

ASBESTOS REGISTER

Maida Vale Tennis Club, Acacia Road, Maida Vale, WA

Report ID: **34767Br0**

Prepared for: **City of Kalamunda**

January 2023



LINKING THEORY TO PRACTICE
IN SUPPORT OF SUSTAINABLE DEVELOPMENT

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Executive Summary

QED Environmental Services was commissioned by City of Kalamunda to audit Maida Vale Tennis Club, Acacia Road, Maida Vale, WA (referred to as the “site”). Specifically, the scope of works includes the following:

1. Asbestos Register - Management Survey (Re-survey)
2. Asbestos Management Plan (separate document)

The assessment was conducted by Peter Shades on 12th January 2023.

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 City of Kalamunda 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 January 2028.

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

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	Recommendations
1	Under Sink Membrane.	Internal – Kitchen, sink unit.	Refer to Management Actions.
2	Urinal Backing Membrane (Bristek).	Internal – Male toilets, urinal.	Refer to Management Actions.

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

1. 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”.
2. Asbestos Management Plan (AMP) implemented:
 - a. City of Kalamunda site induction to include specific reference to AMP and Register.
 - b. 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.
 - c. Emergency Response chart to be printed and kept onsite at the location where contractors sign-in.
 - d. Aleck Nortje nominated as Property Management contact for the site (principal custodian of the Asbestos Management Plan).
 - e. QED Environmental Services nominated as Asbestos Management Planner for the site (part of Emergency Response).
 - f. Register and management plan reviewed in accordance with relevant statutory regulations and Codes of Practice, or more frequent if works occur.
 - g. 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; however, the findings summarised in this report should not be deemed absolute.

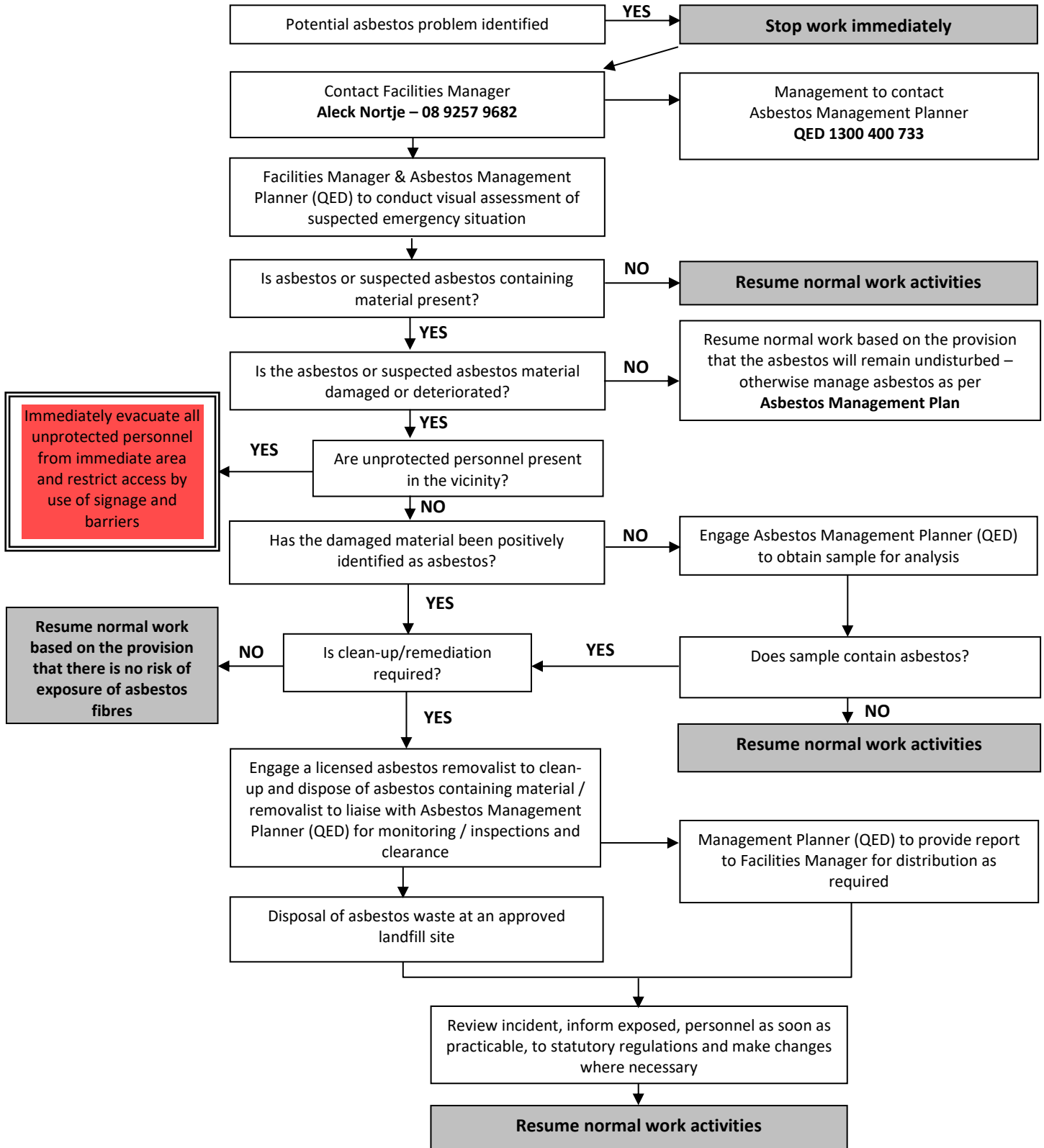
This is a non-intrusive, presumptive survey report and is not to be used for any invasive activity that may result in the disturbance of unidentified asbestos. Such activities may include, but are not limited to: whole or part building demolition, rectification of the HVAC system, lift upgrades, electrical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

This report has been prepared for the use of City of Kalamunda, 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.

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:

1. **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.
 - a. **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.
 - b. **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.
2. **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-survey)* 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-008 – Formulation and Review of Asbestos Registers
- QED PRO-012 - Handling of Inspection Samples
- 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 Register

Asbestos Register

ID 1:- Under Sink Membrane (Asbestos Detected)	
Material	Chrysotile asbestos detected.
Lab No.	ARL Lab No. 21-04932-B-1.
QED Sample No.	ID: 32412.
Locations	Internal – Kitchen, sink unit.
Condition	Good, intact, non-friable.
Signage	None.
Potential for Disturbance	Low to medium.
Risk	<p>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.</p>
Management Actions	<p>Label when practical. 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.</p>
References (See Appendices)	<p>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</p>
Service Record	<p>Review– January 2028 Company: Date: Works: Clearance certificate:</p>





Photos from 2021.


ID 2:- Urinal Backing Membrane (Bristek) (Suspected Asbestos Containing Material)	
Material	Suspected asbestos containing material.
Lab No.	Unable to sample (encapsulated)
QED Sample No.	ID: N/A.
Locations	Internal – Male toilets, urinal.
Condition	Unknown (encased).
Signage	Unable to adequately label.
Potential for Disturbance	Low.
Risk	<p>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.</p>
Management Actions	<p>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.</p>
References (See Appendices)	<p>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</p>
Service Record	<p>Review– January 2028 Company: Date: Works: Clearance certificate:</p>





Removed, Sampled or Observed Materials Not Containing Asbestos


Item Description	Lab No.	Location	Photo	Comments
Electrical mounting board.	Removed.	Main switchboard located at the entrance of reserve on Acacia Rd.		Removed 2016. Previous Information and photo taken from the City of Kalamunda register: Building: Maida Vale Tennis Club. Asset ID: BD_5071-00. Date Inspected: 13-Oct-2016.
Eaves and Ceiling panelling.	ARL Lab No. 21-04932-B-2. QED ID: 32413.	Internal ceilings, veranda panelling and eave panelling.		No asbestos detected.

Appendix 1 - Laboratory Reports









LABORATORY REPORT

ADDRESS: Local Health Authorities Analytical Committee
Edith Cowan University
Building 19, 270 Joondalup Drive
JOONDALUP WA 6027

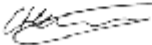
ATTENTION: Trevor Chapman


DATE RECEIVED: 17/03/2021

YOUR REFERENCE: City of Kalamunda - Maida Vale Tennis


PURCHASE ORDER:

APPROVALS:


Chris Harvey
Approved Identifier


Adam Green
Approved Signatory

Job Number: 21-04932-B
Revision: 00
Date: 24 March 2021



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
21-04932-B-1	32412 Undersink Membrane	Debris	<0.1	Chrysotile Asbestos Detected Organic Fibres Detected
21-04932-B-2	32413 Eaves & Ceiling	Board	<0.1	No Asbestos Detected Organic Fibres Detected

ARL GROUP
46-48 Banksia Road, Welshpool, Western Australia 6106
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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 than 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 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.

Appendix 4 - Asbestos Register Composition & Risk Assessment

The Workplace Registers

Since 1996, owners & employers have been required to record and maintain a "register" of Asbestos 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:

1. Retrieve and review building documentation (if available)
2. Develop an investigation procedure
3. Commence the building inspection, record findings and obtain samples
4. 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.

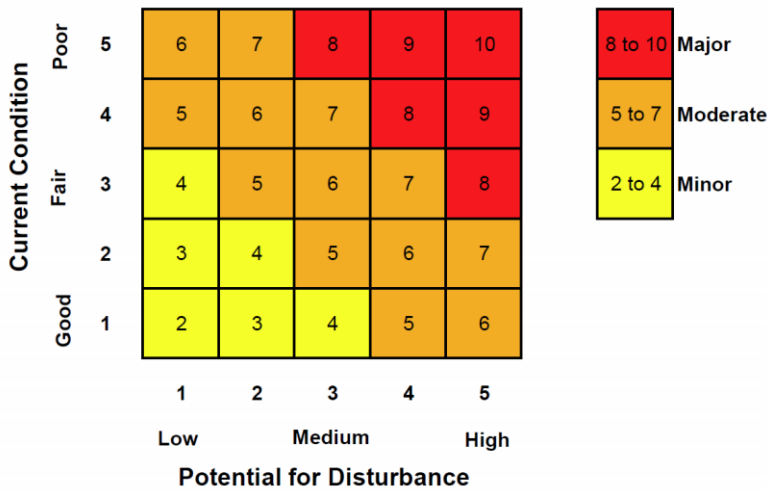
Potential for disturbance is then assessed based on influencing factors, such as:

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.

Risk Assessment



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 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
	<p>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.</p>
Equipment that may be required prior to starting work (in addition to what is needed for the task)	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – Protective clothing and RPE (see AS/NZS 1715:2009: <i>Selection, use and maintenance of respiratory protective equipment</i> and AS/NZS 1716:2012: <i>Respiratory protective devices</i>). 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	<ul style="list-style-type: none"> – 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
	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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. <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>
Clearance procedure	<ul style="list-style-type: none"> – 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. <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>

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	
<p>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.</p> <p>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.</p>	
Equipment that may be required prior to starting work (in addition to what is needed for the task)	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – Protective clothing and RPE (see AS/NZS 1715:2009: <i>Selection, use and maintenance of respiratory protective equipment</i> and AS/NZS 1716:2012: <i>Respiratory protective devices</i>). 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	<ul style="list-style-type: none"> – 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	
	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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. <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>
Clearance procedure	<ul style="list-style-type: none"> – 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 <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>

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)	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – Protective clothing and RPE (see AS/NZS 1715:2009: <i>Selection, use and maintenance of respiratory protective equipment</i> and AS/NZS 1716:2012: <i>Respiratory protective devices</i>). 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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. <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>
Clearance procedure	<ul style="list-style-type: none"> – 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. <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>

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)	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – Protective clothing and RPE (see AS/NZS 1715:2009: <i>Selection, use and maintenance of respiratory protective equipment</i> and AS/NZS 1716:2012: <i>Respiratory protective devices</i>). 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	
	<ul style="list-style-type: none"> – Do not use compressed air darts to pull cables through asbestos-cement conduits/ducts.
Decontaminating the asbestos work area and equipment	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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. <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>
Clearance procedure	<ul style="list-style-type: none"> – 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. <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>

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	
<p>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.</p>	
<p>Equipment that may be required prior to starting the work (in addition to what is required for the task)</p>	<ul style="list-style-type: none"> – 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
<p>PPE</p>	<ul style="list-style-type: none"> – Protective clothing and RPE (see AS/NZS 1715:2009: <i>Selection, use and maintenance of respiratory protective equipment</i> and AS/NZS 1716:2012: <i>Respiratory protective devices</i>). 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.
<p>Preparing the asbestos work area</p>	<ul style="list-style-type: none"> – 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.
<p>Work on electrical mounting panels</p>	<ul style="list-style-type: none"> – Providing the panel is not friable, maintenance and service work may include: replacing asbestos-containing equipment on the electrical panel with non-asbestos equipment

Safe work practice 5 –Working on electrical mounting boards containing asbestos	
	<p>operate main switches and individual circuit devices</p> <p>pull/insert service and circuit fuses</p> <p>bridge supplies at meter bases</p> <p>use testing equipment</p> <p>access the neutral link</p> <p>install new components/equipment.</p>
Decontaminating the asbestos work area and equipment	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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. <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>
Clearance procedure	<ul style="list-style-type: none"> – Visually inspect the asbestos work area to make sure it has been properly cleaned. – Clearance air monitoring is not normally required for this task. – 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 <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>

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)	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – Protective clothing and RPE (see AS/NZS 1715:2009: <i>Selection, use and maintenance of respiratory protective equipment</i> and AS/NZS 1716:2012: <i>Respiratory protective devices</i>). 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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. <p>Wet method:</p> <ul style="list-style-type: none"> – Use the misting spray bottle to wet down any visible dust. – 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.

Safe work practice 6 – Inspection of asbestos friction materials	
	<ul style="list-style-type: none"> – 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. <p>Dry method:</p> <ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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. <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>
Clearance procedure	<ul style="list-style-type: none"> – 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 <p>Refer to the Code of Practice: How to safely remove asbestos for more information.</p>

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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.