat units within air conditioning ducts; and
- Fire doors.
- Underground services
- Soil

Confirmation of lagged pipework in wall cavities and that which may be "chased" into walls is not possible with a visual inspection in a non-destructive survey. Any scheduled demolition or upgrading works should allow for specific inspections to be undertaken in order to determine if asbestos is present in such areas.

Areas specific to this site that were inaccessible on this occasion are specified in the limitations section of the executive summary.

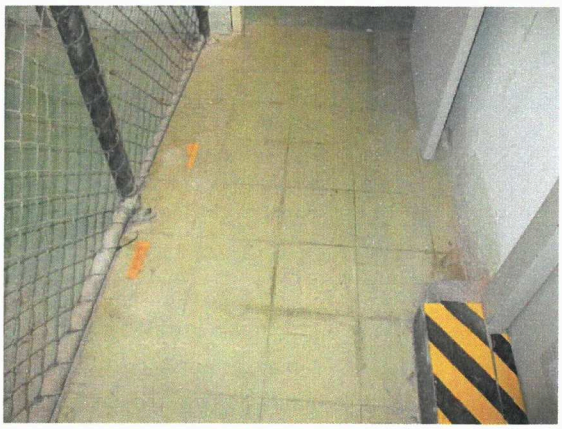
Asbestos and Hazardous Materials Register

Asbestos Register

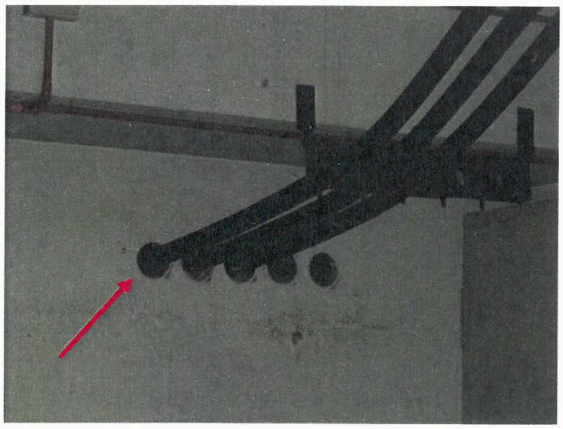
Building Construction: Concrete and steel

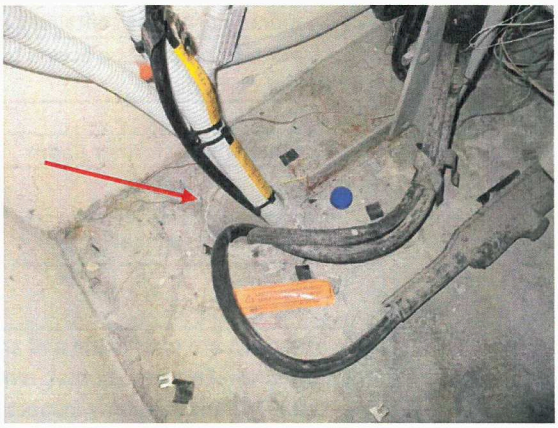
Year of Construction: early 1970s – source: Landgate

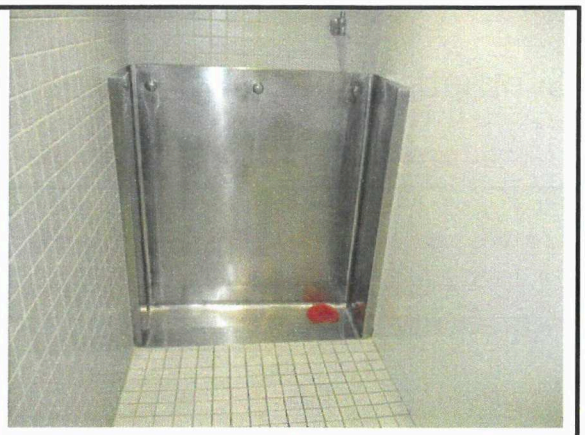
ID 1:- Vinyl Floor Tiles, Pale Green (Asbestos Detected)	
Material	Chrysotile asbestos detected.
Lab No.	BL-0165 PB
QED Sample No.	N/A
Locations	Basement Transformer Room
Condition	Good to Fair, non-friable.
Signage	Labelled
Potential for Disturbance	Low
Risk	**The ACM are not friable and are in stable condition. Ensure that they remain clearly labelled and regularly inspect to ensure they are not deteriorating or otherwise contributing to an unacceptable health risk.**
Management Actions	May remain in-situ until replacement is required. Manage as per **Asbestos Management Plan.** Administrative – Follow safe work procedures during removal and maintenance. Personal protective equipment – P2 facemask and coveralls required when working on material.
References (See Appendices)	**Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.** **WHS Appendix F—Example of asbestos-related work** Working with asbestos friction materials **WHS Appendix G—Recommended safe working practices** Safe work practice 1—Drilling of ACM **Safe Work Australia, Code of Practice: How to Safely Remove Asbestos** **Appendix E—Examples of asbestos removal work** Removal of floor tiles
Service Record	Review– April 2027 Company: Date: Works: Clearance certificate:



ID 2:- High Voltage Wiring Outer Sheath (Suspected Asbestos Containing Material)		
Material	Suspected asbestos containing material.	
Lab No.	Unable to obtain suitable sample (Live).	
QED Sample No.	N/A.	
Locations	Basement Transformer Room	
Condition	Good, non-friable.	
Signage	None – not practical to label	
Potential for Disturbance	Low	
Risk	**The ACM are not friable and are in stable condition. Ensure that they remain clearly labelled and regularly inspect to ensure they are not deteriorating or otherwise contributing to an unacceptable health risk.**	
Management Actions	No access to the transformer compound is available to sample or label this item. May remain in-situ until replacement is required. Manage as per **Asbestos Management Plan.** Administrative – Follow safe work procedures during removal and maintenance. Personal protective equipment – P2 facemask and coveralls required when working on material.	
References (See Appendices)	**Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.** **Safe Work Australia, Code of Practice: How to Safely Remove Asbestos** **Appendix E—Examples of asbestos removal work** Removal of gaskets and rope seals	
Service Record	Review– April 2027 Company: Date: Works: Clearance certificate:	

ID 3:- Fibre Cement Conduit (Suspected Asbestos Containing Material)		
Material	Suspected asbestos containing material.	
Lab No.	Unable to sample – no access to Western Power compound	
QED Sample No.	N/A	
Locations	Basement Transformer Room	
Condition	Good	
Signage	Not practical to label	
Potential for Disturbance	Low.	
Risk	**The ACM are not friable and are in stable condition. Ensure that they remain clearly labelled and regularly inspect to ensure they are not deteriorating or otherwise contributing to an unacceptable health risk.**	
Management Actions	No access to the transformer compound is available to sample or label this item. May remain in-situ until replacement is required. Manage as per Asbestos Management Plan. Administrative – Follow safe work procedures during removal and maintenance. Personal protective equipment – P2 facemask and coveralls required when working on material. Conduit has been sealed in wall, use caution when drilling through walls.	
References (See Appendices)	**Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.** **WHS Appendix G—Recommended safe working practices** Safe work practice 1—Drilling of ACM Safe work practice 2—Sealing, painting, coating and cleaning of asbestos cement products Safe work practice 4—Replacing cabling in asbestos cement conduits or boxes **Safe Work Australia, Code of Practice: How to Safely Remove Asbestos** **Appendix E—Examples of asbestos removal work** Asbestos cement products	
Service Record	Review– April 2027 Company: Date: Works: Clearance certificate:	

ID 4:- Fibre Cement Conduit (Asbestos Detected)		
Material	Chrysotile, amosite and crocidolite asbestos detected.	
Lab No.	ARL Lab No 18-05571-2.	
QED Sample No.	ID: 27014.	
Locations	Basement communications cupboard.	
Condition	Good, non-friable.	
Signage	Labelled.	
Potential for Disturbance	Low to Medium.	
Risk	**The ACM are not friable and are in stable condition.Ensure that they remain clearly labelled and regularly inspect to ensure they are not deteriorating or otherwise contributing to an unacceptable health risk.**	
Management Actions	May remain in-situ until replacement is required. Manage as per Asbestos Management Plan. Administrative – Follow safe work procedures during removal and maintenance. Personal protective equipment – P2 facemask and coveralls required when working on material. Conduit has been sealed in wall, use caution when drilling through walls.	
References (See Appendices)	**Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.** **WHS Appendix G—Recommended safe working practices** Safe work practice 1—Drilling of ACM Safe work practice 2—Sealing, painting, coating and cleaning of asbestos cement products Safe work practice 4—Replacing cabling in asbestos cement conduits or boxes **Safe Work Australia, Code of Practice: How to Safely Remove Asbestos** **Appendix E—Examples of asbestos removal work** Asbestos cement products	
Service Record	Review– April 2027 Company: Date: Works: Clearance certificate:	

ID 5:- Urinal Backing Membrane (Suspected Asbestos Containing Material)		
Material	Suspected asbestos containing material.	
Lab No.	Unable to sample (encapsulated)	
QED Sample No.	N/A.	
Locations	Male toilets on each level.	
Condition	Good, intact, non-friable.	
Signage	Unable to adequately label.	
Potential for Disturbance	Low.	
Risk	**The ACM are not friable and are in stable condition. Ensure that they are regularly inspected to ensure they are not deteriorating or otherwise contributing to an unacceptable health risk.**	
Management Actions	May remain in-situ until replacement is required. Manage as per **Asbestos Management Plan.** Administrative – Follow safe work procedures during removal and maintenance. Personal protective equipment – P2 facemask and coveralls required when working on material.	
References (See Appendices)	**Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.** **Safe Work Australia, Code of Practice: How to Safely Remove Asbestos** **Appendix E—Examples of asbestos removal work** Removing bituminous (malthoid) products	
Service Record	Review– April 2027 Company: Date: Works: Clearance certificate:	

Hazardous Materials Register (other than asbestos)

Synthetic Mineral Fibres

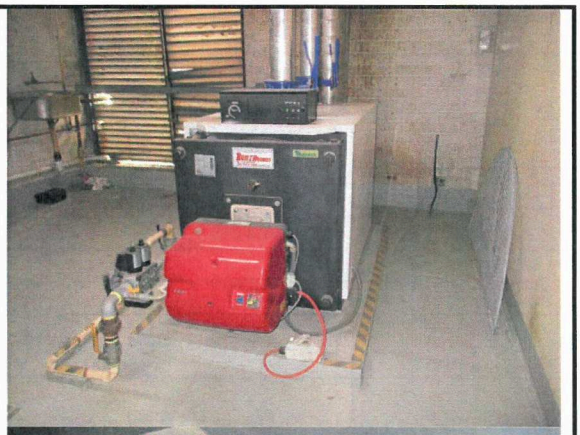
ID 6:- Chilled Water Storage Tank Insulation (Suspected Synthetic Mineral Fibres)	
Material	Suspected synthetic mineral fibres.
Lab No.	Observed.
QED Sample No.	N/A
Locations	Rooftop
Condition	Good.
Signage	N/A.
Potential for Disturbance	Low.
Risk	**Minor**
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].
Service Record	N/A.

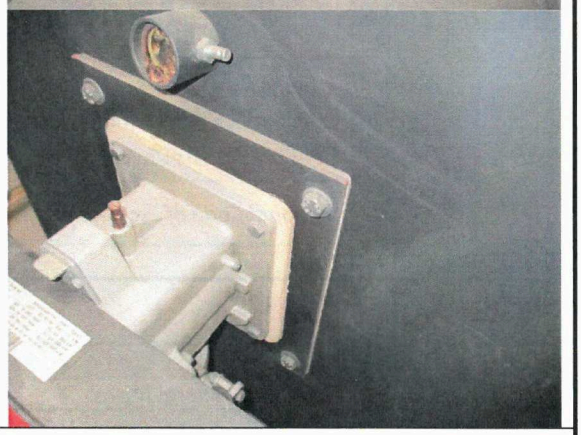
ID 7:- Roof Insulation (Suspected Synthetic Mineral Fibres)	
Material	Suspected synthetic mineral fibres.
Lab No.	Observed.
QED Sample No.	N/A.
Locations	Lift motor room and Level 7 Plantroom.
Condition	Good.
Signage	N/A.
Potential for Disturbance	Low.
Risk	**Minor**
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].
Service Record	N/A.

ID 8:- Waterproofing Membrane (Suspected Synthetic Mineral Fibres)		
Material	Synthetic mineral fibres.	
Lab No.	MPL Lab 094573-001.	
QED Sample No.	N/A.	
Locations	Roof.	
Condition	Good.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.	
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].	
Service Record	N/A.	

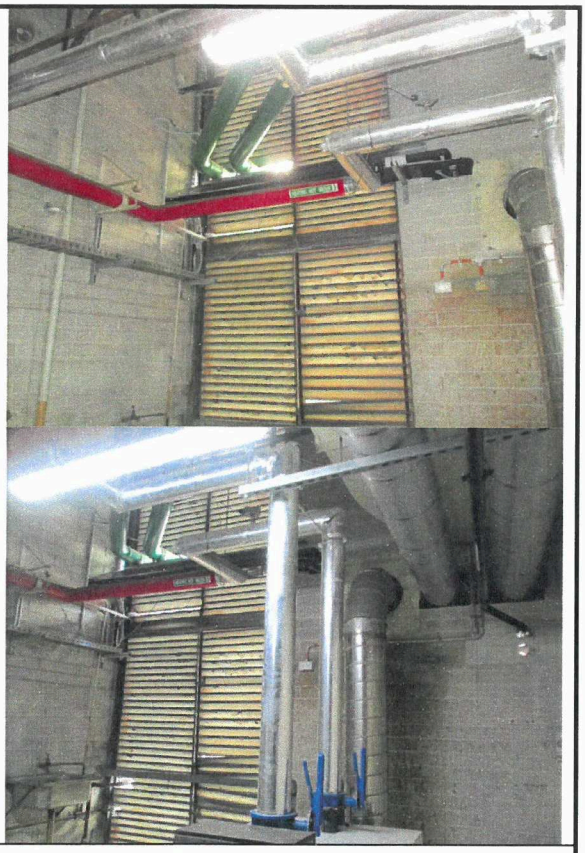
ID 9:- Lift Brakes (Synthetic Mineral Fibres Detected)		
Material	Synthetic mineral fibres.	
Lab No.	MPL Lab 094573-003. Lift Motors and controllers replaced 2006.	
QED Sample No.	N/A.	
Locations	Lift motor room.	
Condition	Good.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.	
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].	
Service Record	N/A.	

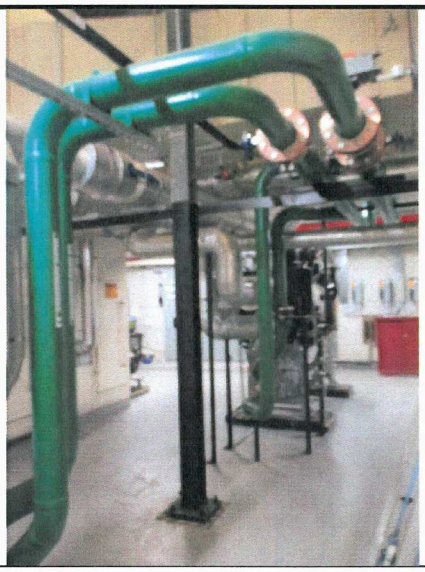
ID 10:- Boiler Gaskets & Insulation (Suspected Synthetic Mineral Fibres)	
Material	Suspected synthetic mineral fibres.
Lab No.	Observed. Boiler installed 2013.
QED Sample No.	N/A.
Locations	L7 Plantroom.
Condition	Good.
Signage	N/A.
Potential for Disturbance	Low.
Risk	**Minor**
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].
Service Record	N/A.





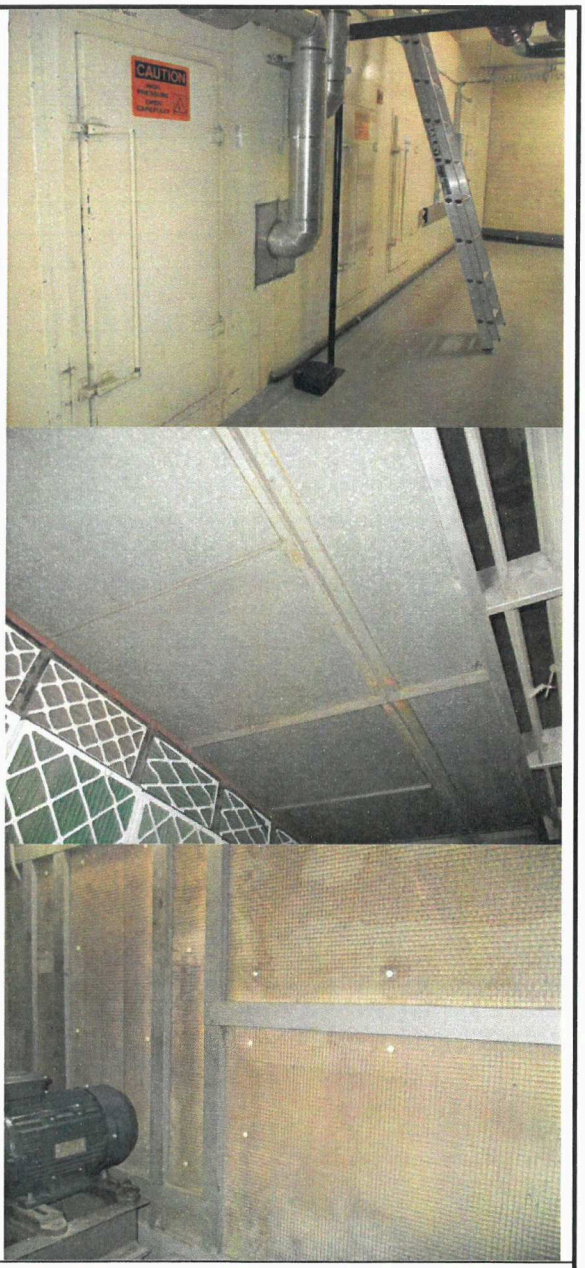
ID 11:- Hot Water Pipe Insulation (Suspected Synthetic Mineral Fibres)	
Material	Suspected synthetic mineral fibres.
Lab No.	Observed.
QED Sample No.	N/A.
Locations	Level 7 Plantroom; All floors.
Condition	Good.
Signage	N/A.
Potential for Disturbance	Low.
Risk	**Minor**
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].
Service Record	N/A.



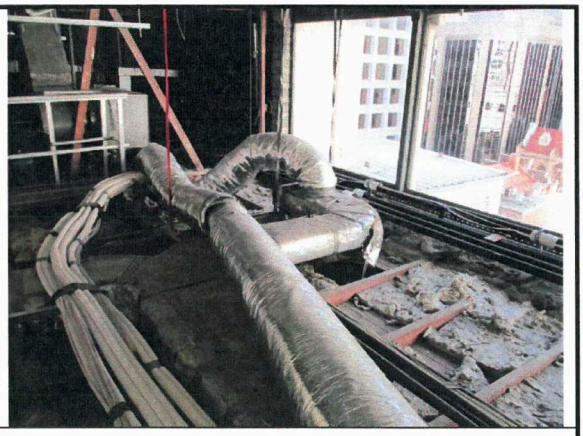
ID 12:- Cold Water Pipe Insulation (Suspected Synthetic Mineral Fibres)		
Material	Suspected synthetic mineral fibres.	
Lab No.	Observed.	
QED Sample No.	N/A	
Locations	Chiller Plant Room and throughout building.	
Condition	Typically Good.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.	
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].	
Service Record	N/A.	

ID 13:- Chiller Insulation (Suspected Synthetic Mineral Fibres)		
Material	Suspected synthetic mineral fibres.	
Lab No.	Observed.	
QED Sample No.	N/A	
Locations	Chiller Plant Room	
Condition	Typically Good.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.	
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].	
Service Record	N/A.	

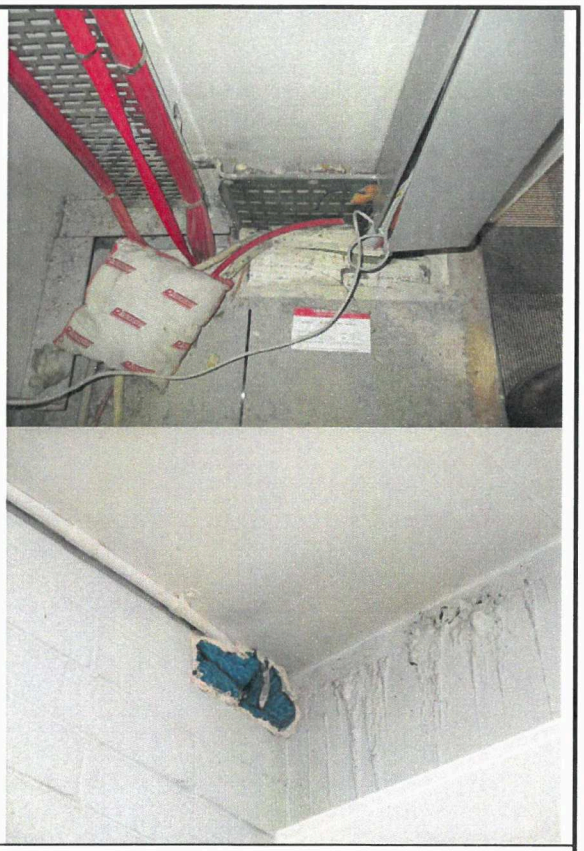
ID 14:- AHU Panel Insulation (Suspected Synthetic Mineral Fibres)	
Material	Suspected synthetic mineral fibres.
Lab No.	Observed.
QED Sample No.	N/A
Locations	AHUs, Plant Room
Condition	Typically Good.
Signage	N/A.
Potential for Disturbance	Low.
Risk	**Minor**



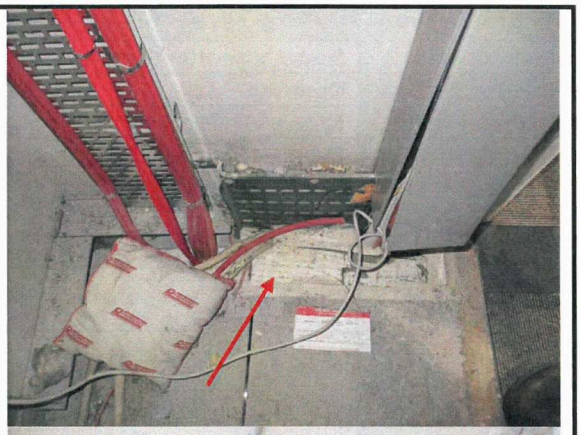
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].
Service Record	N/A.

ID 15:- Ducting Insulation (Suspected Synthetic Mineral Fibres)		
Material	Suspected synthetic mineral fibres.	
Lab No.	Observed.	
QED Sample No.	N/A	
Locations	Risers throughout.	
Condition	Typically Good.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.	
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].	
Service Record	N/A.	

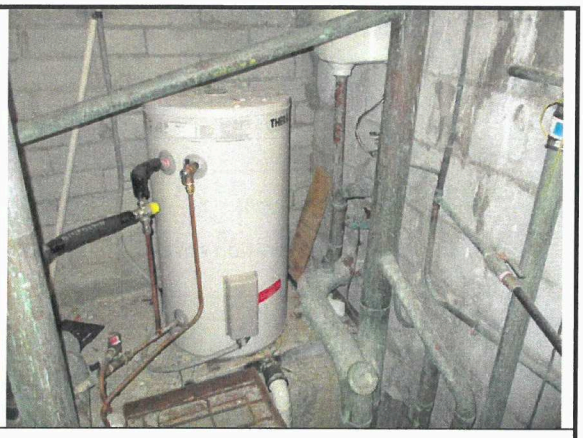
ID 16:- Fire Door Internal Insulation (Suspected Synthetic Mineral Fibres)		
Material	Suspected synthetic mineral fibres.	
Lab No.	Observed. Installed 2003.	
QED Sample No.	QED 09511 (AEC report 97477) confirms non-asbestos.)	
Locations	Fire stairs throughout building.	
Condition	Good.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.	
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].	
Service Record	N/A.	

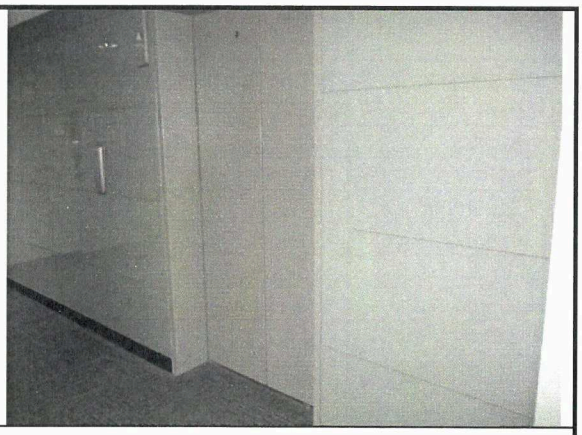
ID 17:- Fire Pillows (Suspected Synthetic Mineral Fibres)		
Material	Suspected synthetic mineral fibres.	
Lab No.	Observed.	
QED Sample No.	N/A.	
Locations	Risers – Level 6 and Basement, Basement Electrical Room.	
Condition	Good.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.	
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].	
Service Record	N/A.	

ID 18:- FireStop Insulation (Suspected Synthetic Mineral Fibres)	
Material	Suspected synthetic mineral fibres.
Lab No.	Observed.
QED Sample No.	N/A.
Locations	Risers – all floors and fire penetrations above fire doors.
Condition	Good.
Signage	N/A.
Potential for Disturbance	Low.
Risk	**Minor**



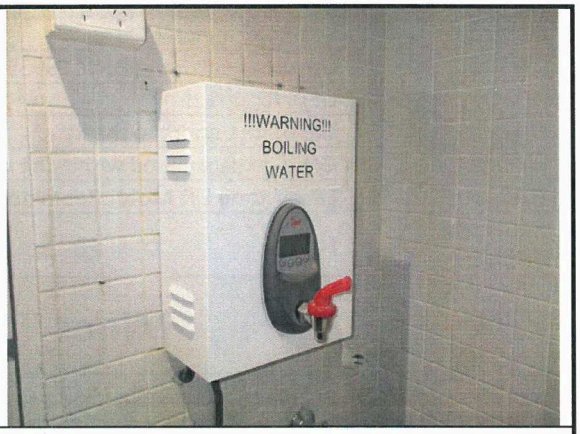
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].
Service Record	N/A.

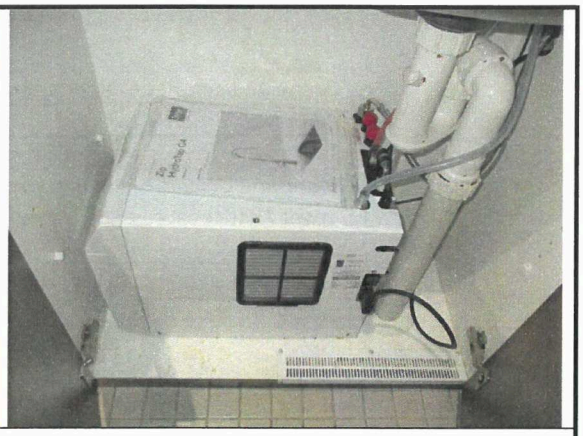
ID 19:- Domestic Hot Water Heater Insulation (Suspected Synthetic Mineral Fibres)		
Material	Suspected synthetic mineral fibres.	
Lab No.	Observed.	
QED Sample No.	N/A.	
Locations	Plumbing Ducts.	
Condition	Good, encapsulated within the unit.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.	
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].	
Service Record	N/A.	

ID 20:- Lift Door Thermal Insulation (Synthetic Mineral Fibres Detected)		
Material	Synthetic mineral fibres.	
Lab No.	Greencap Lab Report No. 99935.	
QED Sample No.	QED: ID: 09125.	
Locations	Within the doors to the lift.	
Condition	Good, encapsulated within the doors.	
Signage	Labelled on Lift Motor Room door.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.	
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].	
Service Record	N/A.	

ID 21:- Tenancy Ceiling Tiles & Insulation (Suspected Synthetic Mineral Fibres)	
Material	Suspected synthetic mineral fibres.
Lab No.	Observed.
QED Sample No.	N/A.
Locations	Tenancies – all floors. Also used as a penetration cover within the plumbing ducts.
Condition	Typically Good.
Signage	N/A.
Potential for Disturbance	Low.
Risk	**Minor**
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].
Service Record	N/A.

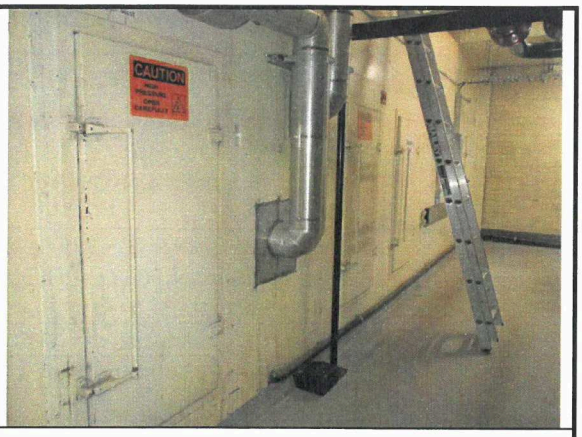
ID 22:- Water Boiler Insulation (Suspected Synthetic Mineral Fibres)	
Material	Suspected synthetic mineral fibres.
Lab No.	Observed.
QED Sample No.	N/A
Locations	Kitchenettes on each level.
Condition	Typically Good.
Signage	N/A.
Potential for Disturbance	Low.
Risk	**Minor**
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].
Service Record	N/A.



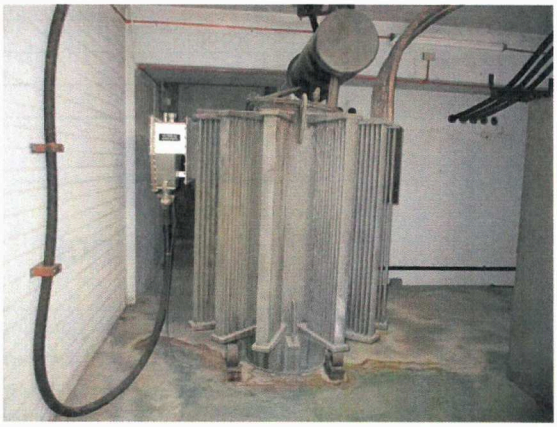
ID 23:- Water Boiler/ Water Cooler Insulation (Suspected Synthetic Mineral Fibres)		
Material	Suspected synthetic mineral fibres.	
Lab No.	Observed.	
QED Sample No.	N/A	
Locations	Tenancy Kitchens.	
Condition	Typically Good.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.	
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].	
Service Record	N/A.	

ID 24:- Loose Roof Insulation (Suspected Synthetic Mineral Fibres)	
Material	Suspected synthetic mineral fibres.
Lab No.	Observed.
QED Sample No.	N/A
Locations	Floor and Ceiling, old Penthouse above Level 7 office, accessed via the Plant Room.
Condition	Poor. Loose and unsealed, with loose pieces on the ceiling.
Signage	N/A.
Potential for Disturbance	Moderate.
Risk	Moderate
Management Actions	Minimise disturbance / handling. Appropriate PPE required when disturbing, at least a P2 Mask. Removal by an appropriate contractor.
References (See Appendices)	*National Code of Practice for the Safe Use of Synthetic Mineral Fibres* [NOHSC:2006(1990)].
Service Record	N/A.

Lead Based Paint

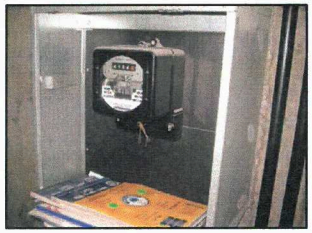
ID 25:- Lead Paint (Lead Detected)		
Material	Lead based paint (3.6%.)	
Lab No.	MPL Lab No. 146783-1.	
QED Sample No.	3526.	
Locations	AC Plantroom.	
Condition	Good.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	Minimise disturbance / handling. Avoid dry sanding or blast cleaning. Appropriate PPE required when disturbing. Removal by an appropriate contractor as required.	
References (See Appendices)	AS 4361.*2:2017 Guide to Hazardous Paint Management; Part 2: Lead paint in residential, public and commercial buildings.*	
Service Record	N/A.	
Further Details	**In 2017, the Australian Standard (AS4361.2) redefined the definition of lead paint, reducing the concentration of lead from 1% to 0.1%w/w for the paint to be classified as lead paint.**	

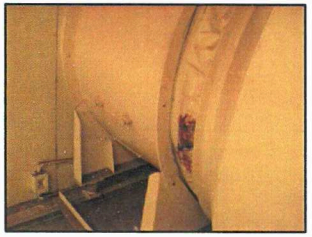
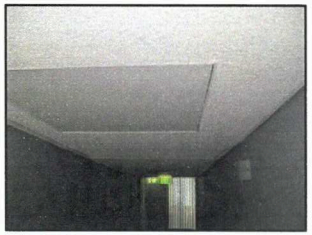
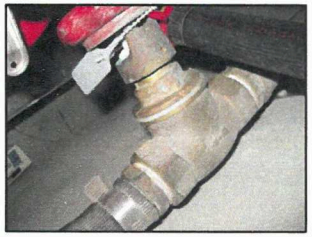
PCBs

ID 26:- Transformer Capacitor Oil (Suspected PCB Containing)		
Material	Suspected PCB (poly chlorinated bi-phenyl) containing capacitor. Further identification required upon removal.	
Lab No.	Not listed in ANZECC – 1997 publication *Identification of PCB Containing Capacitors.*	
QED Sample No.	N/A – Live, cannot be sampled.	
Locations	Basement transformer room.	
Condition	Good, sealed, no leaks.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	At removal, all PCB materials must be placed in a strong, sealed polyethylene bag, which is then placed in a sound, sealable metal drum. An absorbent material should be packed around the PCB equipment to absorb any leaks. The drum should then be sealed and labelled as **"TOXIC - PCB waste".** **Refer to PCB removal section in appendices.**	
References (See Appendices)	**Refer to PCB removal section in appendices.**	

ID 27:- Fluorescent Lighting Capacitors (Suspected PCB Containing)		
Material	Suspected PCB (poly chlorinated bi-phenyl) containing capacitor. Further identification required upon removal.	
Lab No.	Not listed in ANZECC – 1997 publication *Identification of PCB Containing Capacitors.*	
QED Sample No.	N/A	
Locations	Air Handling Units and potentially in older parts of the building.	
Condition	Good, sealed, no leaks.	
Signage	N/A.	
Potential for Disturbance	Low.	
Risk	**Minor**	
Management Actions	At removal, all PCB materials must be placed in a strong, sealed polyethylene bag, which is then placed in a sound, sealable metal drum. An absorbent material should be packed around the PCB equipment to absorb any leaks. The drum should then be sealed and labelled as **"TOXIC - PCB waste".** **Refer to PCB removal section in appendices.**	
References (See Appendices)	**Refer to PCB removal section in appendices.**	

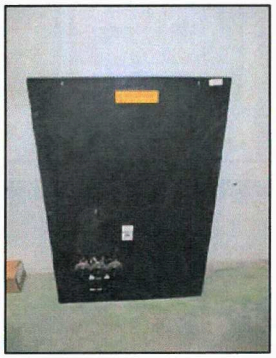
Removed, Sampled or Observed Materials Not Containing Asbestos, SMF, Lead Paint or PCBs

Item Description	Lab No.	Location		Comments
Electrical mounting board.	Observed.	Lift Motor Room. L7 Roof Penthouse. Levels G, 1, 2, 3, 4, 7 Tenancies.	 	Non-asbestiform.
Lift control cabinet.	Observed.	Lift Motor Room. L7 Roof Penthouse.		Lift Motors and controllers replaced 2006.
Panel within door.	AEC report 97477. QED: ID: 09511.	L7 Plantroom.		No asbestos detected.

Item Description	Lab No.	Location		Comments
RA Fan flexible connection.	ARL 14-1235-1.	L7 Plantroom.		No asbestos detected.
Sprayed vermiculite.	PB BL-0164. PB M001.	L7 Lift core ceiling. Underside of slab all floors.		No asbestos detected.
Fire hose reel gaskets – nylon.	Observed.	Fire hose reel cupboards – all floors.		Level 2 and basement appear to be a different material.
Fire hose reel gaskets.	ARL 14-1235-2.	Fire hose reel cupboards – all floors.		No asbestos detected.

Item Description	Lab No.	Location		Comments
Underside of sink membrane.	PB BL-0163.	Pantry all floors.		No asbestos detected.
Building mastic.	PB BL-0159.	Roof and balcony.		No asbestos detected.
Duct re-heats.	Observed.	All floors.		Air is re-heated via hot water coils.
Small fire hose reel gaskets – Fibrous.	ARL Lab No. 15-2520-1.	Fire hose reel cupboards – Basement and level 2.		No asbestos detected.

Item Description	Lab No.	Location		Comments
Panels within the lift car doors.	Greencap Lab Report No. 99935. QED: ID: 09125.	Lift car.		The interior of the lift car doors was inspected. The doors contain SMF insulation and a plasterboard panel to the outward facing side of the doors.
Electrical Mounting Boards. **REMOVED.**	(BL-0153 PB AEC Report 97477.)	(Level 7 AHU Plantroom, Electrical Cupboards on each floor)	 2015 2018	As advised by Knight Frank, all sub boards were replaced by the builders during a building upgrade in 2017. The main switch board was reported as removed previously, but this board is still present in the basement Transformer Room. There has been no access to the transformer room between 2017 and 2021 for previous hazardous materials inspections.
Electrical mounting board dust.	18-05571-1	Electrical mounting board cabinet level 6		No asbestos detected.

Item Description	Lab No.	Location		Comments
Flooring mastic/screed.	ARL Lab No: 20-06388. QED ID: 22337.	Level 7 Tenancy.		No asbestos detected.
Under sink membrane	Greencap SB28312 QED 06974	Level 7 kitchen		No asbestos detected
Electrical mounting boards	QED sample 09512 QED sample 06975 (2021) BL-0153 PB AEC Report 97477 Greencap SB28312 (2021)	Basement Transformer Room Electrical Cupboard	 	Boards were removed before the 2022 audit.

Appendix 1 - Laboratory Reports

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Accreditation No. 5450, Site No. 18611 Adelaide Laboratory.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.
The information for the entries in the top table, with the exception of date received and date analysed, is provided by the client. The results relate only to the samples tested and are for the sole use by the client.

GREENCAP
Going Further in Managing Risk

Greencap Pty Ltd
ABN: 76 006 317 607
12 Greenhill Road
Wayville SA 5034 Australia
T: 08 8299 9955

Asbestos Identification Report No: 43606

CLIENT:	QED Environmental Services	**ORDER NO:**	SB 28312
ATTENTION:	Sarah Bailey	**RECEIVED IN LAB:**	3 May 2021
SAMPLED BY:	As received	**DATE ANALYSED:**	5 May 2021
CLIENT CONTACT:	1300 400 733		

All sample analysis was performed using polarised light microscopy, including dispersion staining, in our Adelaide Laboratory by the method of Australian Standard AS 4964-2004 and supplementary work instruction in-house method LAB04 Asbestos Identification by PLM.

Client ID	Sample Size	Description	Asbestos	Organic Fibre
06974	20x20x2mm	Black bituminous fibrous layer	No	Yes
06975	5x3x2mm	Dark brown resin layer	Yes – Chrysotile	

N. Haliloff

Naciye Haliloff
Approved Identifier and Signatory

Please note that the results contained in this report relate only to the sample(s) submitted for testing. Sample Size and Descriptions are approximate only. Chrysotile is commonly known as white asbestos, Amosite is commonly known as brown asbestos and Crocidolite as blue asbestos. SMF (Synthetic Mineral Fibre) is commonly known as glass fibre. Organic Fibre includes natural fibres and synthetic organic fibre. A blank in the Organic Fibre or SMF column or the absence of an Organic Fibre or SMF column implies not detected.

Any and all services carried out by Greencap for the Client are subject to the Terms and Conditions listed on the Greencap website https://www.greencap.com.au/terms-conditions and are governed by our statements of limitation available at https://www.greencap.com.au/statements-limitation.

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ProMicro

LABORATORY REPORT

Job Number: 20-06388
Revision: 00
Date: 14 April 2020

ADDRESS: QED
PO Box 162
LEEDERVILLE WA 6903

ATTENTION: Aidan Donovan

DATE RECEIVED: 7/04/2020

YOUR REFERENCE: AD25273

PURCHASE ORDER: AD25273

NATA
WORLD RECOGNISED ACCREDITATION

APPROVALS:

Adam Green
Approved Identifier

Reagan Neal
Approved Signatory

SAMPLING COMMENTS:

Samples are analysed on an "as received" basis

METHOD REFERENCES:

Method ID	Method Description
ASBID	Qualitative identification of fibre type in bulk samples by Stereo Microscope Examination and Polarised Light Microscopy, including Dispersion Staining, using ARL in-house method ASBID and in accordance with AS4964-2004

REPORT COMMENTS:

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RESULTS:

Sample No	Sample Details	Sample Type	Sample Weight (Approx. g)	Asbestos in Bulk Sample
20-06388-1	22337	Screed	6.1	No Asbestos Detected

ARL GROUP
46-48 Banksia Road, Welshpool, Western Australia 6106
Telephone: 08 6253 4444 Facsimile: 08 6253 4440 www.arlgroup.com.au

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ARL
Analytical Reference Laboratory

ARL GROUP

ProMicro
Science with Ethics

LABORATORY REPORT

Job Number: 18-05571
Revision: 00
Date: 18 April 2018

ADDRESS: QED
PO Box 162
LEEDERVILLE WA 6903

ATTENTION: Elise Chiappalone

DATE RECEIVED: 12/04/2018

YOUR REFERENCE: EC19394

PURCHASE ORDER: EC19394

APPROVALS:

Adam Green
Approved Identifier

Reagan Neal
Approved Signatory

NATA
ACCREDITATION

SAMPLING COMMENTS:

This report is issued by Analytical Reference Laboratory (WA) Pty Ltd
Samples are analysed on an "as received" basis

METHOD:

ASBID — Qualitative identification of fibre type in bulk samples by Stereo Microscope Examination and Polarised Light Microscopy, including Dispersion Staining, using ARL in-house method ASBID and in accordance with AS4964-2004.

Sample Number	Sample Description	Sample Type	Approx. Sample Weight (g)	Asbestos in Bulk Sample
18-05571-1	27013	Debris	0.1	No Asbestos Detected Organic Fibres Detected
18-05571-2	27014	Cement	0.1	Chrysotile Asbestos Detected Amosite Asbestos Detected Crocidolite Asbestos Detected

REPORT COMMENTS:

ARL GROUP
46-48 Banksia Road, Welshpool, Western Australia 6106
Telephone: 08 6253 4444 Facsimile: 08 6253 4440 www.arlwa.com.au www.promicro.com.au

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NATA

ASBESTOS IDENTIFICATION REPORT No. 99935

CLIENT:	QED Environmental Services	**ORDER:**	DC15108
ATTENTION:	Dave Collins	**RECEIVED IN LAB:**	22 August 016
SAMPLED BY:	As received	**REPORT DATE:**	23 August 2016

Test Method: In house method LOP-002 Asbestos Identification by Polarised Light Microscopy including Dispersion Staining (Based on AS4964-2004 Method for the qualitative identification of asbestos in bulk samples)

Client ID	Description	Asbestos	Synthetic Mineral Fibre
09125	Pink fibrous mass	No	Yes

Approved Identifier and Signatory

N. Halliloff

Naciye Halliloff

Please note that the results contained in this report relate only to the sample(s) submitted for testing. Sample Dimensions (20x20x3mm) and Descriptions are approximate only. Chrysotile is commonly known as white asbestos, Amosite is commonly known as brown asbestos and Crocidolite as blue asbestos. SMF (Synthetic Mineral Fibre) is commonly known as glass fibre. Organic Fibre includes natural fibres and synthetic organic fibre and was not detected. A blank in the SMF column implies not detected.

SOF044 NATA ID Report V8 December 2015

Page 1 of 1

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T (08) 8299 9955 E adelaide@greencap.com.au W www.greencap.com.au ABN 76006318010

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ASBESTOS IDENTIFICATION REPORT No. 97477

CLIENT:	QED Environmental Services	**ORDER:**	DC13708
ATTENTION:	Dave Collins	**RECEIVED IN LAB:**	4 April 2016
SAMPLED BY:	As received	**REPORT DATE:**	6 April 2016

Test Method: In house method LOP-002 Asbestos Identification by Polarised Light Microscopy including Dispersion Staining (Based on AS4964-2004 Method for the qualitative identification of asbestos in bulk samples)

Client ID	Description	Asbestos	Organic Fibre
09511	White, mica- and vermiculite-containing, fibrous layer	No	Yes
09512	Dark brown resin board	Chrysotile	

Approved Identifier and Signatory

Michael Till

Please note that the results contained in this report relate only to the sample(s) submitted for testing. Sample Dimensions (both samples are 10x5x1mm) and Descriptions are approximate only. Chrysotile is commonly known as white asbestos, Amosite is commonly known as brown asbestos and Crocidolite as blue asbestos. SMF (Synthetic Mineral Fibre) is commonly known as glass fibre and was not detected. Organic Fibre includes natural fibres and synthetic organic fibre. A blank in the Organic Fibre column implies not detected.

SOF044 NATA ID Report V8 December 2015

Page 1 of 1

Greencap-NAA Pty Ltd 12 Greenhill Road Wayville SA 5034 PO Box 582 Unley SA 5061
T (08) 8299 9955 E adelaide@greencap.com.au W www.greencap.com.au ABN 76006318010

Analytical Reference Laboratory

LABORATORY REPORT

Job Number: 15-2520
Revision: 00
Date: 8 April 2015

ADDRESS: QED
PO Box 152
LEEDERVILLE WA 6903

ATTENTION: Elise Eldridge

DATE RECEIVED: 7/04/2015

YOUR REFERENCE: 11042

PURCHASE ORDER: EE11042

APPROVALS:

Adam Green
Approved Identifier

Reagan Neal
Approved Signatory

SAMPLING COMMENTS:

Samples are analysed on an "as received" basis

METHOD:

ASBID — Qualitative identification of fibre type in bulk samples by Stereo Microscope Examination and Polarised Light Microscopy, including Dispersion Staining, using ARL in-house method ASBID and in accordance with AS4964-2004.

Sample Number	Sample Description	Sample Type	Approximate Sample Weight (g)	Asbestos in Bulk Sample
15-2520-1	ID: 110421	Gasket	<0.1	No Asbestos Detected Organic Fibres Detected

REPORT COMMENTS:

Page 1 of 1

Analytical Reference Laboratory (WA) Pty. Ltd.
46-48 Banksia Road, Welshpool, Western Australia 6106. Telephone: 08 6253 4444. Facsimile: 08 6253 4440
www.arlwa.com.au ABN: 91 050 159 898

ARL Environmental and Analytical Laboratory

LABORATORY REPORT

Job Number: 14-1235
Revision: 00
Date: 26 February 2014

ADDRESS: **QED**
PO Box 162
Leederville WA 6903

ATTENTION: Joe Scholz

DATE RECEIVED: 25/02/2014

YOUR REFERENCE: IDW001

PURCHASE ORDER: 8670

APPROVALS:

Adam Green
Approved Identifier

Reagan Neal
Approved Signatory

NATA
WORLD RECOGNISED ACCREDITATION

SAMPLING COMMENTS:

Samples are analysed on an "as received" basis

METHOD:

ASBID — Qualitative determination of fibre type in bulk samples by Stereo Microscope Examination and Polarised Light Microscopy, including Dispersion Staining, using ARL in-house method ASBID.

Sample Number	Sample Description	Sample Type	Approximate Sample Weight (g)	Asbestos in Bulk Sample
14-1235-1	ID: 03527 L7. RA Fan. Flexible Connection	Woven Material	0.4	No Asbestos Detected Organic Fibres Detected
14-1235-2	ID: 03528 L6. Fire Reel Gasket	Gasket	0.1	No Asbestos Detected Organic Fibres Detected

REPORT COMMENTS:

Page 1 of 1

Analytical Reference Laboratory (WA) Pty. Ltd
46-48 Banksia Road, Welshpool, Western Australia 6106. Telephone: 08 6253 4444. Facsimile: 08 6253 4440
www.arlwa.com.au. ABN: 91 050 159 898

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email: laboratory@mpl.com.au
www.envirolabservices.com.au
Envirolab Services (WA) Pty Ltd ABN 53 140 099 207

CERTIFICATE OF ANALYSIS 146783

Client:
QED Environmental Services
PO Box 162
LEEDERVILLE
WA 6903

Attention: Joe

Sample log in details:

Your Reference:	**10 W001**
No. of samples:	1 Paint Sample
Date samples received:	21/02/14
Date completed instructions received:	21/02/14
Location:	

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	26/02/14
Date of Preliminary Report:	Not issued
Issue Date:	26/02/14

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

Results Approved By:

Todd Lee
Laboratory Manager

MPL Reference: 146783
Revision No: R 00

NATA ACCREDITED FOR TECHNICAL COMPETENCE

Client Reference: 10 W001

Lead in Paint Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	 146783-1 3526 20/02/2014 Paint
Lead in Paint	%	3.6

MPL Reference: 146783
Revision No: R 00

NATA ACCREDITED FOR TECHNICAL COMPETENCE

Client Reference: **10 W001**

Method ID	Methodology Summary
METALS-020	Metals in soil and water by ICP-OES.

MPL Reference: 146783
Revision No: R 00

NATA ACCREDITED FOR TECHNICAL COMPETENCE

Page 3 of 5

Client Reference: 10 W001

QUALITY CONTROL Lead in Paint	UNITS	PQL	METHOD	Blank
Lead in Paint	%	0.1	METALS-020	0.1

MPL Reference: 146783
Revision No: R 00

ACCREDITED FOR TECHNICAL COMPETENCE

Page 4 of 5

Client Reference: **10 W001**

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job
Airborne fibres were analysed by Approved Counter: Not applicable for this job

INS: Insufficient sample for this test; NT: Not tested; PQL: Practical Quantitation Limit; <: Less than; >: Greater than
RPD: Relative Percent Difference; NA: Test not required; LCS: Laboratory Control Sample;
NS: Not specified; NEPM: National Environmental Protection Measure
DOL: Sample rejected due to particulate overload

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however were analysed at a frequency to meet of exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD a matrix spike recoveries for the sample batch were within laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable
For VOCs in water samples, three vials are required for duplicate or spike analysis
Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spike and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics;
10-140% for SVOC and Speciated Phenols; and 40-120% for low level organics is acceptable.
Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and Speciated Phenols.
In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.
When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

MPL Reference: 146783
Revision No: R 00

ACCREDITED FOR TECHNICAL COMPETENCE

Analytical Report

Asbestos Fibre Identification

Job No :	**094573**
Client:	QED Environmental Services
Address:	PO Box 918 Victoria Park WA 6979
Contact:	Leonard Sharp
E-mail:	lsharp@qed.net.au
Fax:	9355 2166
Client Reference:	LSPON0933
Date Sampled:	6/21/2009
Date Received:	7/21/2009
Date Reported:	7/24/2009
Sampled By:	Client
Location:	10 William St
Test Method:	Qualitative identification of asbestos types in bulk samples by polarised light microscopy, including dispersion staining technique using MPL Laboratories Method WILAB 1. Accreditation does not cover the identification of Synthetic Mineral Fibres.

Approved Identifier
Lalanee Rupasinghe

Approved Signatory
Monika Bürger

This document is issued in accordance with NATA's accreditation requirements. AN: 2220

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Date Printed **7/24/2009** **Page 1 of 3**

Analytical Report

Job No : **094573**

Lab Id	External Idents	Sample Type	Dimensions	Result
094573-001	Roof Membrane	Fibrous Material	25x10x3mm	NAD(SMF)
094573-002	Unidentified fire door	Fibrous Material	20x10x3mm	NAD
094573-003	LMR Brakes	Fibre Board	20x10x2mm	NAD(SMF)
094573-004	Boiler gasket	Scrapings	10x3x2mm	NAD

Page 2 of 3
Date Printed **7/24/2009**

Analytical Report

Job No : **094573**

Report Comments

Key to results on previous pages:
NAD = No Asbestos Detected
Chrys = Chrysotile Asbestos Detected
Amos = Amosite Asbestos Detected
Croc = Crocidolite Asbestos Detected
SMF = Fibres Consistent with Synthetic Mineral Fibres
UMF = Unknown Mineral Fibres Detected
FIM = Fibrous Insulation Material
EMB = Electrical Mounting Board

Notes:
- If Unknown Mineral Fibres (UMF) are detected by polarised light microscopy including dispersion staining confirmation by another independent technique may be required.

- Bonded asbestos material may need to be disintergrated. This procedure can lead to difficulties isolating and identifying fibres and another independent analytical technique may be recommended.

- Asbestos found to be non- homogenous within samples is reported as "hand picked".

Result Comments

Date Printed **7/24/2009** **Page 3 of 3**

Reproduced from Parsons Brinkerhoff report dated 17 February 2005.

Original Lab certificates not available for samples re-printed in this report : PB BL0153, BL0159, BL0163, BL0164, BL0165

Lab certificate supplied for M001 following.

Table 4.1 Hazardous Materials Register and Report
Westpac Property No: 65083, 10 William Street, Perth, Western Australia

Priority	Hazard Group	Sample No.	Material	Item	Hazard Location	Status	Condition	Survey Date	Risk	Date Removed	Action required
P1		Visual Observation	UST	Redundant fuel oil storage tank	Not sighted 2004	Redundant	Good	08/11/2001			Decommission & Fill
Nil	Asbestos - A	Removed	Gasket	Asbestos hatch gasket & flue packing - Removed 18	Plant room boiler	Removed	Poor	21/08/1995	Low	21/08/1995	
Nil	Asbestos - A	Suspected	Millboard	Fire door cores	All fire doors replaced 2003	Removed	Good	01/12/2004	Low	30/12/2003	No action required
Nil	Asbestos - CH	BL-0166	Millboard	Within heater bank ductwork	Not sighted 2004	Removed	Poor	27/04/2002		27/04/2002	No action required
P2	Asbestos - CH	BL-0151	Brake Linings	Lift motor brakes (x2)	Lift motor room	Unsealed & Friable	Average	01/12/2004	Low		Leave and monitor condition
P2	Asbestos - CH	BL-0152	Fibre Cement	Arc shields to the lift control panel	Lift motor room	Unsealed & Friable	Average	01/12/2004	Low		Leave and monitor condition
P2	Asbestos - CH	BL-0158	Gasket	To old (decom-missioned) No. 1 Compressor	Not sighted 2004	,,	Unknown	01/12/2004		01/12/2004	No action required
P4	Asbestos - CH	BL-0165	Vinyl Tiles	Pale green floor covering	Western Power switch room, Basement	Sealed and Not Friable	Good	01/12/2004	Low		Leave and monitor condition
P4	Asbestos - CH	Refer BL-0153	Zelemite	Electrical mounting board	A/C Plant room	Sealed and Not Friable	Good	01/12/2004	Low		Leave and monitor condition
P4	Asbestos - CH	M004	Gasket	Boiler Inspection Gasket Flap	Plant Room	Sealed and Non friable	Good	01/12/2004	Low		Leave and maintain
P4	Asbestos - CH	BL-0153	Zelemite	Electrical mounting board	Western Power switch room, Basement	Sealed and Not Friable	Good	01/12/2004	Low		Leave and monitor condition

Priority	Hazard Group	Sample No.	Material	Item	Hazard Location	Status	Condition	Survey Date	Risk	Date Removed	Action required
P4	Asbestos - CH	Refer BL-0153	Zelemite	Electrical mounting board	Lift control panel in Lift motor room	Sealed and Not Friable	Good	01/12/2004	Low		Leave and monitor condition
Nil	Asbestos - NAD	BL-0156	Rope gasket	To Boiler	A/C Plant room	Sealed and Not Friable	Good	08/11/2001	Low		Leave and monitor condition
Nil	Asbestos - NAD	BL-0163	Membrane	Sound dampener	To underside of sink, Pantry, All levels	Sealed	Good	01/12/2004	Low		Leave and monitor condition
Nil	Asbestos - NAD	BL-0161	Insulation	Fire door core	A/C Plant room	Sealed and Not Friable	Good	01/12/2004	Low		No action required
Nil	Asbestos - NAD	BL-0160	Membrane	Water-proofing	Roof slab, Roof	Unsealed & Friable	Good	01/12/2004	Low		Leave and monitor condition
Nil	Asbestos - NAD	BL-0159	Mastic Sealant	Expansion joints	Parapet walls, Roof	Sealed and Not Friable	Average	01/12/2004	Medium		No action required
Nil	Asbestos - NAD	BL-0155	Woven Insulation	To trailing cables	Not sighted 2004	Sealed and Not Friable	Good	01/12/2004	Low		No action required
Nil	Asbestos - NAD	BL-0164	Insulation	Sprayed applied to underside of concrete slab	Concrete slab, All levels	Unsealed & Friable	Good	21/08/1995	Low		No action required
Nil	Asbestos - NAD	BL-0157	Gasket	To Boiler	A/C Plant room	Sealed and Not Friable	Good	08/11/2001	Low		Leave and monitor condition
Nil	Asbestos - NAD	M003	Gasket	Asbestos Flue Packing	Plant Room Boiler	Sealed and Non friable	Good	01/12/2004	Low		No action required
Nil	Asbestos - NAD	M002	Gasket	Asbestos Hatch gasket	Plant Room Boiler	Sealed and Non friable	Good	01/12/2004	Low		No action required
Nil	Asbestos - NAD	M001	Vermiculite	Spray on acoustic insulation	Roof level ceiling	Sealed and Non friable	Good	01/12/2004	Low		No action required
Nil	Non PCB's	Visual Observation	Capacitors Within Fluoro Light Fittings	Plessey, 3.5uF capacitors	Throughout office areas	Sealed	Good	01/12/2004	Low		No action required
P2	PCB's	Visual Observation	Capacitors Within Fluoro Light Fittings	Ducon, APD 265 CR, 6.5uF capacitors	A/C Plant room & Lift motor room	Sealed	Good	01/12/2004	Low		Leave and monitor condition

Parsons Brinckerhoff
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Email brisbane@pb.com.au

ABN 84 797 323 433
NCSI Certified Quality System ISO 9001

Certificate of Analysis

CLIENT:	Downer Engineering	JOB NO:	2121001A-65083
CLIENT ADDRESS:	PO Box 5139 Garden City VIC 3207	DATE RECEIVED:	3/12/2004
SAMPLED BY:	Parsons Brinckerhoff	DATE OF TEST:	24/12/2004
CONTACT:	Julian Bialecki		
LOCATION:	65083: William St Perth		

TEST METHOD: Qualitative identification of asbestos types in bulk samples at Parsons Brinckerhoff Queensland Laboratory by polarised light microscopy, including dispersion staining techniques using Parsons Brinckerhoff in-house method No.1 and N.A.T.A accreditation No.9607. N.A.T.A. does not accredit sampling.

Lab Number	Client ID	Sample Description	Sample Dimensions cm	Identification Type
M001	65083-01-0237	Vermiculite	1 x 1	NAD
M002	65083-02-0236	Gasket	1 x 1	NAD
M003	65083-03-0235	Gasket	1 x 4	NAD
M004	65083-04	Gasket	1 x 2	CH

National Association of Testing Authorities, Australia
NATA Endorsed Test Report
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LEGEND

NAD - No Asbestos Detected
CH - Chrysotile Asbestos Detected
A - Amosite Asbestos Detected
C - Crocidolite Asbestos Detected
UMF - Unknown Mineral Fibres Detected

Approved Identifier
Name: Alan Barker
Signature

Approved Signatory
Name: Alan Barker
Signature

AUTHORISATION DATE
24/12/2004

NB: If no asbestos is detected in vinyl tiles, mastics, sealants, epoxy resins and ore samples then confirmation by another independent analytical technique is advised due to the nature of the samples.

Page 1 of 1

Over a Century of Engineering Excellence

Parsons Brinckerhoff Australia Pty Limited ACN 078 004 798 and Parsons Brinckerhoff International (Australia) Pty Limited ACN 005 475 056 trading as Parsons Brinckerhoff ABN 84 797 323 433

Appendix 2 - Glossary of Terms

Accredited Laboratory: Means a testing laboratory accredited by the National Association of Testing Authorities (NATA) Australia

Asbestos: Includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, actinolite, and any of these minerals that has been chemically treated and/or altered.

ACM: Asbestos-containing material.

Asbestos Management Planner: Means a person employed to interpret survey results make hazard assessment, evaluation and selection of control options or develop an operation and maintenance plan.

Authorised Person: Means any person authorized by the employer and required by work duties to be present in regulated areas.

Code of Practice: A code of practice is a document prepared to provide practical guidance on how to comply with a general duty or specific duties under relevant health and safety laws.

Competent Person: Means a person who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure

Demolition: Means the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of products.

Disturbance: Means activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris.

Encapsulate: Means the application of any material onto any asbestos containing material to bridge or penetrate the material to prevent fibre release.

Enclosure: Means the permanent confinement of friable asbestos containing materials with an airtight barrier in an area not used or designed as an air plenum.

Fibre: Means a particulate form of asbestos, 5 micrometres or longer, with a length-to-diameter ratio of at least 3 to 1

Friable: Means material which is capable of being crumbled, pulverized or reduced to powder by hand pressure and which under normal use or maintenance, emits or can be expected to emit, asbestos fibres into the air

Hazard: A source of potential harm or a situation with a potential to cause loss

Hazard Identification: The process of recognizing that a hazard exists and defining its characteristics.

High efficiency particulate air (HEPA) filter: Means a filter capable of trapping and retaining at least 99.97 percent of all particles at least 0.3 micrometres or more in diameter.

Incident: Any unplanned event resulting in, or having a potential for injury, ill-health, damage or other loss.

Lead Paint: Paint containing greater that 0.1% lead by mass.

Likelihood: Used as a qualitative description of probability or frequency.

NAD (No Asbestos Detected): A common abbreviation reported when laboratory analysis for asbestos fibres has detected no asbestos fibres.

National Association of Testing Authorities (NATA) - the recognised national accreditation authority for analytical laboratories and testing service providers in Australia.

PCB (Polychlorinated Biphenyl): the common name for a family of chlorinated organic chemicals that contain many individual compounds with varying levels of toxicity.

Presumed: Taken for granted. Used when it is taken for granted that the item contains the nominated hazardous material. This presumption is based on the belief that the item is the same as another that has been tested and confirmed to contain the nominated hazardous material (e.g. one sheet lining the eaves has been sampled and confirmed to contain asbestos, the one next to it is presumed to contain asbestos) or, by visual observation, the item is determined to contain the hazardous material. Conversely, an item can be presumed *not to* contain a hazardous material. This may presumption is typically based on the belief that, due to the age and type of the material or building i.e. >2004, it should not contain asbestos.

Regulations: Regulations have the effect of spelling out specific requirements of the legislation. Regulations may prescribe minimum standards and have a general application, or define specific requirements related to a particular hazard or particular type of work. They may also allow licensing or granting of approvals and certificates etc.

Removal: Means all operations where ACM and/or PACM are taken out or stripped from structures or substrates, and includes demolition operations.

Renovation: Means the modifying of any existing structure, or portion thereof

Risk: The chance of something happening that will have an impact. It is measured in terms of consequences and likelihood

Risk Analysis: A systematic use of available information to determine how often specified events may occur and the magnitude of their consequences

Risk Assessment: The overall process of risk analysis and risk evaluation

Risk Evaluation: The process used to determine risk management priorities by comparing the level of risk against predetermined standards, target risk levels or other criteria

Suspected: Thought to be likely. Used when the item is likely to contain the nominated hazardous material because it appears to be similar to items that historically have been found to contain that material (e.g. the eaves appear to be similar to other buildings of a similar age, which have been confirmed to contain asbestos). All suspected hazardous materials must be treated as though they are hazardous unless sampling and analysis demonstrates otherwise.

Synthetic Mineral Fibre (SMF): a generic term used to collectively describe a number of amorphous (non-crystalline) fibrous materials including glassfibre, mineral wool and ceramic fibre.

Workplace: is a place where work is carried out for a business or undertaking and includes any place where a worker goes, or is likely to be, while at work.

Appendix 3 - Information on Asbestos and Hazardous Materials

Over the past 30 years, international health issues have arisen over building materials that contain asbestos, electrical equipment that contains pcb's, paint, water, or soil that contains lead, and radon, a naturally occurring gas that can seep into occupied buildings. Since a direct link exists between these substances and diseases, efforts have been initiated to abate the hazard of each particular substance.

In Australia, exposure of building occupants to pollutants, whether industrial or non-industrial falls within the requirements of occupational health and safety legislation that is set at State level.

Specific Items relating to commercial buildings

Buildings used for professional or commercial purposes are typically assessed for the presence of construction, operational and services-related generic substances (not all designated hazardous substances), such as: -

Asbestos;

Lead in paint;

Polychlorinated Biphenyl's (PCB's) in electrical fittings and,

Synthetic Mineral Fibre (SMF)

Asbestos (CAS Number 1332 – 21 – 4)

Asbestos is a generic term that applies to a group of impure hydrated silicate minerals which occur in various fibre forms, are incombustible and separable into filaments. Asbestos fibres belong to the mineral groups of amphibole (such as amosite*, crocidolite*, tremolite, anthophyllite, and actinolite) and serpentine (chrysotile*).

Amphibole asbestos includes various silicates of magnesium, iron, calcium and sodium. Its fibres are generally brittle and cannot be spun, but it is more resistant to heat than chrysotile asbestos. Chrysotile, which is commonly found if a product is asbestos-containing, is a magnesium silicate whose fibres are strong and flexible, and its longer fibres can be spun into thread for weaving, and is the most widely used form of asbestos.

The inherent properties of asbestos make it largely impervious to chemical corrosion and a poor conductor of electricity. The many ways to process asbestos, from crushing into tiny fibres to weaving into fabric, facilitates the use of asbestos into hundreds of products.

Chrysotile is the most frequently found in buildings, often known as *"white asbestos"*

Amosite is the second most frequently used in buildings, often known as *"brown asbestos"*

Crocidolite, used in high temperature insulation applications, often known as *"blue asbestos"*

These products vary greatly in the types and amounts of asbestos and binders that were used, and subsequently exhibit large differences in their physical integrity, particularly friability. Friability is the ability of the material to be broken down to dust.

After widespread use of asbestos over a 15 to 25 year span, a pattern of illnesses-specifically diseases of the lung-gradually began to occur in asbestos workers. It was determined that if ACM's were, or become friable, or capable of being crushed by hand pressure, fibres could be inhaled and cause diseases which disrupt the normal functioning of the lungs.

Currently the use of asbestos-containing materials in Commonwealth workplaces was prohibited on 31st December 2003, as part of an Australian wide ban.

Synthetic Mineral Fibres

Man-made mineral fibres that may occur in a commercial building are sourced from a subset known as man-made vitreous fibres (MMVF), which are fibres manufactured from glass, natural rock or other minerals, and termed collectively as synthetic mineral fibres (SMF's). While naturally occurring fibres are crystalline in structure, most synthetic mineral fibres are amorphous silicates. The amorphous networks of SMF's are composed of oxides of silicon, boron, aluminium, oxides of the alkaline earth and alkali metals, oxides of bivalent iron and manganese, or amphoteric oxides.

The main source of emissions of SMF's in a building (mainly glass fibres) is from thermal, acoustic, fireproofing and miscellaneous insulation. Although quantitative data are not available, emissions are probably highest shortly after installation or following any subsequent disturbances that may occur.

For respirable fibres, SafeWork Australia has adopted a TWA exposure standard, and a proposed secondary standard for non-respirable fibres.

Polychlorinated Biphenyls (CAS Number 53469-21 -9)

Are a class of chlorinated, aromatic compounds which have found widespread applications due to their outstanding physio-chemical characteristics, namely thermal stability, resistance to oxidation (non-flammability), and to acids, bases, and other chemical agents as well as their excellent dielectric properties.

These characteristics made PCB's ideal for use in electrical transformers and capacitors such as those found in light fixture ballasts. Other applications of PCB's included elevator hydraulic fluids, dye carriers) carbonless copy paper), and construction related materials such as paint, adhesives, and caulking compounds.

Even though the importing of PCB's was banned in 1976, they may still be present in building transformers and capacitors. Table (3)

The risk associated with PCB's occurs primarily in the case of leaks and fire, at which time contamination of air and surfaces can occur. Once PCB molecules are released in the environment, they tend to keep their integrity and not react with other substances.

If PCB's enter the body, they can remain there for a long period of time (sometimes years) stored in body fat and ultimately released into the blood stream.

PCB's can enter the body through inhalation or ingestion by skin contact and can create long term health effects by causing reproductive and gastric disorders and sometimes cancerous tumours. Short-term exposure to the vapour can result in irritation to the eyes, nose, and throat.

Lead

Until recently, Lead (a heavy, soft, malleable metal) has been used extensively in paint, utensils and pottery, plumbing pipes and fittings, and gasoline additives. Potential sources of lead exposure include lead –based paint, lead dust in the soil, air or drinking water, and lead materials in the workplace. Exposure can also occur from uncontrolled lead removal activities.

Lead poisoning effects range from sluggishness to death. Children, foetuses, and pregnant women are the most susceptible to poisoning. Lead poisoning effects in children include attention span deficiencies, development, reduced I.Q. scores, mental retardation, seizures, convulsions, coma, and even death. Small exposures over weeks or years can cause lead poisoning because it bioaccumulates, or builds up in the body tissues.

Appendix 4 - Asbestos and Hazardous Material Register Composition & Risk Assessment

The Workplace Registers

Since 1996, owners & employers have been required to record and maintain a "register" of Asbestos and Hazardous Materials in the workplace.

The statutory regulations requires the employer, main contractor, any self-employed person or the person having control of the workplace to identify each hazard, assess the risk of injury or harm to a person resulting from each hazard and consider the means by which the risk may be reduced.

Content

In keeping with the code at a minimum the register should contain five critical parameters, nominally:

- Location
- Identification
- Condition
- Risk Assessment
- Control Measures

Additionally there are three phases to an Asbestos materials workplace register: -

- Identification Phase
- Evaluation Phase
- Control Phase

Identification Phase

The identification phase is based on observations, findings, and substance samples, from a systematic inspection of the building structure, tenancy areas, plant rooms, services risers, lift motor rooms, ceiling spaces, car parking and basement areas, and general areas accessible through the supplied keying system.

Simplistically, the methodology involves a multi-step process:

- Retrieve and review building documentation (if available)
- Develop an investigation procedure
- Commence the building inspection, record findings and obtain samples
- Laboratory test and/or analyse samples

Identification and subsequent classification of substances is by visual examination and laboratory assessments from samples of substances that are, or may be, installed, used, produced or stored in the workplace.

Generally, samples are taken from “suspect” accessible fixtures, fittings and process products, specifically in the absence of local identification, MSD Sheets, labels and/or, on site registers.

Such samples are sent, under code, to independent laboratories for identification and, subsequently, are assessed, classified and recorded in the workplace register.

Evaluation Phase

The evaluation phase is based on observations from site and the analysis of samples reported from the independent NATA accredited laboratory.

In reviewing hazardous materials and asbestos, it is important to understand the terms ***hazard*** and ***risk***, which in everyday use are commonly used as synonyms, but not so in industrial hygiene, where the difference is significant.

A hazard is something or condition, which has the capability of producing adverse health or safety consequences to humans. The mere presence of the capability to harm is sufficient to classify a substance, action, or condition as a hazard or to describe such as Asbestos.

Risk is a statement, either quantitative, via statistical expression, or qualitative, via subjective expression, of the probability or likelihood that harm will actually occur.

For example, asbestos insulation in a building presents a hazard, but the risk is nil if no asbestos is released into the air.

Asbestos within Buildings is evaluated using the following;

- Existing condition
- Potential for disturbance
- Subsequent risk of exposure and risk to health

Existing Condition is assessed and rated 1 to 5 from Good to Poor.

Asbestos Condition Risk Assessment

5	**Poor:** Surface of material has extensive amounts of damage or deterioration and appears friable. Surface covering of material is heavily torn or in poor condition (paint heavily flaking, insulation is extensively torn). Surface shows amounts of visible fibres, dust and debris.
4	Fair to Poor
3	**Fair**: Surface of material shows moderate amounts of damage. Surface covering of material is torn or in moderately poor condition (small flakes of paint, thermal insulation is torn). Moderate amount of visible dust and debris.
2	Good to Fair
1	**Good**: Surface of material shows no visible amounts of damage or deterioration. Surface of material is covered and generally intact (painted, galvanised, coated with bitumen, thermal insulation is intact). Small amount of visible dust and debris.

Lead Paint Condition Risk Assessment

5	**Poor:** Lead dust or surface of material has extensive amounts of damage or in poor condition (paint heavily flaking, powdery or fragments of non-paint products).
4	Fair to Poor
3	**Fair**: Surface of material shows moderate amounts of damage (eg small flakes of paint, slightly powdery or fragments)
2	Good to Fair
1	**Good**: Surface of material shows no visible amounts of damage or deterioration. Surface of material is covered and generally intact.

SMF Condition Risk Assessment

5	**Poor:** Unbonded fibres, with surface covering material in very poor condition.
4	Fair to Poor
3	**Fair**: Surface of material shows moderate amounts of damage. Surface covering of material is torn or in moderately poor condition.
2	Good to Fair
1	**Good**: Surface of material shows no visible amounts of damage or deterioration. Surface of material is covered and generally intact.

PCBs Condition Risk Assessment

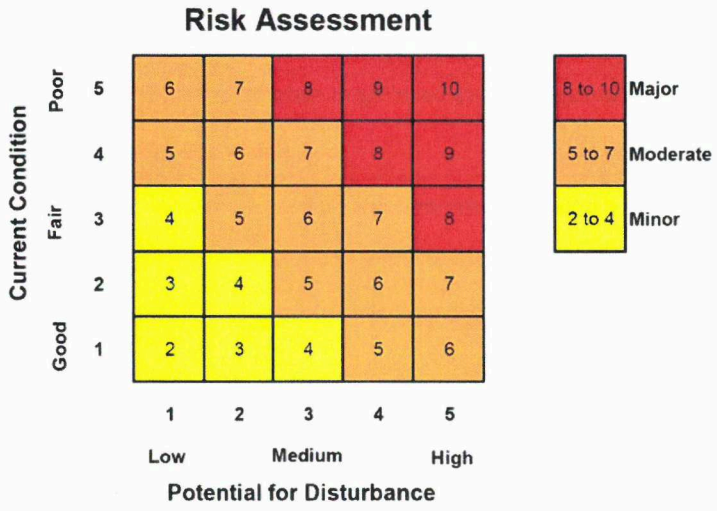
5	**Poor:** Visible oil (PCB) residue near the object or around welds or gaskets
4	Fair to Poor
3	**Fair**: Damage to the casing (dints, rust, damaged gaskets)
2	Good to Fair
1	**Good**: No damage to the casing or viable leaks

Potential for disturbance is then assessed based on influencing factors, such as:

Score 0 or 1 No = 0 Yes = 1	Typical Influencing Factors
	Accessible during normal operations? i.e. common areas, accessible without ladders or steps, area unsecured Maintenance activities on/or in area? i.e. regularly accessed and serviced, servicing requires use of electric tools Subjected to Mechanical Influences? i.e. vibration of machinery, involved with moving parts, within the HVAC air supply stream, subjected to mechanical exhaust Subjected to Environmental Influences? i.e. weathering, rainfall, surface runoff, wind, river and coastal influences No Current Management Plan (<1 year), Not labelled (Score 1 for not adequately managed, Score 0 for adequately managed)

Score ≤1	Low potential for disturbance
Score 3	Medium potential for disturbance
Score 5	High potential for disturbance

The inherent risk is then calculated using the risk assessment matrix.



The Code of Practice for the Management of Asbestos in Workplaces defines a required action that must be undertaken, dependent on the level of risk. They are:

For inherent risks rated at 2 to 4: The ACM are not friable and are in stable condition. Ensure that they remain clearly labelled and regularly inspect to ensure they are not deteriorating or otherwise contributing to an unacceptable health risk.

For inherent risks rated at 5 to 7: IMMEDIATE ACTION REQUIRED. The ACM are friable but are in a stable condition and are accessible. Serious consideration should be given to their removal. If removal is not immediately practicable, short-term control measures, such as sealing and enclosure, may be able to be used until removal is possible.

For inherent risks rated at 8 to 10: IMMEDIATE ACTION REQUIRED. The ACM are friable and not in a stable condition, and there is a risk to health from exposure. They should be removed by an appropriately licensed asbestos removalist as soon as is practicable.

When materials of unknown composition, or materials suspected of containing asbestos, are encountered, and are not listed in the Workplace Register, such materials should be treated as if they are asbestos until sample analysis confirms otherwise.

In the event that additional Asbestos materials are identified, a risk assessment should be conducted by an appropriately qualified and competent person, and the workplace register updated accordingly.

Control Phase

The "Hierarchy of Control Measures" is a list, in priority order, of control measures that may be employed to eliminate and/or reduce exposure to asbestos.

Notwithstanding elimination as the optimum solution, practical and cost-effective control measures may be "and/or" classified as follows: -

Classification	Description
A – Elimination	A permanent solution should be attempted in the first instance.
B – Substitution	Involves replacing the material with a product that presents a lower and/or no risk.
C – Isolation	Isolation involves separation of the material from people by distance or use of barriers /encapsulation to prevent exposure.
D – Engineering Controls	Involves some structural change to the work environment or work process to place a barrier to, or interrupt the transmission path between, the worker or environment and the Asbestos material aspect. i.e. isolation and/or enclosure and/or sealing of the Asbestos material.
E – Administrative (procedural) Controls	Reduce or eliminate exposure of individuals to the Asbestos materials, by adherence to procedures or instructions. The documentation should emphasize all the steps to be taken and the controls to be used in carrying out the task both safely and with minimum impact to the environment.
F – Personal Protective Equipment (PPE)	Relates only to hazards and their impact on personal safety risks. It is worn as a barrier between personnel and the Asbestos material. The success of this control procedure is dependent on the protective equipment selected, as well as fitted correctly and worn at all times when required.

Appendix 5 - Legislation Guidelines and Standards

Asbestos Legislation for each state

This section lists the relevant legislation for each state. The year of publication is not included as it is presumed that only the most current version will be used.

National

- National Occupational Health & Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition*, NOHSC: 3003 (2005), Canberra, April 2005
- SafeWork Australia, Workplace Exposure Standards for Airborne Contaminants

Safe Work Australia

- Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.
- Safe Work Australia, Code of Practice: How to Safely Remove Asbestos.

Western Australia – WorkSafe (1300 307 877)

- Work Health and Safety Act.
- Work Health and Safety Regulations.
- Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.
- Safe Work Australia, Code of Practice: How to Safely Remove Asbestos.

Victoria – WorkSafe (1800 136 089)

- Occupational Health and Safety Act (OHS Act).
- Occupational Health and Safety Regulations.
- WorkSafe Victoria, Compliance Code, Managing Asbestos in Workplaces.
- WorkSafe Victoria, Compliance Code, Removing Asbestos in Workplaces.

Australian Capital Territory – WorkSafe (13 22 81)

- Work Health and Safety Act.
- Dangerous Substances Act.
- Work Health and Safety Regulation.
- Dangerous Substances (General) Regulation.
- Work Health and Safety (How to Safely Remove Asbestos Code of Practice).
- Work Health and Safety (How to Manage and Control Asbestos in the Workplace Code of Practice).

New South Wales - SafeWork (13 10 50)

- SafeWork NSW, Work Health and Safety Act.
- SafeWork NSW, Work Health and Safety Regulations.
- SafeWork Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.
- SafeWork Australia, Code of Practice: How to Safely Remove Asbestos.

Queensland – WorkSafe (1300 362 128)

- Work Health and Safety Act 2011.
- Work Health and Safety Regulation 2011.
- Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.
- Safe Work Australia, Code of Practice: How to Safely Remove Asbestos.

South Australia - SafeWork SA (1300 365 255)

- Work Health and Safety Act.
- Work Health and Safety Regulations.
- Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.
- Safe Work Australia, Code of Practice: How to Safely Remove Asbestos.

Northern Territory – WorkSafe (1800 019 115)

- Work Health and Safety (National Uniform Legislation) Act.
- Work Health and Safety (National Uniform Legislation) Regulations.
- Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.
- Safe Work Australia, Code of Practice: How to Safely Remove Asbestos.

Tasmania – WorkSafe (1300 366 322)

- Work Health and Safety Act.
- Work Health and Safety Regulations.
- Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.
- Safe Work Australia, Code of Practice: How to Safely Remove Asbestos.

Other Hazardous Materials

National Occupational Health and Safety Commission's *List of Designated Hazardous Substances (NOHSC: 10005 - 1994); or*

National Code of Practice for the Safe Use of Synthetic Mineral Fibres [NOHSC: 2006(1990)].

National Code of Practice for the control and safe use of inorganic lead at work [NOHSC: 2015(1994)]

SafeWork Australia, Workplace Exposure Standards for Airborne Contaminants (2019)

AS/NZS 4361.2:2017 Guide to hazardous paint management Lead paint in residential, public and commercial buildings

Appendix 6 - Workplace Procedures

Safe Work Australia, Code of Practice: How to Manage and Control Asbestos in the Workplace.

WHS Appendix F—Example of asbestos-related work

Working with asbestos friction materials

There may be a risk of exposure to significant amounts of dust that contains asbestos fibres while removing and repairing brakes, clutches and high-temperature gaskets on motor vehicles.

If the following simple controls are applied carefully, it generally should not be necessary to carry out air monitoring in the workshop while servicing vehicle brakes, clutches and cylinder head/exhaust gaskets.

A HEPA filtered H-Class industrial vacuum cleaner should be certified by the manufacturer as fit for removal work and can be used to clean all asbestos dust from components and other parts in the immediate vicinity. It may be necessary to purchase or fabricate special hose nozzles to reach difficult areas to ensure components are effectively cleaned of asbestos. Any remaining dust needs to be removed with a wet rag.

A fine spray of water on the dust will dampen it and prevent it being dispersed. The component and parts in the immediate vicinity can then be wiped down with a wet rag. The rag can only be used once. It then needs to be placed in a heavy duty plastic (200 µm polyethylene) bag and into an appropriately labelled asbestos waste disposal bin. Any spillage onto the workshop floor needs to be wiped up and disposed of in the same way. It is important that only a gentle misting spray is used as a coarse spray will disperse the asbestos fibres into the air.

A respirator certified by the manufacturer as suitable for asbestos dust (for example, a P1 or P2 disposable respirator) needs to be worn during the above cleaning processes.

The use of high-pressure water spray and compressed air on asbestos or ACM is prohibited for asbestos-related work. Compressed air, water hoses and aerosol cans must not be used to clean asbestos dust off components in the open workshop as they will disperse large numbers of fibres into the air.

Personal decontamination should be carried out in accordance with the WHS Regulations and this Code.

Dedicated asbestos handling area

To minimise risks to other people, the area where asbestos components are cleaned and removed needs to be segregated and in a location where wind or cooling fans etc. will not disturb any dust. All workers must be provided with information and training on asbestos hazards, its presence and the safety procedures that must be followed.

For all removal:

- segregate the vehicle from surrounding work areas. Try to have at least three metres separation and avoid windy locations and cooling fans etc.
- use portable signs to indicate that asbestos removal is going on
- wear a P1 or P2 disposable respirator
- wear disposable coveralls, and
- carry out personal decontamination in accordance with the WHS Regulations and this Code.

Brake assembly repairs—vacuum method

- Use a HEPA filtered H-Class industrial vacuum cleaner to clean the wheel prior to undoing the wheel nuts.
- Remove the wheel and vacuum any remaining dust on the wheel.
- Vacuum all dust off the brake assembly.

- Use a wet rag to wipe down all parts and remove final traces of dust.
- Vacuum any extra dust that is exposed during disassembly.
- Place the component and rags etc. into a heavy duty plastic bag, tie it or seal it using adhesive (cloth or duct) tape and then place it into an appropriately labelled plastic-lined disposal bin or skip.
- Carry out personal decontamination in accordance with the WHS Regulations and this Code.

Brake assembly removal—wet method

- Place a tray or tape plastic sheeting on the floor under the removal area to catch spillage and assist in the clean-up.
- Use a saturated rag to wet down the wheel and wipe off dust prior to removing the wheel nuts.
- Remove the wheel and clean off any remaining dust with the wet rag.
- Use a saturated rag and gentle water mist to thoroughly damp down any dust on the brake assembly.
- Carry out personal decontamination in accordance with the WHS Regulations and this Code.

Brake disc pads

- Use a saturated rag to wipe off exposed dust and dust exposed during disassembly. Wipe up any spillage on the floor.
- Place the component and rags etc. into a heavy duty plastic bag, tie it or seal it using adhesive (cloth or duct) tape.
- The heavy duty plastic bag must be decontaminated before it is removed from the asbestos removal work area. It should immediately be double bagged and then placed into an appropriately labelled plastic-lined disposal bin or skip.
- Carry out personal decontamination in accordance with the WHS Regulations and this Code.

Clutch removal and repairs

- After separating the gearbox from the engine, vacuum/wet-wipe inside the bell housing and around the pressure plate.
- On removal of the pressure plate and clutch plate, vacuum/wet-wipe the flywheel, housing and components; place used rags and removed components in a heavy duty plastic bag and tie the bag or seal it using adhesive (cloth or duct) tape.
- Place this plastic bag into an appropriately labelled plastic-lined disposal bin or skip.
- Carry out personal decontamination in accordance with the WHS Regulations and this Code.

Cylinder head and exhaust gaskets

- If the gasket is damaged during separation of the components, wet it with water to control asbestos fibres.
- Keep the gasket wet and carefully remove it without using power tools.
- Wipe down the joint faces and the immediate area with a wet rag.
- Place the gasket and rag into a heavy duty plastic bag and tie it or seal it using adhesive (cloth or duct) tape.
- Place this plastic bag into an appropriately labelled plastic-lined disposal bin or skip.
- Carry out personal decontamination in accordance with the WHS Regulations and this Code.

Brake shoe and clutch linings

The process of removing asbestos-containing linings from brake shoes and clutch parts has the potential to release large quantities of asbestos fibres. All work involving power tools should be carried out within an enclosure that is fitted with an effective dust extraction and filtration system that will eliminate or minimise the release of airborne asbestos fibres. If components are to be hand-worked, carry out the following procedure.

- Undertake the work in a separate area away from other workers, preferably in a purpose-built enclosure.

- Thoroughly wet down the component to control dust/fibres.
- Wear PPE and RPE.
- Use local extraction to minimise the spread of dust/fibres.
- Control air monitoring must be carried out to determine respirable asbestos fibre exposure levels and the suitability of PPE.
- Clean up after removal with a HEPA filtered H-Class industrial vacuum cleaner and wet rag.
- Place waste asbestos into a heavy duty plastic bag and tie it or seal it using adhesive (cloth or duct) tape.
- Place this plastic bag into an appropriately labelled heavy plastic disposal bag, tie or seal it and place the bag into an appropriately labelled plastic-lined disposal bin or skip (see disposal section below).
- Used respirators and overalls should not be worn away from the removal work area and need to be disposed of in the same way as asbestos waste.
- Carry out personal decontamination t in accordance with the WHS Regulations and this Code.

WHS Appendix G—Recommended safe working practices

As a first priority, planning for the maintenance of asbestos at the workplace must include consideration of the removal of the asbestos, as removing the hazard will eliminate the risk of exposure to airborne asbestos. Where products containing asbestos are removed, they must be replaced with products that do not contain asbestos. Removal of asbestos products must be done in accordance with the Code of Practice: *How to safely remove asbestos*.

Below are some recommended safe working methods that demonstrate how control measures can be used when asbestos is present at the workplace:

– Safe work practice 1—Drilling of ACM

– Safe work practice 2—Sealing, painting, coating and cleaning of asbestos-cement products

– Safe work practice 3—Cleaning leaf litter from gutters of asbestos cement roofs

– Safe work practice 4—Replacing cabling in asbestos cement conduits or boxes

– Safe work practice 5—Working on electrical mounting boards (switchboards) containing asbestos

– Safe work practice 6—Inspection of asbestos friction materials.

Safe work practice 1—Drilling of ACM

Table 1 Safe work practice 1

	Safe work practice 1 – Drilling of ACM
	The drilling of asbestos cement sheeting or low density asbestos fibre board can release asbestos fibres into the atmosphere, so precautions must be taken to protect the drill operator and other persons from exposure to these fibres. A hand drill is preferred to a battery-powered drill, because the quantity of fibres is drastically reduced if a hand drill is used.
Equipment that may be required prior to starting work (in addition to what is needed for the task)	– A non-powered hand drill or a low-speed battery-powered drill or drilling equipment. Battery-powered drills should be fitted with a local exhaust ventilation (LEV) dust control hood wherever possible. If an LEV dust control hood cannot be attached then shadow vacuuming techniques should be used. If this is not possible, other dust control methods such as pastes and gels should be used. – Disposable cleaning rags – A bucket of water, or more as appropriate, and/or a misting spray bottle – Adhesive (cloth or duct) tape – Sealant – Spare PPE – A thickened substance such as wallpaper paste, shaving cream or hair gel – Heavy duty plastic (200 µm polyethylene) sheeting – A suitable asbestos waste container (e.g. heavy duty plastic bags or a drum, bin or skip lined with heavy duty plastic sheeting) – Warning signs and/or PVC barrier tape – A HEPA filtered H-Class industrial vacuum cleaner – A sturdy paper, foam or thin metal cup, or similar (for work on overhead surfaces only)
PPE	– Protective clothing and RPE (see AS/NZS 1715:2009: *Selection, use and maintenance of respiratory protective equipment* and AS/NZS 1716:2012: *Respiratory protective devices*). It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed.
Preparing the asbestos work area	– If the work is to be carried out at height, appropriate precautions must be taken to prevent falls. – Ensure appropriately labelled heavy duty plastic asbestos waste disposal bags are available. – Carry out the work with as few people present as possible. – Segregate the asbestos work area to ensure unauthorised personnel are restricted from entry (e.g. close door and/or use warning signs and/or barrier tape at all entry points). The distance for segregation should be determined by a risk assessment. – If drilling a roof from outside, segregate the area below.

	Safe work practice 1 – Drilling of ACM
	– If access is available to the rear of the asbestos cement, segregate this area as well as above. – If possible, use heavy-duty plastic sheeting, secured with adhesive (cloth or duct) tape, to cover any surface within the asbestos work area that could become contaminated. – Ensure there is adequate lighting. – Avoid working in windy environments where asbestos fibres can be redistributed. – If using a bucket of water, do not resoak used rags in the bucket, as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.
Drilling vertical surfaces	– Tape both the point to be drilled and the exit point, if accessible, with a strong adhesive (cloth or duct) tape to prevent the edges crumbling. – If possible, use local exhaust ventilation or shadow vacuuming techniques to capture the small amounts of debris created during drilling. If this is not possible, cover the drill entry and exit points (if accessible) on the asbestos with a generous amount of thickened substance. – Drill through the tape. – Use damp rags to clean off paste (if used) and debris from the wall and drill bit. – Dispose of the rags as asbestos waste as they will contain asbestos dust and fibres. – Seal the cut edges with sealant. – If a cable is to be passed through, insert a sleeve to protect the inner edge of the hole.
Drilling overhead horizontal surfaces	– Mark the point to be drilled. – Drill a hole through the bottom of the cup. – Fill or line the inside of the cup with shaving cream, gel or a similar thickened substance. – Put the drill bit through the hole in the cup so that the cup encloses the drill bit, and make sure the drill bit extends beyond the lip of the cup. – Align the drill bit with the marked point. – Ensure the cup is firmly held against the surface to be drilled. – Drill through the surface. – Remove the drill bit from the cup, ensuring that the cup remains firmly against the surface. – Remove the cup from the surface. – Use damp rags to clean off the paste and debris from the drill bit. – Dispose of the rags as asbestos waste, as they will contain asbestos dust and fibres. – Seal the cut edges with sealant. – If a cable is to be passed through, insert a sleeve to protect the inner edge of the hole.

	Safe work practice 1 – Drilling of ACM
Decontaminating the asbestos work area and equipment	– Use damp rags to clean the equipment. – Carefully roll or fold any plastic sheeting used to cover any surface within the asbestos work area, so as not to spill any dust or debris that has been collected. – If necessary, use damp rags and/or a HEPA filtered H-Class industrial vacuum cleaner to clean any remaining visibly contaminated sections of the asbestos work area. – Place debris, used rags, plastic sheeting and other waste in appropriately labelled heavy duty plastic asbestos waste disposal bags or wrap it in a double layer of heavy duty plastic which is then sealed using adhesive (cloth or duct) tape and appropriately labelled as asbestos waste. – Wet wipe the external surfaces of the asbestos waste disposal bags or wrapping to remove any adhering dust before they are removed from the asbestos work area.
Personal decontamination should be carried out in a designated area	– If disposable coveralls are worn, clean the coveralls while still wearing RPE using a HEPA filtered H-Class industrial vacuum cleaner, damp rag or fine-water spray. RPE can be cleaned with a wet rag or cloth. – While still wearing RPE, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into appropriately labelled asbestos waste disposal bags or wrap them in a double layer of heavy duty plastic which is then sealed using adhesive (cloth or duct) tape and appropriately labelled as asbestos waste. – Remove RPE. If non-disposable, inspect it to ensure it is free from contamination, clean it with a wet rag and store in a clean container. If disposable, cleaning is not required but RPE should be placed in an appropriately labelled heavy duty plastic asbestos waste disposal bag or wrap it in a double layer of heavy duty plastic which is then sealed using adhesive (cloth or duct) tape and appropriately labelled as asbestos waste. Refer to the Code of Practice: *How to safely remove asbestos* for more information.
Clearance procedure	– Visually inspect the asbestos work area to make sure it has been properly cleaned. – Clearance air monitoring is not normally required for this task. – Ensure asbestos waste is transported and disposed of in accordance with the relevant state or territory Environment Protection Authority (EPA) requirements at a site licensed by the EPA. Refer to the Code of Practice: *How to safely remove asbestos* for more information.

Safe work practice 2—Sealing, painting, coating and cleaning of asbestos cement products

Table 2 Safe work practice 2

Safe work practice 2 – Sealing, painting, coating and cleaning of asbestos cement products	
These tasks should only to be carried out on asbestos cement products that are in good condition. For this reason, the ACM should be thoroughly inspected before starting the work. There is a risk to health if the surface of asbestos cement sheeting is disturbed (e.g. from hail storms and cyclones) or if it has deteriorated as a result of aggressive environmental factors such as pollution. If it is so weathered that its surface is cracked or broken, the asbestos-cement matrix may be eroded, increasing the likelihood that asbestos fibres will be released. **If treatment is considered essential, a method that does not disturb the matrix should be used. Under no circumstances should asbestos-cement products be water blasted or dry sanded in preparation for painting, coating or sealing.**	
Equipment that may be required prior to starting work (in addition to what is needed for the task)	– Disposable cleaning rags – A bucket of water, or more as appropriate, and/or a misting spray bottle – Sealant – Spare PPE – Heavy duty plastic (200 µm polyethylene) sheeting – A suitable asbestos waste container (e.g. heavy duty plastic bags or a drum, bin or skip lined with heavy duty plastic sheeting) – Warning signs and/or PVC barrier tape.
PPE	– Protective clothing and RPE (see AS/NZS 1715:2009: *Selection, use and maintenance of respiratory protective equipment* and AS/NZS 1716:2012: *Respiratory protective devices*). It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed. Where paint is to be applied, appropriate respiratory protection to control the paint vapours/mist must also be considered.
Preparing the asbestos work area	– If work is being carried out at height, precautions must be taken to prevent falls. – Before starting, assess the asbestos-cement for damage. – Ensure appropriately marked asbestos waste disposal bags are available. – Carry out the work with as few people present as possible. – Segregate the asbestos work area to ensure unauthorised personnel are restricted from entry (e.g. close door and/or use warning signs and/or barrier tape at all entry points). The distance for segregation should be determined by a risk assessment. – If working at height, segregate the area below. – If possible, use heavy duty plastic sheeting secured with adhesive (cloth or duct) tape to cover any floor surface within the asbestos work area which could become contaminated. This will help to contain any runoff from wet sanding methods. – Ensure there is adequate lighting. – If using a bucket of water, do not resoak used rags in the bucket, as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.

Safe work practice 2 – Sealing, painting, coating and cleaning of asbestos cement products	
	– Never use high-pressure water cleaning methods. – Never prepare surfaces using dry sanding methods. Where sanding is required, you should consider removing the asbestos and replacing it with a non-asbestos product. – Wet sanding methods may be used to prepare the asbestos, provided precautions are taken to ensure all the runoff is captured and filtered, where possible. – Wipe dusty surfaces with a damp cloth.
Painting and sealing	– When using a spray brush, never use a high-pressure spray to apply the paint. – When using a roller, use it lightly to avoid abrasion or other damage.
Decontaminating the asbestos work area and equipment	– Use damp rags to clean the equipment. – If required, use damp rags and/or a HEPA filtered H-Class industrial vacuum cleaner to clean the asbestos work area. – Place debris, used rags, plastic sheeting and other waste in appropriately labelled heavy duty plastic asbestos waste disposal bags or wrap it in a double layer of heavy duty plastic which is then sealed using adhesive (cloth or duct) tape and appropriately labelled as asbestos waste. – Wet wipe the external surfaces of the asbestos waste bags/container to remove any adhering dust before they are removed from the asbestos work area.
Personal decontamination should be carried out in a designated area	– If disposable coveralls are worn, clean the coveralls while still wearing RPE using a HEPA filtered H-Class industrial vacuum cleaner, damp rag or fine-water spray. RPE can be cleaned with a wet rag or cloth. – While still wearing RPE, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into appropriately labelled heavy duty plastic asbestos waste disposal bags or wrap them in a double layer of heavy duty plastic which is then sealed using adhesive (cloth or duct) tape and appropriately labelled as asbestos waste. – Remove RPE. If non-disposable, inspect it to ensure it is free from contamination, clean it with a wet rag and store in a clean container. If disposable, cleaning is not required but RPE should be placed in an appropriately labelled heavy duty plastic asbestos waste disposal bag or wrapped in a double layer of heavy duty plastic which is then sealed using adhesive (cloth or duct) tape and appropriately labelled as asbestos waste. Refer to the Code of Practice: *How to safely remove asbestos* for more information.
Clearance procedure	– Visually inspect the asbestos work area to make sure it has been properly cleaned. – Clearance air monitoring is not normally required for this task. – Ensure asbestos waste is transported and disposed of in accordance with the relevant state or territory Environment Protection Authority (EPA) requirements at a site licensed by the EPA Refer to the Code of Practice: *How to safely remove asbestos* for more information.

Safe work practice 3—Cleaning leaf litter from gutters of asbestos cement roofs

Table 5 Safe work practice 3

Safe work practice 3 – Cleaning leaf litter from gutters of asbestos cement roofs	
Equipment that may be required prior to starting work (in addition to what is needed for the task)	– A bucket of water, or more as appropriate, and detergent – A watering can or garden sprayer – A hand trowel or scoop – Disposable cleaning rags – Heavy-duty plastic (200 µm polyethylene) sheeting – A suitable asbestos waste container (e.g. heavy-duty plastic bags or a drum, bin or skip lined with heavy-duty plastic sheeting) – Warning signs and/or barrier tape – A HEPA filtered H-Class industrial vacuum cleaner.
PPE	– Protective clothing and RPE (see AS/NZS 1715:2009: *Selection, use and maintenance of respiratory protective equipment* and AS/NZS 1716:2012: *Respiratory protective devices*). It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed.
Preparing the asbestos work area	– Since the work is to be carried out at height, appropriate precautions must be taken to prevent the risk of falls. – Ensure appropriately marked asbestos waste disposal containers are available. – Segregate the asbestos work area to ensure unauthorised personnel are restricted from entry (e.g. use warning signs and/or barrier tape at all entry points). The distance for segregation should be determined by a risk assessment. – Segregate the area below. – Avoid working in windy environments where asbestos fibres can be redistributed. – If using a bucket of water, do not resoak used rags in the bucket as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.
Gutter cleaning	– Disconnect or re-route the downpipes to prevent any entry of contaminated water into the waste water system and ensure there is a suitable container to collect contaminated runoff. Contaminated water must be disposed of as asbestos waste. – Mix the water and detergent. – Using the watering can or garden sprayer, pour the water and detergent mixture into the gutter but avoid over-wetting as this will create a slurry. – Remove the debris using a scoop or trowel. Do not allow debris or slurry to enter the water system. – Wet the debris again if dry material is uncovered. – Place the removed debris straight into appropriately labelled heavy duty plastic asbestos waste disposal bags or wrap it in a double layer of heavy duty plastic which is then sealed using duct tape and appropriately labelled as asbestos waste.

Safe work practice 3 – Cleaning leaf litter from gutters of asbestos cement roofs	
Decontaminating the asbestos work area and equipment	– Use damp rags to wipe down all equipment used. – Use damp rags to wipe down the guttering. – Where practicable, and if necessary, use a HEPA filtered H-Class industrial vacuum cleaner to vacuum the area below. – Place debris, used rags and other waste in appropriately labelled heavy duty plastic asbestos waste disposal bags or wrap it in a double layer of heavy duty plastic which is then sealed using duct tape and appropriately labelled as asbestos waste. – Wet wipe the external surfaces of the asbestos waste container to remove any adhering dust before it is removed from the asbestos work area.
Personal decontamination should be carried out in a designated area	– If disposable coveralls are worn, clean the coveralls while still wearing RPE using a HEPA filtered H-Class industrial vacuum cleaner, damp rag or fine-water spray. RPE can be cleaned with a wet rag or cloth. – While still wearing RPE, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into appropriately labelled heavy duty plastic asbestos waste disposal bags or wrap them in a double layer of heavy duty plastic which is then sealed using duct tape and appropriately labelled as asbestos waste. – Remove RPE. If non-disposable, inspect it to ensure it is free from contamination, clean it with a wet rag and store in a clean container. If disposable, cleaning is not required but RPE should be placed in appropriately labelled heavy duty plastic asbestos waste disposal bags or wrapped in a double layer of heavy duty plastic which is then sealed using duct tape and appropriately labelled as asbestos waste. Refer to the Code of Practice: *How to safely remove asbestos* for more information.
Clearance procedure	– Visually inspect the asbestos work area to make sure it has been properly cleaned. – Clearance air monitoring is not normally required for this task. – Ensure asbestos waste is transported and disposed of in accordance with the relevant state or territory Environment Protection Authority (EPA) requirements at a site licensed by the EPA. Refer to the Code of Practice: *How to safely remove asbestos* for more information.

Safe work practice 4—Replacing cabling in asbestos cement conduits or boxes

Table 3 Safe work practice 4

Safe work practice 4 – Replace cabling in asbestos cement conduits or boxes	
Equipment that may be required prior to starting the work (in addition to what is required for the task)	– Disposable cleaning rags – A bucket of water, or more as appropriate, and/or a misting spray bottle – Heavy duty plastic (200 µm polyethylene) sheeting – Cable slipping compound – Appropriately labelled heavy duty plastic asbestos waste disposal bags – Spare PPE – Duct tape – Warning signs and/or barrier tape – A HEPA filtered H-Class industrial vacuum cleaner
PPE	– Protective clothing and RPE (see AS/NZS 1715:2009: *Selection, use and maintenance of respiratory protective equipment* and AS/NZS 1716:2012: *Respiratory protective devices*). It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed.
Preparing the asbestos work area	– If the work will be carried out in a confined space, appropriate precautions must be taken to prevent the risk of asphyxiation. Refer to the Code of Practice: *Confined Spaces* for more information. – Ensure appropriately marked asbestos waste disposal bags are available. – Carry out the work with as few people present as possible. – Segregate the asbestos work area to ensure unauthorised personnel are restricted from entry (e.g. use warning signs and/or barrier tape at all entry points). The distance for segregation should be determined by a risk assessment. – Use heavy duty plastic sheeting secured with duct tape to cover any surface within the asbestos work area which could become contaminated. – Place plastic sheeting below any conduits before pulling any cables through. – Ensure there is adequate lighting. – Avoid working in windy environments where asbestos fibres can be redistributed. – If using a bucket of water, do not resoak used rags in the bucket as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.
Replacement or installation of cables	– Wet down the equipment and apply adequate cable slipping compound to the conduits/ducts throughout the process. – Clean all ropes, rods or snakes used to pull cables after use. Cleaning should be undertaken close to the point(s) where the cables exit from the conduits/ducts. – Ropes used for cable pulling should have a smooth surface that can easily be cleaned. – Do not use metal stockings when pulling cables through asbestos-cement conduits.

Safe work practice 4 – Replace cabling in asbestos cement conduits or boxes	
	– Do not use compressed air darts to pull cables through asbestos-cement conduits/ducts.
Decontaminating the asbestos work area and equipment	– Use damp rags to clean the equipment. – Wet wipe around the end of the conduit, sections of exposed cable and the pulling eye at the completion of the cable pulling operation. – If the rope or cable passes through any rollers, these must also be wet wiped after use. – Wet wipe the external surface of excess cable pulled through the conduit/duct, as close as possible to the exit point from the conduit, before it is removed from the work site. – Carefully roll or fold any plastic sheeting used to cover any surface within the asbestos work area, so as not to spill any dust or debris that has been collected. – If required, use damp rags or a HEPA filtered H-Class industrial vacuum cleaner to clean any remaining visibly contaminated sections of the asbestos work area. – Place all debris, used rags, plastic sheeting and other waste in appropriately labelled heavy-duty plastic asbestos waste disposal bags or wrap it in a double layer of heavy-duty plastic which is then sealed using duct tape and appropriately labelled as asbestos waste. – Wet wipe the external surfaces of the asbestos waste bags/container to remove any adhering dust before they are removed from the asbestos work area.
Personal decontamination should be carried out in a designated area	– If disposable coveralls are worn, clean the coveralls while still wearing RPE using a HEPA filtered H-Class industrial vacuum cleaner, damp rag or fine-water spray. RPE can be cleaned with a wet rag or cloth. – While still wearing RPE, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into an appropriately labelled asbestos waste disposal bag or wrap them in a double layer of heavy-duty plastic which is then sealed using duct tape and appropriately labelled as asbestos waste. – Remove RPE. If non-disposable, inspect it to ensure it is free from contamination, clean it with a wet rag and store in a clean container. If disposable, cleaning is not required but RPE should be placed in appropriately labelled heavy duty plastic asbestos waste disposal bags or wrapped in a double layer of heavy duty plastic which is then sealed using duct tape and appropriately labelled as asbestos waste. Refer to the Code of Practice: *How to safely remove asbestos* for more information.
Clearance procedure	– Visually inspect the asbestos work area to make sure it has been properly cleaned. – Clearance air monitoring is not normally required for this task. – Ensure asbestos waste is transported and disposed of in accordance with the relevant state or territory Environment Protection Authority (EPA) requirements at a site licensed by the EPA. Refer to the Code of Practice: *How to safely remove asbestos* for more information.

Safe work practice 5—Working on electrical mounting boards (switchboards) containing asbestos

Table 4 Safe work practice 5

Safe work practice 5 –Working on electrical mounting boards containing asbestos	
If the asbestos-containing electrical mounting panel has to be removed for work behind the board, the procedures outlined in the Code of Practice: How to Safely Remove Asbestos must be followed. If drilling is required, the control process should be consistent with the measures in Safe Work Practice 1.	
Equipment that may be required prior to starting the work (in addition to what is required for the task)	– A non-powered hand drill or a low-speed battery-powered drill or drilling equipment. Battery-powered drills should be fitted with a LEV dust control hood wherever possible. If a LEV dust control hood cannot be attached then shadow vacuuming techniques should be used. If this is not possible other dust control methods, such as pastes and gels, should be used – Adhesive (cloth or duct) tape – Warning signs and/or barrier tape – Disposable cleaning rags – A plastic bucket of water and/or a misting spray bottle – Spare PPE – A suitable asbestos waste container (e.g. heavy duty plastic (200 µm polyethylene) bags or a drum, bin or skip lined with heavy duty plastic sheeting) – Heavy duty plastic sheeting – A HEPA filtered H-Class industrial vacuum cleaner
PPE	– Protective clothing and RPE (see AS/NZS 1715:2009: *Selection, use and maintenance of respiratory protective equipment* and AS/NZS 1716:2012: *Respiratory protective devices*). It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed.
Preparing the asbestos work area	– As the work area will involve electrical hazards, precautions must be taken to prevent electrocution. – Ensure appropriately marked asbestos waste disposal bags are available. – Carry out the work with as few people present as possible. – Segregate the asbestos work area to ensure unauthorised personnel are restricted from entry (e.g. use warning signs and/or barrier tape at all entry points). The distance for segregation should be determined by a risk assessment. – Use heavy duty plastic sheeting secured with duct tape to cover any surface within the asbestos work area which could become contaminated. – Ensure there is adequate lighting. – Avoid working in windy environments where asbestos fibres can be redistributed. – If using a bucket of water, do not resoak used rags in the bucket as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.

Safe work practice 5 –Working on electrical mounting boards containing asbestos	
Work on electrical mounting panels	– Providing the panel is not friable, maintenance and service work may include: replacing asbestos-containing equipment on the electrical panel with non-asbestos equipment operate main switches and individual circuit devices pull/insert service and circuit fuses bridge supplies at meter bases use testing equipment access the neutral link install new components/equipment.
Decontaminating the asbestos work area and equipment	– Use damp rags to clean the equipment. – Carefully roll or fold any plastic sheeting used to cover any surface within the asbestos work area so as not to spill any dust or debris that has been collected. – If there is an electrical hazard, use a HEPA filtered H-Class industrial vacuum cleaner to remove any dust from the mounting panel and other visibly contaminated sections of the asbestos work area. – If there is no electrical hazard, wet wipe with a damp rag to remove minor amounts of dust. – Place debris, used rags, plastic sheeting and other waste in appropriately labelled heavy duty plastic asbestos waste disposal bags or wrap it in a double layer of heavy duty plastic which is then sealed using adhesive (cloth or duct) tape and appropriately labelled as asbestos waste. – Wet wipe the external surfaces of the asbestos waste bags/container to remove any adhering dust before they are removed from the asbestos work area.
Personal decontamination should be carried out in a designated area	– If disposable coveralls are worn, clean the coveralls while still wearing RPE using a HEPA filtered H-Class industrial vacuum cleaner, damp rag or fine-water spray. RPE can be cleaned with a wet rag or cloth. – While still wearing RPE, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into an appropriately labelled asbestos waste bag or wrap them in a double layer of heavy-duty plastic which is then sealed using adhesive (cloth or duct) tape and appropriately labelled as asbestos waste. – Remove RPE. If non-disposable, inspect it to ensure it is free from contamination, clean it with a wet rag and store in a clean container. If disposable, cleaning is not required but RPE should be placed in appropriately labelled heavy duty plastic asbestos waste disposal bags or wrapped in a double layer of heavy duty plastic which is then sealed using adhesive (cloth or duct) tape and appropriately labelled as asbestos waste. Refer to the Code of Practice: *How to safely remove asbestos* for more information.
Clearance procedure	– Visually inspect the asbestos work area to make sure it has been properly cleaned. – Clearance air monitoring is not normally required for this task.

Safe work practice 5 –Working on electrical mounting boards containing asbestos	
	– Dispose of all waste as asbestos waste. Ensure asbestos waste is transported and disposed of in accordance with the relevant state or territory Environment Protection Authority (EPA) requirements at a site licensed by the EPA Refer to the Code of Practice: *How to safely remove asbestos* for more information.

Safe work practice 6—Inspection of asbestos friction materials

Table 5 Safe work practice 6

Safe work practice 6 – Inspection of asbestos friction materials	
This guide may be used when friction ACM (e.g. brake assemblies or clutch housings) need to be inspected or housings need to be cleaned. Compressed air must not be used to clean dust from a brake assembly.	
Equipment that may be required prior to starting the work (in addition to what is required for the task)	– A misting spray bottle – Adhesive (cloth or duct) tape – Warning signs and/or barrier tape – Disposable cleaning rags – A bucket of water and detergent – Spare PPE – A suitable asbestos waste container – A catch tray or similar container (e.g. heavy duty plastic (200 µm polyethylene) bags or a drum, bin or skip lined with heavy duty plastic sheeting) – A HEPA filtered H-Class industrial vacuum cleaner.
PPE	– Protective clothing and RPE (see AS/NZS 1715:2009: *Selection, use and maintenance of respiratory protective equipment* and AS/NZS 1716:2012: *Respiratory protective devices*). It is likely that a class P1 or P2 half face respirator will be adequate for this task, provided the recommended safe work procedure is followed.
Preparing the asbestos work area	– Ensure appropriately marked asbestos waste disposal bags are available. – Carry out the work with as few people present as possible. – Determine whether to segregate the asbestos work area – Ensure unauthorised personnel are restricted from entry by using barrier tape and/or warning signs. – Place a catch tray or similar container below where the work will be carried out to collect any debris/ runoff. – Ensure there is adequate lighting. – Avoid working in windy environments where asbestos fibres can be redistributed. – If using a bucket of water, do not resoak used rags in the bucket as this will contaminate the water. Instead, either fold the rag so a clean surface is exposed or use another rag.
Inspection of asbestos friction materials	– A misting spray bottle should be used to wet down any dust. If spray equipment disturbs asbestos, use alternative wetting agents e.g. a water-miscible degreaser or a water/detergent mixture. – Use the wet method, but if this is not possible the dry method may then be used. Wet method: – Use the misting spray bottle to wet down any visible dust.

Safe work practice 6 – Inspection of asbestos friction materials	
	– Use a damp rag to wipe down the wheel or automobile part before removal. Ensure the dust is kept wet to prevent atmospheric contamination. – Use hand tools rather than power tools to reduce the generation of airborne fibres. – Partially open the housing and softly spray the inside with water using the misting spray bottle. Any spillage of dust, debris or water must be controlled (e.g. capturing any runoff in a catch tray or similar container) and either filtered or disposed of as asbestos waste. – Open the housing and clean all asbestos parts using a damp rag, ensuring all runoff water is caught in an appropriately labelled asbestos waste container. Dry method: – Place a catch tray or similar container under the components to catch dust or debris spilling from the housing or components during the inspection, and dispose of any material as asbestos waste. – Use a HEPA filtered H-Class industrial vacuum cleaner to remove asbestos from the brakes and rims or other materials before carrying out the inspection.
Decontaminating the asbestos work area and equipment	– Use damp rags to clean the equipment, including the catch tray. – If necessary, use damp rags or a HEPA filtered H-Class industrial vacuum cleaner to clean any remaining visibly contaminated sections of the asbestos work area. – Place debris, used rags and other waste in appropriately labelled heavy-duty plastic asbestos waste disposal bags or wrap it in a double layer of heavy-duty plastic which is then sealed using adhesive (cloth or duct) tape and appropriately labelled as asbestos waste – Wet wipe the external surfaces of the asbestos waste bags/container to remove any adhering dust before removing them from the asbestos work area.
Personal decontamination should be carried out in a designated area	– If disposable coveralls are worn, clean the coveralls and RPE while still wearing them using a HEPA filtered H-Class industrial vacuum cleaner, damp rag or fine-water spray. RPE can be cleaned with a wet rag/cloth. – While still wearing RPE, remove coveralls, turning them inside-out to entrap any remaining contamination and then place them into an appropriately labelled asbestos waste bag or wrap them in a double layer of heavy-duty plastic which is then sealed using adhesive (cloth or duct tape) and appropriately labelled as asbestos waste. – Remove RPE. If non-disposable, inspect it to ensure it is free from contamination, clean it with a wet rag and store in a clean container. If disposable, cleaning is not required but RPE should be placed in an appropriately labelled heavy-duty plastic asbestos waste disposal bags or wrapped in a double layer of heavy duty plastic which is then sealed using adhesive (cloth or duct tape) and appropriately labelled as asbestos waste. Refer to the Code of Practice: *How to safely remove asbestos* for more information.
Clearance procedure	– Visually inspect the asbestos work area to make sure it has been properly cleaned. – Clearance air monitoring is not normally required for this task.

Safe work practice 6 – Inspection of asbestos friction materials	
	– Ensure asbestos waste is transported and disposed of in accordance with the relevant state or territory Environment Protection Authority (EPA) requirements at a site licensed by the EPA Refer to the Code of Practice: *How to safely remove asbestos* for more information.

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Appendix E—Examples of asbestos removal work

This appendix does not address other hazards that may be present at a workplace, for example falls from heights or electrical hazards. These hazards must also be identified and the associated risks controlled.

This appendix provides guidance on how to perform a specific task associated with asbestos removal work. With all tasks, some general requirements include the following:

- Obtain the asbestos register prior to commencing asbestos removal work.
- Depending on the type of asbestos removal work, follow the requirements outlined in Chapters 2–4 of this Code (for example, laying polyethylene sheeting, isolating the work areas, signs and barricades, PPE, cleaning up site decontamination).

Asbestos cement products

Asbestos cement products consist of approximately 15 per cent asbestos fibres by weight. A wide range of products have been commonly found—including roofing, shingles, exterior cladding on industrial, public and some residential premises, corrugated/profile sheets as well as flat sheets—that have been used for exterior flexible building boards.

If possible, you should remove the asbestos cement products whole. If some sections have been damaged prior to removal, these may be strengthened, for example by using adhesive (cloth or duct) tape. Applying water and PVA glue mixture to the damaged section may assist in minimising the release of asbestos fibres.

Identify the method by which the asbestos cement product is held in place, then use a method that would minimise airborne dust generation in removing the product. For example:

- **fasteners**: dampen then carefully remove using a chisel.
- **bolts**: dampen then use bolt cutters (or an oxy torch)—do not use an angle grinder.
- **screws**: dampen then carefully unscrew with a screwdriver.
- **nails**: dampen then carefully lever the panel or punch through if absolutely necessary.

Avoid breaking the asbestos cement products. If breakage is absolutely necessary to remove or dislodge the product, dampen the material and minimise breakage.

Remove the asbestos cement product after wetting or dampening it by applying a fine water spray, unless this creates an electrical risk.

Once the asbestos cement product has been removed from its position, spray the back of the product with a fine water spray. Frequent application of a fine water spray may be required depending on the circumstances (for example on a very hot day) but be careful not to create a slip hazard.

Personal decontamination must be carried out in accordance with the WHS Regulations. See section 4.6 of this Code.

Asbestos cement roof sheeting

Asbestos cement can become brittle with age, so any removal work on roofs should address the risk of fall hazards. If lichen is encountered on roof sheeting, caution should be exercised in the use of water and the choice of workers' footwear because lichen can be slippery, especially when it is wet.

The removal of asbestos cement roof sheeting must be performed in accordance with the WHS Regulations.

Angle grinders should not be used because of the potential for damage to the asbestos cement and subsequent fibre release. Anchoring screws/bolts should be removed from the roof sheeting using an oxy torch or another suitable device, such as a screwdriver or cold chisel that will not significantly damage the sheet.

If the system of removal involves walking on the roof to remove roof sheeting (this should be the last option when choosing a method to remove roof sheeting), spray the asbestos cement roof sheeting with a PVA solution prior to removal. Ensure the PVA is dry before removing it so as to avoid a slip hazard. Once removed, spray the back (underside) of the asbestos cement with either a fine water spray or the PVA solution.

Where the asbestos roof sheeting requires lowering to the ground, ensure this is done in a manner that will minimise the generation of respirable dust. Do not use chutes, ramps or similar gravity-dependent devices. Examples of appropriate lowering methods for roof sheeting include:

- by hand, over short distances
- loading the wrapped sheets on to a cradle for support
- using scissor lifts or similar devices, and
- using scaffolds.

You should follow the decontamination (section 4.6), waste containment and disposal procedures (section 4.8) in this Code once the asbestos roof sheeting has been removed.

Where the asbestos roof sheeting to be removed covers an area greater than the size of an average domestic house or where considerable dust will be generated, you should use a decontamination unit.

Ensure that clearance of the area has been completed and a clearance certificate has been issued prior to reoccupation of the area.

Personal decontamination must be carried out in accordance with the WHS Regulations. See Section 4.6 of this Code.

Removal of floor tiles

Flooring products such as polyvinyl chloride (PVC or vinyl) tiles often contain a few per cent (5–7 per cent) of very fine chrysotile asbestos. Black and brown thermoplastic tiles containing larger amounts of chrysotile, often in visible clumps, were also produced. Sheet floor coverings including sheet vinyl were sometimes backed with a thin layer of chrysotile paper. Some underfelts, such as hessian underlays for carpets and linoleum, were also manufactured containing asbestos. The mastics which were used to bond the floor covering to the surface could also contain asbestos. Some hard-wearing composite floors (for example magnesium oxychloride) also contain about 2 per cent of mineral fibres, which could be asbestos.

Place a tool (such as a scraper or wide blade) or use a heat gun between the tiles and lift the tile away from the floor, being careful to minimise breakage. A hammer or mallet can be used to tap the tool under firmly-adhered tiles to assist in separating the tiles from the floor.

Minimise dust by spraying fine water mist under tiles as they are lifted.

Place the tiles into heavy duty polyethylene sheeting (minimum 200 µm thickness) asbestos waste bag or suitable alternate waste container dedicated for asbestos waste that is clearly labelled as asbestos waste.

Use the scraper to remove any adhesive that is left adhered to the floor after each tile has been removed and place this waste into the asbestos waste bag or suitable waste container.

The vinyl can be cut into strips prior to its removal to facilitate bagging, or it can be rolled into one roll and wrapped securely with polyethylene sheeting, making sure it is totally sealed.

If a heat source is used to soften the adhesive beneath a vinyl tile, care should be taken not to scorch or burn the tile. Burning or scorching vinyl tiles can result in the release of toxic decomposition products and generate a fire hazard. In some cases, the adhesive may contain asbestos.

Follow decontamination (section 4.6), waste containment and disposal procedures (section 4.8) in this Code once the tiles have been removed.

Ensure that a clearance inspection of the area is conducted by a licensed asbestos assessor and a clearance certificate has been completed prior to reoccupation of the area.

Personal decontamination must be carried out in accordance with the WHS Regulations. See section 4.6 of this Code.

Removing bituminous (malthoid) products

Bituminous (malthoid) products are generally regarded as non-friable and include bitumen products such as roofing felts and damp-proof courses that have been widely reinforced by the addition of asbestos, usually in the form of chrysotile paper. Bitumen-based wall and floor coverings were also produced.

Some mastics used to stick the bitumen products commonly had asbestos added to them for flexibility. Other sealants also had asbestos added to improve the performance of the product. When removing bituminous products:

- seal access points (for example skylights) with material such as heavy duty polyethylene sheeting (minimum 200 µm thickness) using adhesive (cloth or duct) tape
- where there are exhaust vents from gasfired equipment in the area, it is dangerous to seal over them. Turn the gas off if possible
- cut and remove manageable sections. Place cut pieces in a lined skip or wrap in polyethylene sheeting
- remove adhering material by dampening and gently scraping. Consider using an HEPA-filtered H-Class industrial vacuum cleaner while scraping
- remember that mastics are flexible and may require removal by using scraping and chipping tools. The pieces removed should be kept as intact as possible
- if heating is used to soften the material to enable the material to be peeled, it is important not to burn the material, as this can release respirable asbestos fibres. Excessive heating is also likely to generate toxic fumes and gases and generate a fire hazard, and
- collect all debris and dispose of waste according to the waste disposal procedures.

Personal decontamination must be carried out in accordance with the WHS Regulations. See section 4.6 of this Code.

Removal of ceiling tiles

False ceiling tiles or suspended ceilings sometimes need to be removed so maintenance work can be performed. If asbestos has been used on structural materials above a false ceiling there could be contamination on the upper surface of the tiles.

The minimum RPE suitable for this operation is a P1 or P2 filter with a half-face piece respirator. If considerable amounts of asbestos dust or debris are likely to be involved, full-face air-purifying positive pressure respirators should be worn.

Any surface below the tiles that might be contaminated should be covered with heavy duty polyethylene sheeting (minimum 200 µm thickness).

The first tile should be lifted carefully to minimise the disturbance of any asbestos fibres. The top of each tile should be thoroughly vacuumed and wet wiped, where possible, prior to removing subsequent tiles.

Where non-asbestos ceiling tiles are to be re-used, they should be covered with polyethylene sheeting as they are removed from the ceiling to prevent further dust settling on them.

Wrap the asbestos ceiling tiles in a double layer of polyethylene sheeting.

Waste containment, disposal and a clearance inspection must be carried out in accordance with the WHS Regulations. See sections 4.8 and 3.10 of this Code.

Personal decontamination must be carried out in accordance with the WHS Regulations. See section 4.6 of this Code.

Removal of gaskets and rope seals

Gaskets and rope seals containing asbestos are generally regarded as friable. If there is any doubt, advice should be sought from a person with knowledge and experience in dealing with asbestos.

Gaskets reinforced with asbestos were once used extensively in plant and equipment exposed to high temperatures and/or pressures. These gaskets were typically used between the flanges of pipes.

Asbestos rope was often used for lagging pipes and valves and for sealing hatches. It is likely gaskets and rope from plant and equipment will contain friable asbestos. When removing gaskets and rope seals:

- ensure the plant or equipment is shut down and isolated
- dismantle the equipment carefully. Protect any other components with heavy duty polyethylene sheeting (minimum 200 µm thickness)
- ensure the plant and equipment has been made safe (pipework emptied, electrical supply isolated and equipment shut down, etc.)
- unbolt or unscrew the flange or dismantle the equipment
- once accessible, dampen the asbestos with a fine water mist or similar. Continue dampening the asbestos as more of it is exposed/accessible
- ease the gasket or rope seal away with the scraper and place into the asbestos waste container positioned directly beside/beneath it. Keep the area damp and scrape away any residue, and
- consider using a HEPA filtered H-Class industrial vacuum cleaner while scraping.

Personal decontamination must be carried out in accordance with the WHS Regulations. See section 4.6 of this Code.

Pipe lagging (small section)

Asbestos was widely used to insulate pipes, boilers and heat exchangers.

There are several types and forms of insulation, often with multi-layer construction. Pre-formed sections of asbestos insulation were made to fit the diameter of the pipe. These would be strapped on and calico-wrapped and sometimes painted (for example, 'Decadex' finish) or sealed with a hard plaster (often asbestos-containing) to protect against knocks and abrasion. Other types of asbestos-containing felts, blankets, tapes, ropes and corrugated papers were also used. For bends and joins, ensure the plant and equipment has been made safe (for example pipework emptied, electrical supply isolated and equipment shut down).

Set up/attach the glove bag and perform the removal work as described in section 6.2. Remove and dispose of waste according to the relevant parts of section 4.8.

Personal decontamination must be carried out in accordance with the WHS Regulations. See section 4.6 of this Code.

Fire retardant material

Fire retardant material is normally a homogeneous coating sprayed or trowelled onto reinforced concrete or steel columns or beams as fireproofing. Sprays were also commonly used on the underside of ceilings for fireproofing and sound and thermal insulation in many high-rise premises. Warehouses and factories commonly had sprayed asbestos applied to walls, ceilings and metal support structures for fireproofing.

Some fire doors contained loose asbestos insulation sandwiched between the wooden or metal facings to give them the appropriate fire rating. Loose asbestos was also packed around electrical cables, sometimes using chicken wire to contain it.

Mattresses containing loose asbestos were widely manufactured for thermal insulation. Acoustic insulation has been provided between floors by the use of loose asbestos in paper bags, and in some areas near removal works it is known that loose asbestos has been used as a readily available form of loft insulation.

Asbestos textiles were manufactured for primary heat (for example insulation tapes and ropes) or fire protection uses (for example fire blankets, fire curtains and fire-resistant clothing). Asbestos textiles were also used widely as a reinforcing material in friction products and composites.

It will depend on where the fire retardant material is located and the quantity of the material as to how the removal process is conducted. However, the asbestos is friable and a Class A licensed asbestos removalist must perform the asbestos removal work.

An asbestos removal control plan must be developed.

- Establish the extent of the removal area and move all items out of the area or cover them with heavy duty polyethylene sheeting (minimum 200 µm thickness) if they could be contaminated during the removal work.

- Develop an enclosure that allows smooth flow of air from the decontamination unit to the negative air units. In constructing the enclosure, pay particular attention to penetrations through the floor and ceiling/roof. Set up the enclosure and decontamination unit, and remove and dispose of asbestos.
- Ensure all air-conditioning equipment has been shut and isolated/blanked from this area.
- Maintain regular checks on the negative air unit and decontamination unit. An independent licensed asbestos assessor must conduct/control air monitoring throughout the asbestos removal work.
- Clearance monitoring by an independent licensed asbestos assessor and the issue of a clearance certificate is required before re-entry into the removal work area.

Personal decontamination must be carried out in accordance with the WHS Regulations. See section 4.6 of this Code.

Removal of asbestos-backed vinyl and millboard from beneath a vinyl floor

As asbestos millboard is typically 100 per cent asbestos and very friable, a full enclosure with negative air extraction units must be used for this type of asbestos removal work.

The asbestos millboard should be wetted down as the vinyl is peeled from the floor, preferably with the millboard attached. The vinyl can be cut into strips prior to its removal to facilitate bagging, or it can be rolled into one roll and wrapped securely with heavy duty polyethylene sheeting (minimum 200 µm thickness), making sure it is totally sealed. If the vinyl sheeting cannot be removed without leaving some of the asbestos millboard on the floor surface, the remaining asbestos millboard should be wetted down and, when thoroughly soaked, scraped off the floor surface.

Sufficient water should be used to dampen the asbestos millboard, but not so much that run-off or pools of contaminated water will occur.

If a heat source is used to soften the adhesive beneath a vinyl tile, care should be taken not to scorch or burn the tile. Burning or scorching vinyl tiles can result in the release of toxic decomposition products and generate a fire hazard.

Alternative removal methods should only be used if they do not result in excessive fibre release from the asbestos millboard and do not result in any additional hazard.

Personal decontamination must be carried out in accordance with the WHS Regulations. See section 4.6 of this Code.

Polychlorinated Bi-phenyls Workplace Procedures

How can materials containing PCBs be handled safely?

Identification

If the concentration of PCBs is greater than 50 parts per million in solids or liquids, they should be considered contaminated. PCBs are in the Safe Work Australia Hazardous Substances Information System as hazardous at levels above 50 parts per million (0.005%).

Consultation

Consultation and co-operation between employers and employees is the key to safety in the workplace. The Occupational Safety and Health Act 1984 requires employers and employees to meet to discuss hazards and formulate and put into practice effective safety and health controls.

Removal of PCBs in capacitors

All leaking capacitors must be replaced with non PCB capacitors, and the work must be carried out by a licensed electrical worker.

Unless accurate information on PCB content is available (eg label stating 'No PCBs') or the age of the capacitor is known, all leaking capacitors must be treated as if they do contain PCBs, and adequate personal protective equipment and clothing must be worn. Swab samples of the leaking capacitor fluid or the capacitors themselves can be sent for laboratory analysis if confirmation is needed.

Leaking capacitors which have been removed should be properly packed in a sealed container, then into a secondary container (eg steel drum) containing absorbent for transport to an approved disposal facility.

Non-leaking PCB capacitors can be left in place, however plans should be made for their eventual replacement. Regular walk-through surveys should be made to check for oil leaks under light fittings, and leaking capacitors should be replaced.

Removal or sealing of caulking compounds containing PCBs

Removal or sealing should be considered when the caulking compound is:

- leaching PCBs to the surface and skin contact occurs;
- causing PCB contamination of the air, including dust, above the exposure standard of 0.5mg/m3; or
- penetrated by water.

Where the removal of PCB caulking compound is necessary, skin contact should be avoided (see information below on personal protective equipment).

The PCB caulking compound being removed should not be heated or burnt, and measures should be taken to minimise dust generated in the process. The process of removal should include engineering controls based on good occupational hygiene practices.

As with other hazardous substances, a hierarchy of control measures should be considered for the handling of PCB caulking compounds. The following order is recommended:

- Isolation to control the emission of PCBs or PCB contaminated dusts;
- Engineering controls to minimise the direct handling of caulking compounds and to minimise generating any airborne dust;
- Adoption of safe work practices;
- Where other effective means for control listed above are not practicable or sufficient, suitable personal protective equipment is to be used.

The removed PCB caulking compound must be treated as PCB waste and placed in plastic bags, stored in an adequately labelled steel drum and disposed of as recommended in the Safe Disposal of PCBs section of this article.

Demolition of structures containing PCB caulking compounds

The demolition process may give rise to two types of exposure - that from the PCB caulking compound itself and that from the dust.

Prior to demolition of concrete structures built prior to 1980, any caulking compounds in the structure should be tested and those containing PCBs removed. Bulk removal only is required. Residue compound in the joint will only make up a small component in the rubble. The handling of this rubble with mechanical equipment is not considered a health risk.

As with any demolition process, dust will be generated and will constitute a hazard if it exceeds the exposure standard. Appropriate dust control methods must be used.

PCB spills

Soak up spilt PCB liquid (eg from capacitors, or from water contaminated with PCB caulking compound) with an absorbent (eg vermiculite, rags) as would be used for oil. Place the material in plastic bags and store in a sound steel drum. Any contaminated protective clothing should be treated the same way. The drum should be clearly labelled and stored in a secure place where there is no risk of fire, prior to disposal at an approved facility.

Personal protective equipment

Personal protective equipment and clothing recommended for the handling of PCBs and PCB contaminated equipment includes:

- chemically impervious disposable overalls;
- mid-arm nitrile, neoprene or Teflon gloves;
- safety glasses; and
- rubber boots.

At room temperature, PCBs do not readily vaporise. However if vapours are suspected due to a characteristic burnt smell which can occur if a capacitor begins to leak and overheats, then suitable respirators (cartridge-type suitable for chlorinated vapours) should be used. If dust is generated during removal of caulking compounds, a Class P2 (Particulate) respirator should be used.

Cleaning contaminated equipment

Contaminated equipment and tools should be cleaned with a cloth soaked in a small amount of suitable solvent (eg kerosene). The contaminated cloth should be disposed of as for PCB waste.

First aid

If eye contamination occurs, remove any contact lenses and wash eyes for at least 15 minutes. Seek medical attention.

If skin contamination occurs, the liquid should be wiped off immediately and the skin washed with soap and water. Water alone is not sufficient. If clothing is contaminated it should be quickly removed and disposed of as recommended. Solvents should NOT be used to wash the skin. Seek medical attention.

Safe disposal of PCBs

PCB waste should be placed in plastic bags (for solids) or containers (for liquids) and stored in a sound, labelled steel drum for transport to an approved waste disposal facility.

Correct disposal PCBs and contaminated material will prevent PCBs entering the food chain and the general environment. PCBs cannot be dumped or hosed away safely because of their potential to enter the food chain. Ordinary incinerators are NOT effective and must not be used.

Contact your regulator for information on approved disposal facilities.

Safe management of synthetic mineral fibres (SMF) – glasswool and rockwool

The following has been taken from: SafeWork NSW 2015, Safe management of synthetic mineral fibres (SMF) – glasswool and rockwool, viewed 04/06/2020, https://www.safework.nsw.gov.au/resource-library/manufacturing/safe-management-of-synthetic-mineral-fibres-smf-glasswool-and-rockwool

This information guide explains safe management of synthetic mineral fibres (SMF) - specifically, glasswool and rockwool.

Information on the safe use of Refractory ceramic fibres (RCF) can be found in SafeWork Australia's guide to handling refractory ceramic fibres 2013.

1. Background to SMF

Synthetic mineral fibres (SMF) is a term used to describe a fibrous product manufactured by the process of blowing or spinning a molten mineral raw material into a fibrous 'woollen' product that is used for insulation.

SMF can be classified into three groups:

1. Glasswool: is manufactured by melting glass into a fibrous 'wool'
   - used as thermal and acoustic insulation in the manufacturing and construction industry
   - does not include fibreglass used in boatbuilding, surfboards and other industrial applications because they contain catalysts and resins which require different work practices.
2. Rockwool: is manufactured by melting volcanic rock (usually basalt) into a fibrous 'wool'
   - also known as slagwool
   - used as thermal and acoustic insulation in the manufacturing and construction industry.
3. Refractory ceramic fibres (RCF): are made from kaolin (a naturally occurring alumino-silicate clay or a synthetic mix of alumina) used as:
   - high temperature, high performance thermal insulation, eg: in furnaces, kilns and other industrial heaters
   - insulation in the automotive, marine, petrochemical, steel, aluminium, ceramic, glass and construction industries.

For over 70 years, glasswool and rockwool insulation materials have been the most widely used insulation in Australia.

1.1 SMF classified as possibly cancerous to humans in 1987

Concerns from research into other building materials in the 1970s (eg asbestos) led to questions being raised about possible health effects of SMF products.

In 1987, based on some early research findings the International Agency for Research into Cancer (IARC), an agency of the World Health Organisation (WHO), classified all SMF as 'Category 2B - possibly carcinogenic to humans'.

1.2 Change to SMF classifications in 2001

Throughout the 1990s, further extensive medical and scientific research was conducted and then reviewed by the IARC in 2001. As a result of this review:

- Glasswool was reclassified down to 'Category 3 - not classifiable as carcinogenic to humans',
- Rockwool was also reclassified down to 'Category 3 - not classifiable as carcinogenic to humans', but
- RCF remains classified as 'Category 2B - possibly carcinogenic to humans' and, therefore, a hazardous substance.

Since 2000 – 2002, all glass and rockwool insulation products manufactured in Australia have been biosoluble, allowing the product to dissolve in bodily fluids and be quickly cleared from the lungs. Despite this, it should be remembered that workers can still be exposed to SMF made of lower quality imported products.

1.3 Health effects from exposure to glasswool and rockwool

Dust from glasswool and rockwool products may cause:

- discomfort, tickling and dryness of the nose, throat and respiratory tract, especially for those who suffer hay fever, asthma or bronchitis;
- temporary skin irritation, particularly where there is rubbing from clothing such as cuffs and collars; and
- severe irritation to eyes.

2. Who has responsibilities?

Manufacturers, importers, suppliers and installers:

Manufacturers, importers, suppliers and installers must ensure, so far as is reasonably practicable, the glasswool and rockwool they manufacture, import, supply or install is without risks to health and safety including:

- carrying out testing and analysis (manufacturers)
- providing information to users to enable the safe use of the product
- manufacturing, importing, supplying or installing glasswool and rockwool materials which emit a minimum amount of fibres and/or dust, especially during transport as well as when being cut and shaped.

PCBUs:

PCBUs must ensure, so far as is reasonably practicable, that workers and other people are not exposed to health and safety risks arising from exposure to glasswool and rockwool at airborne concentration levels that exceeds the workplace exposure standards for airborne contaminants (2013).

When working with glasswool and rockwool products, the dust concentrations capable of being inspired can vary greatly depending on the circumstances in which it is being used, eg: work installing new insulation batt products into old ceiling spaces or removing worn and damaged insulation is likely to involve inspirable dust levels that may include dusts other than glasswool and rockwool.

While there can be significant amounts of respirable fibres in all wool insulation products, in most situations, routine air monitoring is not required when it has been clearly established that the work practices outlined in this information guide are being followed.

Routine medical surveillance of workers who work with glasswool and rockwool products is NOT necessary as harmful health effects should NOT occur if exposure to the fibres is kept below the level specified in the workplace exposure standards for airborne contaminants.

The WHS Regulation 2017 prescribes specific duties in relation to workplace exposure standards:

- Regulation 49 requires PCBUs to ensure that no person at the workplace is exposed to a substance or mixture in an airborne concentration that exceeds the exposure standard for the substance or mixture.
- Regulation 50 requires PCBUs at a workplace to ensure that atmospheric monitoring is carried out to determine the airborne concentration of a substance or mixture at the workplace to which an exposure standard applies if: 'the person is not certain on reasonable grounds whether or not the airborne concentration of the substance or mixture at the workplace exceeds the relevant exposure standard, or monitoring is necessary to determine whether there is a risk to health'.

The exposure standards referenced in the WHS Regulation are those published in the workplace exposure standards for airborne contaminants.

To achieve low airborne concentrations of fibres, the PCBU must ensure that:

- the manner in which glasswool and rockwool products are purchased, handled, stored or disposed of in the workplace minimise the release of fibres and/or dust

- workers are provided with appropriate instruction, training and information about how to safely use glasswool and rockwool products
- Safety Data Sheets (SDSs) are obtained and are readily available to workers and their representatives
- all containers or packages of glasswool and rockwool are clearly and appropriately labelled.

Workers:

Workers have a duty to take reasonable care for their own and others health and safety and co-operate to make the workplace safe.

This includes following WHS policies and procedures and wearing personal protective equipment (PPE) if provided.

3. Factors that impact the risk of exposure to glasswool and rockwool fibres

There are four main factors which alone, or in combination, determine the fibre levels present when working with glasswool and rockwool and which therefore determine the risks that may arise and how these risks might be managed.

The four factors are the:

- proportion of respirable fibres in the product
- degree of disturbance of the product
- extent of any binders, cladding or sealants, and
- ventilation in areas where the product is being used.

4. Types of glasswool and rockwool insulation

There are two basic forms of glasswool and rockwool insulation and the procedures to be applied to remove the product depend on the form of the original glasswool or rockwool insulation installed.

Bonded insulation contains binding agents (such as adhesives or cements) that have been cured in the manufacturing process prior to packaging and delivery and the products have a specific shape, such as in a batt or blanket form or as compressed boards. Additionally, some bonded materials may be clad in various coverings on one or more sides. The advantage of the presence of binding agents is that they significantly reduce fibre release during handling.

Typical examples of the use of bonded glasswool and rockwool materials include:

- preformed insulation batts in ceilings and cavity walls
- insulation blankets or batts around air conditioning ducts, and
- preformed pipe sections as lagging around steampipes and hot or chilled water pipes.

Unbonded insulation has no adhesives or cements and is loose material packed into a package. This type of material can be packed loose or mixed with adhesives or cements before, or during, installation. There are three main types of unbonded glasswool and rockwool materials:

- **wet spray:** where the fibres are mixed with cement and sprayed as fire protection in multi-storey buildings
- **loose-fill:** where the material is sprayed into ceiling and cavity spaces of buildings, and
- **dry spray:** where densely packed material is blown dry into a closed stud cavity. This method should only occur where the target area is enclosed to prevent the release of loose fibres. Typical examples of the use of dry spray include cavity-wall and loose fill in existing construction undergoing an insulation retrofit.

5. Practical solutions to control exposure to glasswool and rockwool insulation products

5.1 General work practices

Action should be taken on a continuing basis to achieve the lowest possible level of airborne fibres and dust, using the hierarchy of controls. In the glasswool and rockwool insulation industry, engineering controls are usually the most effective control measures to implement.

Administrative controls and PPE are the least effective and the least reliable controls and **must only be used for any leftover risk that cannot be controlled by a higher level control.**

Administrative controls and the use of personal protective clothing and equipment (PPE) rely solely on human behaviour and require constant supervision.

Engineering controls: eg local mechanical exhaust or dilution ventilation to contain or minimise exposure to fibres and dust.

Administrative controls:

- order materials in a form and shape which requires minimum of cutting and handling on site.
- develop safe work practices that adhere to product usage information as defined in the SDS, including dust suppressants to reduce the release of dust and fibres.
- designate specific work areas using barriers for all overhead work involving glasswool and rockwool. Workers not engaged in this work should not be within 3 metres of the work area.
- install appropriate signs in glasswool and rockwool work areas.

All warning signs should comply with AS 1319:1994 Occupational signs for the work environment.

- always use manual hand tools in preference to power tools to trim or cut SMF materials. (If power tools are used, they should be fitted with exhaust extraction at the point where the dust is generated or supply other effective local exhaust ventilation).
- store packaged or in intact containers or under sheet covers in low traffic areas and transfer from storage to the point of use in sealed containers or bags. Take care when opening boxes or bags to minimise dust release
- spray or gun glasswool and rockwool materials in a wet, rather than dry form where possible
- regularly clean the work area to remove any build up of fibres and/or dust. Visible waste materials should be removed promptly to avoid being trampled and spread about
- clean with an industrial vacuum cleaner. Wet mopping and wiping is acceptable if this is not possible.
- keep amenity rooms as free as possible from fibres and dust
- place waste in plastic bags or other containers which prevent fibre and dust emission, and dispose of them in accordance with requirements of the local environment protection and waste disposal authorities
- provide adequate washing facilities on site to wash the skin, and to treat dust in the eyes
- provide appropriate instruction, training and supervision to enable workers to safely perform their tasks. The training should include instruction in the:
    - importance of controlling the level of glasswool and rockwool fibres and dust in the atmosphere to the lowest workable levels
    - control measures that are in place
    - safe work practices which must be followed
    - selection, wearing and maintenance of PPE.

Personal protective equipment (PPE):

PPE should be readily available in the workplace.

- **Respirators**:
    - Class P1 and Class P2 efficiency is adequate for virtually all aspects of work involving glasswool and rockwool to ensure a worker's exposure is kept to a a time weighted average (TWA) of < 2 mg/m3 inhalable dust. The choice of Class P1 and P2, and disposable or non-disposable, is often determined by practical considerations such as worker comfort or preference and the reliability of maintenance.

- information about the selection, maintenance and performance of all types of respirators is found in Australian Standards AS 1715:2009 selection, use and maintenance of respiratory protective equipment and AS 1716:2012 respiratory protective devices.
- respirators should be correctly fitted. The actual protection provided is very much determined by the quality of the facial seal and the degree of any resultant leakage from, eg: beards and the wearing of glasses or goggles.
- respirators should be maintained in good condition and kept in clean storage when not in use.
- replaceable filters and cartridges should be replaced regularly, in accordance with guidelines issued by the manufacturer.

It takes only short periods during the workday of not wearing a respirator to erode the protection afforded even by high efficiency filters.

- **Clothing** should be loose fitting, long sleeved, long legged garments or disposable overalls:
  - if not disposable, the clothing should be washed regularly and separated from other laundry to avoid cross contamination and subsequent skin irritation of non-workers
  - consider the type of material chosen to avoid undue heat stress and general discomfort for the wearer.
- **Gloves** as specified in the SDS
- **Safety goggles** or **face shields** (especially for overhead work)

5.2 Specific additional work practices for unbonded glasswool and rock wool insulation materials

Wet Spray: The following additional handling and installation procedures are recommended for wet-spray rockwool material:

- place bags into a hopper before slitting open
- avoid excess shaking of bags and the production of unnecessary dust
- fold used bags and store in waste container
- take care to ensure that the material is sprayed only in the desired area, and
- a cleaning and maintenance program for the machine and adjacent area, including vacuuming or wet mopping and wiping, should be available.

Loose Fill: Work with loose fill has the potential of creating relatively high airborne fibre levels, therefore the product should be handled more carefully. The following additional handling and installation procedures are recommended for loose-fill rockwool material:

- avoid unnecessary disturbance, eg: tearing, of the product
- where packing down is required, it should be done only to the required degree so as to minimise the disturbance of the product
- fold empty bags and store in a waste container
- ensure adequate sealing of the application site for overhead applications or protection of workers below, and
- remove excess material from the work area at completion of job.

Dry Spray: This work has a potential of creating relatively high fibre levels and therefore these additional recommended work practices should be closely followed.

- avoid unnecessary disturbance, eg: excess shaking of bags; tearing of the product
- place bags into a hopper before slitting open
- fold used bags and store in waste container
- no spraying to commence until the nozzle is securely in the target area and the spray is to be terminated before the nozzle is removed from the target area
- no material should be left in the machine unless the machine is adequately covered
- cleaning and maintenance of the machine and adjacent area should be carried out at the completion of the job.

5.3 Specific work practices for the removal of glasswool and rock wool insulation materials

Procedures to be used for the removal of glasswool and rockwool insulation depend on the form of the original insulation wool installed.

5.3.1 Bonded glasswool and rockwool insulation:

Any physical abrasion, including cutting, should be kept to a minimum during removal. If there is minimal physical abrasion, the removal can be performed in a dry condition. Only in circumstances where heat or other causes have made the bonded material attach itself to the substrate should physical abrasion take place. If this occurs, removal should be performed as for unbonded glasswool and rockwool removal.

5.3.2 Unbonded glasswool and rockwool insulation:

Removal of unbonded material is more dusty and difficult. The unbonded material should be thoroughly wet down before removal takes place. Dry removal may be necessary when there are electrical and heat hazards. Increased respiratory protection may be necessary when working in enclosed or poorly ventilated spaces or where the insulation has undergone physical change.

Working with lead-based paint

The following is published by: Queensland Government 2019, Working with lead-based paint, viewed 19 July 2017, https://www.worksafe.qld.gov.au/injury-prevention-safety/hazardous-exposures/lead/working-with-lead-based-paint.

How do I know if there's lead-based paint?

Lead-based paint is most likely to be found on window frames, doors, skirting boards, kitchen and bathroom cupboards, exterior walls, gutters, metal surfaces and fascias on homes or structures built before 1970, or even interior walls.

Sometimes lead-based paint may be covered by more recently applied paint and becomes a workplace health and safety issue when the paint deteriorates and becomes powdery or flaky, or during paint removal.

- Test all surfaces and layers of paint to be removed to determine if the paint contains lead as lead-based paint cannot be identified by its appearance.
- A simple test kit available from some paint manufacturers and distributors can determine the presence of lead-based paint. Carefully read the manufacturer's instructions before using the test kit.
- Test kits can give false results, so if the swab gives a negative reading, but the age of the house indicates that lead-based paint could have been used, assume that lead-based paint is present or have the paint tested by a laboratory. Some analytical laboratories can provide a precise analysis of lead presence and its concentration.
- A list of accredited laboratories is available from the National Association of Testing Authorities for environmental lead testing.

Removal alternatives

If paint is in good condition there may be no need to remove it unless major renovation and comprehensive removal is planned. However, lead-based paint should be removed from areas that are likely to be chewed or licked by children, knocked or subject to friction.

Alternatives to paint removal include:

Painting over lead-based paint

- Only paint over lead-based paint if surfaces are in good condition. If the paint is flaking or chalking, prepare the surface by a light wet sanding with wet-and-dry sandpaper to help the paint stick to the surface. Take care not to generate lead dust or contaminate the area with water from the wet-sanding process.
- Painting over the paint is a temporary solution limited by the life of the paint.

Covering lead-based paint with other materials

- Cover lead-based paint on exterior surfaces with durable materials, such as aluminium cladding or weatherboard and thoroughly seal all gaps.
- Cover internal surfaces with durable materials that will not tear, chip or peel. These include plasterboard, vinyl wall coverings, wood panelling and floor coverings such as carpet, tiles or vinyl.

Safe removal methods

If you have decided to remove the paint, choose a safe removal method. Different ways of removing lead paint create different risks to health, which need to be properly controlled.

Safe methods include:

Wet scraping

Risk: Dust may be produced during the scraping process if paint is not wet properly, spreading flakes of paint around the worksite.

Control:

- Wear a half face respirator with P2 particulate filter during removal and clean up.
- Use a plastic drop sheet that has the edges raised with wooden studs to collect water.
- Collect paint debris properly.

Chemical strippers

Risk: Some strippers contain flammable solvents which can burn the skin or produce vapours that are highly toxic. Even after chemical stripping has been done, sanding after this method may still produce lead dust.

Control:

- Wear a half face respirator for organic vapours, safety glasses, overalls and chemically resistant gloves. If further sanding is required after applying a chemical stripper, wear a combined particulate and organic vapour filtration cartridge respirator.
- Consult the Safety Data Sheets for further information.
- Ensure windows and doors are open.

Wet hand sanding

Risk: Dust may be produced if paint is not wet properly before sanding. Fine lead residue is left after water dries.

Control:

- Wear a half face respirator with P2 particulate filter during removal and clean up.
- Use plastic drop sheet that has the edges raised with wooden studs to collect water.
- Wash down surfaces carefully.

Low-temperature heat processes

Risk: This method is unlikely to produce lead fume unless the paint smokes from too much heat being applied. Dust may also be produced during the scraping process if the paint has started to reharden.

Control:

- Wear a half face respirator with P2 particulate filter if smoke is present. Toxic fumes can be generated at temperatures as low as 200ºC and heat guns should be controlled to ensure that this temperature is not exceeded.
- Scrape softened paint directly into a disposable container before it rehardens to avoid having to sand or scrape to clean it up.

Dry power sanding with HEPA vacuum attachment sanding

Risk: Lead dust may be generated if the shroud of the sander extends beyond the surface being sanded or if the sander is not kept flat on the surface.

Control:

- Training and experience.

How to set up the site

Working on the exterior

- Complete exterior work before doing the interior. Remove any lead dust in the house generated by exterior work during the interior clean up.
- Cover the ground and vegetation with plastic sheeting extended two metres from the base of the house and an additional metre for each storey to catch dust and debris.
- Use impervious materials such as tarpaulin or plastic sheeting to prevent dust from travelling to neighbouring properties. Attach the tarpaulin to house guttering at the top and to the plastic ground sheet at the bottom.
- Use bricks or rocks to hold the edges of the plastic sheeting in place and place wooden studs under the edges of the sheeting to contain liquid.
- Close windows and doors to prevent dust from entering the building.
- Avoid working in windy conditions, as the lead dust and paint might be blown off the plastic sheeting as it dries.
- Move play equipment and personal belongings away from the work area and cover sandpits.
- Advise the neighbours to close windows and doors while exterior work is being done, move play equipment away from the boundary fence and cover their own sandpits.
- Exclude all others from the work area, especially pregnant women, children and pets.

Working on the interior

- Remove furniture, rugs, curtains, food, clothing and other household items.
- Cover the floor with disposable double plastic sheeting and tape the sheeting to the skirting boards. Dispose of the top sheet with the debris.
- Keep the bottom sheet in place during the wash down.
- Cover or temporarily remove carpet to prevent it becoming contaminated with lead dust. Lead dust is difficult to remove from carpet, even with a HEPA vacuum cleaner. Carpet exposed to chalking or flaking paint may need to be replaced.
- Cover openings, such as gaps around pipes and between floorboards, immovable surfaces such as counter-tops and shelves with plastic sheeting and heavy duty tape to prevent dust from entering.
- Tape around the door seals of refrigerators.
- Turn off forced-air heating and air conditioning. Cover and seal doors and air ducts for heating and cooling systems.

- Cover entrances to the work area with two lengths of plastic sheeting which overlap each other in the middle. Tape the outside edges at the top and sides to the door jambs.
- Close the windows unless using a torch or open flame or chemical strippers.
- Use exhaust fans when using chemical strippers indoors.
- Repair or replace torn sheets immediately.
- Exclude all others from the work area, especially pregnant women, children and pets.

How to clean the site

- Remain in protective clothing, including gloves and respirator when cleaning the site.
- Place large disposable items including the plastic sheet and other debris into tough plastic bags.
- Vacuum all surfaces including the tarpaulin used for exterior work with a suitable commercial vacuum cleaner fitted with a HEPA filter.
- Wet-clean hard surfaces using a carpet steam cleaner or by wet mopping several times. Put dust into tough sealable plastic bags. Alternatively, some contract cleaning services offer an effective chemical method of removing lead dust.
- Do not use a broom, compressed air or a vacuum cleaner without a HEPA filter as it will spread lead dust.
- Use a spray bottle to wet down all dust and debris lying on the plastic sheeting before taking them up.
- Wipe down all surfaces in the work areas with a damp cloth.
- Wash the area with 25 grams of 5% trisodium phosphate (TSP) in five litres of hot water or sugar soap. Renew the solution frequently to prevent it becoming contaminated.
- Dispose of cloths and mops to avoid spreading lead dust during cleaning.
- Vacuum dry surfaces such as skirting boards, architraves, window sills, casings, shelves and counter-tops until no dust or residue remains.
- Dampen dusty outside areas with spray from a garden hose and sweep and collect debris. Avoid dry sweeping since it spreads lead dust.
- Shovel paint debris into heavy duty plastic bags.
- Remove the top layer of contaminated soil and put into tough sealable plastic bags.
- Clean tools with TSP solution or sugar soap.
- Clean respirators after use and store them in a container away from the lead source.
- Remove contaminated clothing before leaving the work area and place clothes in a plastic bag until washed.
- Clean up the site frequently throughout the day and vacuum at the end of each day.

How to dispose of lead contaminated waste

- Place lead-containing debris into deflated heavy duty plastic bags and seal them.
- Pour lead-contaminated water generated as a result of wet scraping or sanding, or during clean-up, into a strong, securely sealed container.
- Provide short-term secure storage.
- Transport debris and solid waste materials containing lead to waste systems.
- Check with the waste management section of the local council about proper waste disposal.
- Ensure that all bulky items are covered during transportation.