

**ASBESTOS CONTAINING MATERIALS
SURVEY REPORT**

270 Trower Road, Casuarina NT

Report Number 680.10358.00000-R01-ASR

27 April 2017

The Del Giacco Family Trust P/L
GPO Box 41122
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ASBESTOS CONTAINING MATERIALS SURVEY REPORT

270 Trower Road, Casuarina NT

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This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with the Client. Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
680.10358.00000-R01-v1.0-ASR	27 April 2017	Gemma Sheridan	Paul Turyn	Paul Turyn

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1 EXECUTIVE SUMMARY

SLR Consulting Australia Pty Ltd (SLR) was engaged by Bridgette Del Giacco to undertake an asbestos building materials survey of 270 Trower Road, Casuarina NT. The survey was conducted by Paul Turyn and Gemma Sheridan from SLR on 12 April 2017.

Within the scope and limitations of this report, no ACMs were identified in the building at the time of the inspection.

Copies of NATA Laboratory Certificates for asbestos identification analysis are provided in **Appendix B**. Refer to **Appendix C** for Limitations of this survey. Relevant photographs taken during the inspection are provided in **Appendix D**.

2 BACKGROUND AND SCOPE

SLR Consulting Australia Pty Ltd (SLR) was requested by Bridgette Del Giacco to undertake an asbestos building materials survey of 270 Trower Road, Casuarina NT to ascertain the location, extent, type and condition of Asbestos Containing Materials (ACM). The survey was conducted on 12 April 2017 by Paul Turyn and Gemma Sheridan from SLR.

2.1 Site Description

The site is located on the south side of Trower Road, between Angelo Street and Vanderlin Drive. A Locality Map is presented in **Figure 1** for the purpose of this report. Trower Road is taken to run in a north/south direction, directly adjacent to the site.

The following information is known about the building:

- The building is a single storey building and contains storage and general use areas, enclosed office and meeting rooms, toilets and a kitchenette area.
- The buildings use, at the time of the survey, is office accommodation for a Motor Vehicle Registry centre.
- The building was inspected outside of office hours and cleaners were the only occupants.
- The following areas were surveyed at the time of the inspection:
 - External fascia and eaves - located to all elevations of the building
 - Staff break/meeting area – located to the south east of the building
 - Open plan office area, including small server room – located to the south west of the building
 - Public entry way (interior) and waiting room – located to the north west of the building
 - All meeting rooms and private office rooms – located to the north of the building
 - Toilets, kitchenette and cleaning/wash cupboard – located to the north east of the building

Relevant photographs taken during the inspection are provided in **Appendix D**.

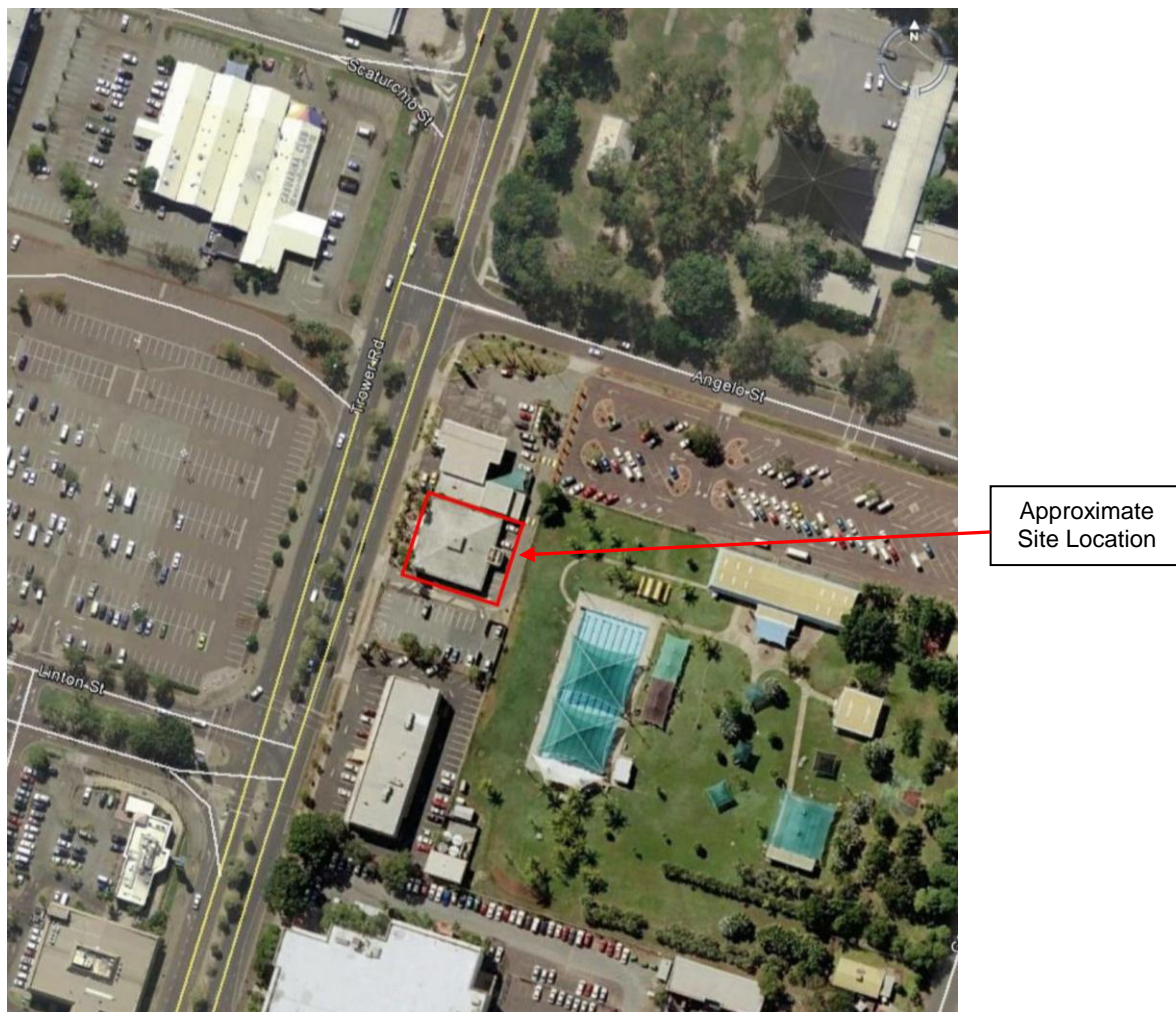


Figure 1 Site Location

2.2 Survey Strategy

The purpose of this survey is to locate, as far as reasonably practicable, the presence, type and extent of any suspect ACMs in the building(s), to assess their condition, provide a suitable risk assessment/rating and recommended control actions based on the condition of the materials at the time of the survey. As this is not an intrusive, demolition or refurbishment style survey, findings must not be deemed absolute. A demolition/refurbishment style survey is to be conducted prior to such works commencing as described in AS2601 (2001) The Demolition of Structures and outlined in state WHS Code of Practice: Demolition Work (2015): Refer to **Appendix C** for limitations.

The survey consisted of a visual inspection with limited sampling/analysis of materials undertaken by a trained and experienced surveyor. Materials are assumed to contain asbestos where:

- Laboratory analysis has confirmed the presence of asbestos in a visually similar material; or
- Materials visually appear to be asbestos containing but no sample was collected, for example due to access restraints.

Samples are typically collected using a hand tool or core borer. Hand drills and other tools are used where required. Power tools were not used during the survey.

2.3 Exclusions

Certain areas of the building were inaccessible at the time of the inspection. This includes areas/materials that were inaccessible due to being “live electrical” or “moving parts” equipment. **Table 1** lists those areas/materials that were inaccessible.

Table 1 Inaccessible Areas and/or Materials

Location	Explanation
External switchboard, adjacent to entrance door at north west elevation	The cover was padlocked shut at the time of the inspection and no keys were provided
Backing to internal switchboard, adjacent to external switchboard	Electricity was live at the time of the inspection

Additionally, and unless specifically noted, the survey did not cover:

- Wall/ceiling panelling behind laminations/coverings.
- Concealed floor coverings beneath carpet or superficial floor coverings.
- Fuses within “live” electrical panelling. Fuses of a certain age may contain asbestos containing flashguards.
- Hidden and/or inaccessible locations such as in or under concrete slabs, in or under vinyl/linoleum/carpet, wall cavities, hidden storage areas and the like. If the vinyl or linoleum is tested, this does not necessarily mean that the resin/glue is included in the analysis.
- Lift wells and inaccessible/unidentified shafts, cavities and the like.
- Air conditioning, heating, mechanical, electrical or other equipment.
- General exterior ground surfaces and subsurface areas e.g. asbestos in fill/soil.
- Materials dumped, hidden, or otherwise placed in locations which one could not reasonably anticipate.
- Materials other than normal building fabric, materials in laboratories or special purpose facilities and building materials that cannot be reasonably and safely assessed without assistance.

Limited access was available within the Ceiling Cavity Areas, Risers and Plant Room Areas at height due to the concentration of services, limited safe walking paths (where applicable) and lighting.

3 SURVEY RESULTS

The results of the asbestos survey are presented in a tabular format. **Section 4.1** details all ACM identified. **Section 4.2** details non-asbestos containing materials as determined during laboratory analysis.

To assist with the interpretation of the results the following legend provides detailed meaning of abbreviations and terms that may appear in the tables.

Legend

Internal/ External	Refers to the location of the material in relation to the structure. E.g. Eaves would be external of the building; Kitchen would be internal of the building.
Floor	Refers to the floor level on which the material is located.
Specific location	Refers to the precise location of the material within a room e.g. Room 1 - infill panel below window on southern wall.

Material	Refers to the type of material identified e.g. vinyl tile, fibre cement sheeting, fibrous insulation, etc. Material does not refer to the use or application of the material. This is covered in 'Application'.
Application	Refers to the use or application of the material e.g. floor covering, soffit lining, pipe lagging, etc.
Photograph	Refers to the photograph reference number located in the appendices.
Approximate Extent	Usually refers to the surface area or length of the material expressed as either square metres (m ²) or linear metres (Lin m). The dimension is an estimate only and should not be relied upon as an exact measure.
Results of Analysis	<p>Refers to the type of asbestos identified during laboratory analysis. There are three main commercial asbestos types: chrysotile (CH-white), amosite (A-brown or grey), and crocidolite (C-blue).</p> <p>The term NAD which appears only in the non-asbestos register; means no asbestos was detected during laboratory analysis.</p> <p>Materials shown as 'Similar to.....' have not been sampled but appear the same as other materials previously sampled.</p> <p>'Suspect' refers to those materials not sampled (perhaps for safety reasons) and which are not similar to previously sampled materials.</p> <p>'Assumed' refers to those materials not sampled (perhaps for safety/access reasons) and which exhibit similar properties to other materials identified/sampled.</p>
Risk of Disturbance	<p>Refers to frequency of disturbance</p> <p>High: The material is located in frequently accessible areas with potential for disturbance</p> <p>Medium: The material is prone to mechanical disturbance due to routine building activity and/or maintenance</p> <p>Low: Routine accessibility is unlikely to cause significant deterioration, the material is located in areas with minimal or no disturbance potential or the material is adequately sealed</p> <p>NA: Not Applicable where Analysis indicates No Asbestos Detected</p>
Overall Condition / Deterioration	<p>Refers to the physical state or condition of the material.</p> <p>Good - material shows no, or very minor, sign of damage and/or deterioration</p> <p>Fair - material shows signs of minor damage and/or deterioration</p> <p>Poor - material shows sign of significant damaged and/or deterioration or the material is partly or wholly unserviceable for its intended use.</p>
Friability of Asbestos	Friable or Non Friable
Sealed / Surface Treatments	Refers to whether or not the material is encapsulated with a sealant such as paint, wall paper, etc. concealing its exposed surfaces.

Outcome of Risk or exposure risk assessment	<p>Below is the general risk matrix that is followed however the consultant will take into account the specifics with each individual situation which may vary the outcome from risk assessment, such variations would be explained in the comments.</p> <p>Refers to the level of risk posed by the material based on its condition, friability, accessibility and other factors such as exposure to disturbance.</p> <p>Based Upon Heath Risk</p> <table><tr><td>Risk of disturbance</td><td>High</td><td>Medium</td><td>Low</td></tr><tr><td>Overall condition / Deterioration</td><td>Poor</td><td>Fair</td><td>Good</td></tr><tr><td>Friability of Asbestos</td><td>Friable</td><td>Non Friable</td><td></td></tr><tr><td>Sealed / Surface Treatments</td><td>Unsealed</td><td>Sealed</td><td></td></tr></table> <p>Removal Recommended: Engage appropriately qualified persons (i.e. licensed asbestos removal contractor) to remove and dispose of the ACM under controlled conditions in accordance with relevant state specific Removal Code of Practice.</p> <p>Repair / encapsulation Recommended: Repair or encapsulate (e.g. paint) or enclose the ACM to minimise deterioration until such time that the ACM is removed</p> <p>Suitable for Continual Use: ACM may remain in situ provided appropriate management controls are adopted, the material is appropriately labelled and re-assessed every 12 months or earlier, where a risk assessment indicates the need for reassessment or the ACM has been disturbed or removed.</p> <p>NA: Not Applicable where Analysis indicates No Asbestos Detected</p>	Risk of disturbance	High	Medium	Low	Overall condition / Deterioration	Poor	Fair	Good	Friability of Asbestos	Friable	Non Friable		Sealed / Surface Treatments	Unsealed	Sealed	
Risk of disturbance	High	Medium	Low														
Overall condition / Deterioration	Poor	Fair	Good														
Friability of Asbestos	Friable	Non Friable															
Sealed / Surface Treatments	Unsealed	Sealed															
Recommended control Actions	Refers to the recommended controls / actions required to ensure the identified asbestos materials are managed as per the legislative requirements.																
Labels Affixed	Yes/No or NA - Not Applicable where Analysis indicates No Asbestos Detected																
Additional Comments	Refers to any other relevant comments that may assist with the future management of the material.																
Next Inspection Date	Due 12 months from Inspection Date or as determined by the Risk Assessment or NA - Not Applicable where Analysis indicates No Asbestos Detected.																

4 ASBESTOS CONTAINING MATERIALS REGISTER

4.1 Asbestos Register

The following table is a register of all identified ACM on site, confirmed through analysis or assumed materials deemed to be homogenous or consistent in appearance and manufacture to similar samples collected/analysed. This Summary of ACM should be read in conjunction with all sections of this report.

Sample No./ Visual observation	Location				Analysis	Risk assessment						Additional information		
	Int / Ext Floor Specific Location	Material Application	Photo	Extent	Result	Risk of Disturbance	Overall Condition / deterioration	Friability of Asbestos	Sealed/ Surface Treatments	Outcome of Risk or Exposure Risk Assessment	Recommended Control Actions	Labels Affixed	Additional Comments	Next Inspection due date

Within the scope and limitations of this report, no ACMs were identified or assumed during the site investigation

Notes:

- The Asbestos Containing Materials Register should be read in conjunction with all sections of this report.

4.2 Non Asbestos Containing Materials

The following table is a register of all identified non-asbestos containing materials on site confirmed through analysis.

Sample No.	Location				Analysis		Additional information		
	Internal / External Floor Specific Location	Material Application	Photo	Extent	Result	Recommended Control Actions	Labels Affixed	Additional Comments	Next Inspection Due Date
MVR1	External Ground floor Lining to eaves at all elevations	FCS Lining panel	1	67 m ²	No asbestos detected	N/A	N/A	-	N/A
MVR2	External Ground floor Lining to fascia above eaves to all elevations	FCS Lining panel	2	55 m ²	No asbestos detected	N/A	N/A	-	N/A
MVR3	Internal Ground floor Ledges above all toilet cisterns and urinal in male toilets and above trough sink in laundrette room	FCS Infill panel	3	1.5 m ²	No asbestos detected	N/A	N/A	-	N/A

Notes:

- AC = Asbestos Cement; FCS = Fibre Cement Sheetting; BEBB = Black Electrical Backing Board; N/A = Not Applicable.
- The Asbestos Containing Materials Register should be read in conjunction with all sections of this report.
- Certificate of analysis/test results are detailed in **Appendix B** of this report.

5 DISCUSSION AND RECOMMENDATIONS

As previously detailed in the Scope (**Section 2**), SLR was appointed to complete a survey and assessment of 270 Trower Road, Casuarina NT with regards to the identification of ACM. The extent of the inspection and samples collected for subsequent analysis was completed in order to confirm, as far as reasonably practicable, the location, condition and risk presented by ACM remaining in-situ (and was based on the level of access available).

Further to the completion of the on-site investigation and collection/analysis of samples, there are detailed site/work-specific requirements and precautions that must be taken in the management, control and removal of ACM. In addition to those listed on the Asbestos Containing Materials Register, the following are some general recommendations and precautions that should be considered. Detailed documents, which may include Management Plans, Scope of Works, Safe Work Method Statements and Risk Assessments, should be prepared to appropriately address health and safety issues associated with specific work and site conditions.

- Within the scope and limitations of this report, no ACM were identified in the building surveyed at the time of inspection.
- This document should be held as an Asbestos Register of the building inspected and updated where a risk assessment indicates the need for re-assessment. All occupiers of the workplace are to be provided with a copy of this register and all updates to it.
- If any material that may contain asbestos is found on site the material should be sent for identification and expert advice sought. The material should be assumed to contain asbestos in the interim.
- In order to comply with the *Work Health and Safety Regulations (NT)*, any action taken to control asbestos and ACM in the place of work, or in plant at the place of work, is to be recorded in this register. These details are to be recorded in the Asbestos Control Log attached in **Appendix A**.
- Refer to the General Information attached in **Appendix E** of this report.

6 LEGISLATION, GUIDELINES AND REGULATIONS

- Work Health and Safety Act 2011
- Work Health and Safety Regulations 2011
- Code of Practice: How to Safely Remove Asbestos [Safe Work Australia (2011)]
- Code of Practice: How to Manage and Control Asbestos in the Workplace [Safe Work Australia (2011)]
- Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [National Occupational Health and Safety Commission: 3003 (2005)]
- AS/NZS 1716-2012 - Respiratory Protective Devices
- AS/NZS 1715-2009 - Selection, Use and Maintenance of Respiratory Protective Devices
- AS 2601-2001 - The Demolition of Structures
- AS 1319-1994 Safety Signs for the Occupational Environment

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ASBESTOS CONTROL LOG

To comply with the *WHS Code of Practice How to Safely Remove Asbestos 2011*, all actions taken to control asbestos and ACM are to be recorded in the table below. It is recommended that similar details also be recorded for any other asbestos materials identified.

[illegible]

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CERTIFICATE OF ANALYSIS

Asbestos Bulk Sample Analysis Report Certificate No NT1704180950

Client: SLR Consulting Client Contact: Gemma Sheridan Telephone: 08 8998 0100 Email: gsheridan@slrconsulting.com Project: 680.10358.00000 Site Location: MVR Casuarina, 270 Trower Rd Casuarina NT 0810	Sampled By: As received # of Samples Submitted: 2 Sampling Date: 12/04/2017 Date Received: 18/04/2017 Identification Date: 19/04/2017 Issue Date: 19/04/2017
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Test Methodology: Polarized light microscopy examination including dispersion staining techniques for the presence of asbestos in accordance with the methodology outlined in the In-House Procedure QP-930-001 which is based on Australian Standard (AS4964-2004)

Sample ID	Sample Location	Sample Description	Size or Weight	Asbestos Detected (Yes/No)	Fibre Types Detected
MVR1	AC - Lining to external eaves	Fibre cement sheeting	100x60x8mm	No	NAD-ORG
MVR2 & MVR3	AC - Lining to external fascia above eaves and panel to top of toilet cistern in male toilets (also in female)	Fibre cement sheeting	35x15x3mm	No	NAD-ORG-SMF

Detection limit (AS 4964) – 0.1 g/kg



Approved Identifier: Dianne Loffler



Report Approved By: Dianne Loffler

Fibre Types

CHR	Chrysotile (white asbestos) fibres detected	ORG	Organic fibres detected
AMO	Amosite (brown / grey asbestos) fibres detected	SMF	Synthetic mineral fibres detected
CRO	Crocidolite (blue asbestos) fibres detected	UMF	Unidentified mineral fibres detected
NFD	No fibres detected	NAD	No Asbestos Detected

Notes: Hand-picked refers to small discrete amounts of asbestos distributed unevenly in a large body of non-asbestos material.

Detection limit (AS 4964) – 0.1 g/kg.

Due to their nature, confirmation using another independent analytical technique is recommended if no asbestos is detected in samples of vinyl tiles, bituminous materials, mastics, adhesives, paints, sealants, resins or ore.

The results contained within this report relate only to the sample(s) submitted for analysis and OCTIEF accepts no responsibility for the collection, packaging and transportation of sample submitted by external parties. Sample descriptions, sizes and weights are approximate only.

LIMITATIONS

Surveys are conducted in a conscientious and professional manner. The nature of the task and the likely disproportion between any damage or loss which might arise from the work or reports prepared, and the cost of our services, is such that SLR cannot guarantee that all asbestos building materials have been identified and/or addressed.

Due to the possibility of renovations and additions to the building(s) over time, ACMs may have been concealed (for example behind new walls, flooring, ceilings, within boxing, etc.); such areas were inaccessible during the inspection. It is recommended that prior to any refurbishment/demolition works at the site that a full destructive asbestos building materials refurbishment/demolition survey is undertaken by a suitably qualified and experienced consultancy, such as SLR. An intrusive survey is required under AS 2601 (2001) The Demolition of Structures. If any materials reasonably suspected of containing asbestos are found on site, which are not identified within this report, the client's independent consultant, SLR, should be contacted to complete additional confirmatory sampling and analysis as required.

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PHOTOGRAPHS



Photo 1

Non-ACM lining to external eaves, as confirmed by laboratory analysis (sample I.D. MVR1)



Photo 2

Non-ACM lining to external fascia, as confirmed by laboratory analysis (sample I.D. MVR2)



Photo 3

Non-ACM panel to ledge above toilet cisterns, as confirmed by laboratory analysis (sample I.D. MVR3)

PHOTOGRAPHS



Photo 4

Inaccessible during site investigation and excluded from this survey:

Materials inside external electrical switchboard, adjacent to main entrance.



Photo 5

Inaccessible during site investigation and excluded from this survey:

Backing board and fuses to internal electrical switchboard, adjacent to main entryway



Photo 6

Non-ACM panels above trough sink in cleaning cupboard, as confirmed by laboratory analysis of what is presumed to be the same material (i.e.: sample I.D. MVR3)

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PHOTOGRAPHS



Photo 7

Non-ACM fragments on ground surface at north western boundary of building, as confirmed by laboratory analysis of what is presumed to be the same material (i.e.: sample I.D. MVR1)



Photo 8

Representative of non-ACM linings to ceiling, walls and floor coverings in open plan office spaces, meeting rooms and staff room

GENERAL INFORMATION

ASBESTOS

Asbestos: Description, Properties and Uses

Asbestos is the generic term given to a group of naturally occurring fibrous minerals, based on hydrated silicates, which are found in various rock formations. Differing ratios of oxygen, hydrogen, sodium, iron, magnesium and calcium elements account for several different types of asbestos minerals, the most common varieties being Amosite (brown asbestos), Chrysotile (white asbestos), Crocidolite (blue asbestos). Other types include Anthophyllite, Actinolite and Tremolite.

The immense popularity of asbestos as a building material is attributed to its near unique properties of fire resistance, high abrasion resistance and superb acoustical characteristics coupled with its relatively low cost. Prior to 1973, asbestos was the material of choice for fire proofing, thermal insulation, sound insulation and abrasion resistance. It was used as a spray-on insulation of ceilings and steel girders; as a thermal insulation of boilers, pipes, ducts, air conditioning units, etc; as an abrasion resistant filler in floor tiles, vinyl sheet floor coverings, roofing and siding shingles; as a flexible, though resistant joining compound and filler of textured paints and gaskets; as the bulking material with the best wear characteristics for automobile brake shoes and in countless domestic appliances such as toasters, grills, dishwashers, refrigerators, ovens, clothes dryers, electric blankets, hair dryers, etc.

Asbestos: Health Effects

Many asbestos bearing materials or products are of no significant health risk whatsoever when used in the normal course of events. A health risk exists when asbestos fibres are released into the air and when that air is inhaled into the lungs. Even then, it appears that most people exposed to relatively small amounts of asbestos do not develop any related health problems. There is however no "safe" level of asbestos exposure since the risk is dependent on numerous factors including the time since exposure, exposure duration and concentration, asbestos type, the attributes of the particular individual and environmental factors such as exposure to cigarette smoke and other airborne pollutants.

There are three main diseases associated with airborne asbestos fibres:

Asbestosis - A fibrosis (or scarring) of the lung associated with relatively massive exposure to asbestos.

Lung Cancer - Indistinguishable from that caused by smoking and a common cause of death. The risk of lung cancer is much higher when there is exposure to both cigarette smoking and to airborne asbestos.

Mesothelioma - A cancer of the chest and abdominal lining, it is specific to asbestos exposure.

A feature of these diseases is that symptoms take a long time to appear, generally 5 to 40 years. Once symptoms are evident the disease progresses rapidly.

There is some evidence that Chrysotile asbestos is less carcinogenic than Amosite, and that Amosite is less carcinogenic than Crocidolite in causing mesothelioma, but the evidence is less clear for lung cancer.

Measurement of Airborne Asbestos Fibres

Work Health and Safety Regulations (NT), and the Safe Work Australia Asbestos Codes of Practice & Guidance Note set the maximum allowable time weighted average for all forms of asbestos at 0.1 fibre/mL of air.

Air monitoring is used to determine airborne fibre levels. SLR is NATA certified for Asbestos Fibre Counting and Volume Measurement to carry out such monitoring.

The Safe Work Australia Code of Practice How to Safely Remove Asbestos 2011 states that air monitoring should be performed whenever Asbestos Containing Materials (ACM) are being removed, to ensure the control measures are effective.

The onus to provide a safe environment rests with persons in control of a business or undertaking, persons with management or control and persons carrying out demolition or refurbishment work. To meet these obligations it is recommended that SLR be engaged by the site controller, or their representative, and not an asbestos removal contractor as there could be a conflict of interest in the latter arrangement.

Asbestos Survey

Asbestos surveys are undertaken to identify any asbestos materials/hazards and assess the risk associated with the material/hazard.

Surveys are conducted through visual inspection by experienced personnel. During the inspection material samples are taken as appropriate for analysis.

Limitations

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Due to the nature of the task all asbestos surveys are limited. Since asbestos can occur in so many forms and in so many locations, and as there is no instrument to detect asbestos, it is never possible to guarantee all asbestos has been identified. Access is usually restricted, and there may be asbestos hidden behind walls or other structures. Building plans are of great assistance to consultants undertaking surveys.

Asbestos Register

An asbestos register is a record of the location, type and condition of all asbestos containing products identified in a building. Under the Safe Work Australia Codes of Practice and the legislation, any place of work constructed prior to 31 December 2003 must have an Asbestos Register. A SLR Asbestos Survey Report includes an asbestos register.

Registers must be maintained and changes in the condition or extent of any asbestos present should be recorded. Registers should also detail the next review date, at present annually since the condition of asbestos materials, legislation, guidelines and standards change.

Management Plan

An asbestos management plan is required where asbestos materials have been identified and are to remain on site. The plan would normally be a component in the overall Hazard Management Plan for the site.

Control Options

Asbestos judged to constitute a health risk should be removed, enclosed or encapsulated by an approved asbestos contractor.

Enclosure

This involves the installation of a permanent, solid, non-porous, impervious barrier between the asbestos material and the surrounding environment. Examples include building boxes around steam pipes etc. A suspended ceiling is not permanent and, since occasional access is necessary above a suspended ceiling, enclosure is negated. Furthermore, many suspended ceilings act as return air plenums so enclosure is impossible.

Encapsulation

Encapsulation involves coating the material with a sealant. Good sealants penetrate through the asbestos material to the substrate. The encapsulating substance then hardens and binds all the asbestos fibres into a solid matrix. This is usually a short to medium term management option.

Removal

Removal is not without hazards to the occupants of the building. If not strictly controlled, the removal process can result in increased fibre counts in other areas. Technical competence, experience and integrity are of prime importance in evaluating asbestos removal plans.

We advise clients to work within the usual practised time frames of the experienced asbestos removal companies under strict supervision by a qualified person. Pressing for quicker turnaround times may result in low quality workmanship and unnecessary asbestos risk. Building owners may be in part responsible for risks created by the removal Contractor due to carelessness or negligence.

An independent consultant such as SLR, experienced in the supervision of asbestos removal, should be retained to act on the client's behalf.

Clearance Inspection

A clearance inspection must be conducted at the completion of asbestos removal works. The clearance inspection may include airborne asbestos monitoring and/or sampling/analysis of materials and should be completed by a suitably qualified and experienced consultant, such as SLR.

ASBESTOS CEMENT SHEETING

A large number of building products used in the building and construction industry have been made with asbestos and cement. Products include:

- Flat or corrugated, compressed sheeting
- Pipes for water, drainage, flues
- Roof shingles
- Building boards eg Villaboard, Hardiflex, Wundaboard, Flexiboard

GENERAL INFORMATION

- Cable trays for electrical wiring
- Numerous preformed items such as cisterns, protective housings, etc

Provided these products are maintained in good condition, they present no health risk, however precautions must be observed during demolition, refurbishment etc.

Licensing Requirements

Asbestos-containing products are classified as **non-friable** or **friable**. **Asbestos cement (AC)** is classified as **non-friable asbestos** however once it is significantly broken, crushed or otherwise damaged Worksafe NT may consider it to be friable asbestos. The rules governing friable asbestos are far more stringent.

A Worksafe NT asbestos licence is required to remove 10 square metres or more of non-friable asbestos and there must be Worksafe NT notification.

Anyone wishing to carry out friable asbestos removal must obtain a friable asbestos removal licence from Worksafe NT. A friable asbestos removal permit must be obtained for all friable asbestos jobs.

Removal Procedures

The following procedures are recommended for demolition work involving non-friable asbestos cement sheeting in order to reduce the potential health risk to workers and to building occupants.

All asbestos removal and/or decontamination should be undertaken by a competent person working in accordance with the requirements specified in the Safe Work Australia Asbestos Codes of Practice and the *Work Health and Safety Regulations (NT)*. A licensed, experienced asbestos removal contractor is required to remove friable asbestos and >10m² of non-friable asbestos.

1. Prior to commencement of asbestos removal works, suitable warning signs must be erected. All windows and doors etc in the occupied areas of these buildings should be closed so as to prevent the spread of contamination.
2. All asbestos removal operatives to wear half-face particulate filter (cartridge) respirators and approved disposable coveralls.
3. The bolts fixing the asbestos cement sheets to the main frame must be cut out and removed. Abrasive cutting or sanding discs shall not be used on asbestos cement products. Only approved power tools may be used.
4. The asbestos cement sheets should be wetted or PVA coated (polyvinyl acetate). **High water pressures should not be used.**
5. All asbestos cement sheets should be removed with minimal breakage and be **lowered** to ground level, not dropped.
6. All asbestos cement dust and residues should be cleaned from the work area using an approved vacuum cleaner.
7. All asbestos containing waste must be removed from the site as soon as possible. The bins should be plastic lined, covered and taped secure prior to removal.
8. The asbestos waste shall be disposed of in accordance with the existing regulations.
9. Prior to engagement in the work, all asbestos operatives must be trained in safe working practices. These training aspects include:
 - Health hazards of asbestos
 - Safe working procedures
 - Wearing and maintenance of protective clothing and equipment

ASBESTOS CONTAINING VINYL TILES

Vinyl tiles which contain asbestos are considered to be of minimal risk whilst undisturbed and in good condition. The asbestos contained within vinyl tiles is well bound in the parent matrix and fibre release is virtually impossible provided the tiles are not ground, drilled, or otherwise abraded. Normal floor cleaning operations will not release asbestos fibres.

If the tiles are intact and not abraded or drilled etc. it is safe to leave them *in-situ*. However, prior to demolition and/or refurbishment all asbestos containing vinyl tiles in the work area must be removed in accordance with the *Work Health and Safety Regulations (NT)* and the Safe Work Australia Asbestos Codes of Practice.

Removal Procedures

The following procedures are recommended for the removal of asbestos containing vinyl tiles in order to avoid potential asbestos health risks to workers and building occupants.

GENERAL INFORMATION

If 10 m² or more of vinyl tiles are to be removed the work should be completed by a licensed, experienced asbestos removal contractor with notification to *Work Health and Safety Regulations (NT)*.

1. Prior to commencement of removal works, suitable warning signs must be erected. All windows, doors and vents etc in the occupied areas of the buildings should be closed to reduce the potential for cross-contamination/exposure.
2. All vinyl tile removal operatives are to wear appropriate personal protective equipment (PPE) including respiratory protection, safety glasses/goggles, disposable coveralls, hearing protection and gloves. Steel capped boots, hi-visibility vests and hard hats should also be worn as per the normal requirements for work on construction sites.
3. The tiles can be removed by heating the surface to loosen them or by use of a mechanical chisel to wedge them up. Care should be taken when heating tiles and the glues holding them in place to avoid the generation of toxic fumes. Do not grind, drill or otherwise abrade the tiles in any fashion that generates unnecessary dust/debris.
4. All waste is to be double bagged or placed in lined bins, sealed, and disposed of as asbestos waste in accordance with the Asbestos Codes of Practice and existing guidelines and regulations.
5. The removal area should be detailed clean using an approved vacuum cleaner fitted with a High Energy Particulate (HEPA) filter, and by wet wiping. A detergent should be used when wet wiping as this improves cleaning efficiency.
6. Obtain a clearance inspection and report from an independent, suitably qualified and experienced consultant such as SLR.
7. Upon satisfactory clearance inspection spray the area with a dilute PVA emulsion at low pressure. Multiple applications may be required to provide adequate coverage.
8. Prior to engagement in the work, all asbestos operatives must be trained in safe working practices. These training aspects include:
 - Health hazards of asbestos
 - Safe working procedures
 - Wearing and maintenance of protective clothing and equipment

Air Monitoring

The Safe Work Australia Code of Practice How to Safely Remove Asbestos 2011 states that air monitoring should be performed whenever Asbestos Containing Materials (ACM) are being removed, to ensure the control measures are effective.

All air monitoring must be completed by a NATA accredited organisation as specified in the Work Health and Safety Regulations (NT).

Asbestos fibres are generally well bound in the vinyl matrix and fibre release is unlikely provided the tiles are not ground, drilled or similarly disturbed.

Note:

These are general recommendations. In all cases the asbestos removalist should be familiar with, and comply with, the relevant Codes of Practice and the Work Health and Safety Regulations (NT). There may also be site specific requirements which should be complied with.

CORRUGATED ASBESTOS CEMENT (AC) ROOFING

Deterioration Mechanisms

Asbestos cement (AC) roofs deteriorate slowly over time. The upper surface exposed to the elements slowly loses cement binder and asbestos fibres become increasingly exposed. This may result in excessive fibre loss and a general weakening of the roof materials which will eventually become porous.

The process of natural weathering may be compounded by exposure to steam, acid fumes and other agents from industrial processes, resulting in accelerated deterioration of the roof.

Hail, heavy rain and other storm activity can cause also significant problems including:

- Cracks and/or penetrations in asbestos cement panels, and resultant generation of asbestos cement dust/debris.
- Shedding of asbestos fibres which may contaminate runoff and enter gutters and drains etc.
- Blocking of gutters with hail and other debris resulting in overflow and asbestos contamination of surrounding areas.

In most situations the underside of AC roofs exhibit very little deterioration however asbestos containing dust can accumulate on the roof support structure and other exposed locations below/around the roof.

GENERAL INFORMATION

If an asbestos cement roof becomes significantly damaged, weathered and or produces visible dust or significant debris it is likely that health and safety management works will be required. A suitably qualified and experienced consultant, such as SLR, can advise and assist in carrying out such works.

Life Expectancy and Maintenance

AC roofs in good condition may remain in place indefinitely providing certain precautions are taken.

- On no account may high pressure water be used to clean AC roofs. This is forbidden under the Safe Work Australia asbestos codes of practice as it can result in widespread contamination.
- AC roofs may not be drilled, ground, cut or otherwise damaged as this may result in the release of airborne asbestos fibres.
- In general, roofs are best left undisturbed if in good condition. There are however several sealing compounds which may be used on AC roofs. The underside of AC roofs may be encapsulated, shielded with sarking or enclosed with a fixed ceiling or other materials. Enclosures are fixed, permanent, non-porous barriers that prevent fibre penetration. All barriers need to be maintained.
- The roof including internal support structure should be inspected regularly (eg at least once a year) by a suitably qualified and experienced consultant such as SLR to assess the condition and extent of the asbestos materials present.
- Gutters and down pipes should be kept clean and in good condition. Some gutters may accumulate a build up of debris which contains asbestos; this is best removed by an experienced licensed asbestos removal contractor.
- Down pipes etc should be protected from damage by forklifts and other vehicles via the installation of appropriate barriers.
- Damaged sections of asbestos containing material should be removed as soon as possible by an experienced licensed asbestos removal contractor. It is illegal to re-use asbestos containing materials.
- As a precautionary measure any exposed broken edges of asbestos material temporarily remaining in place should be sealed with an appropriate sealant such as Emerclad paint.

Demolition

Demolition of AC roofs should only be undertaken by an experienced licensed Asbestos Removal Contractor.

It is recommended that asbestos removal supervision, air-monitoring and clearance inspections be undertaken by an independent, suitably qualified and experienced asbestos consultant such as SLR.

ASBESTOS CONTAINING FIRE DOORS

The cores of older fire doors frequently contain asbestos materials. Such doors may remain in place provided certain precautions are taken. These include:

- Labelling the doors with appropriate warning signs that advise of the asbestos risk.
- Not drilling or otherwise disturbing the doors so as to release airborne asbestos fibres.
- Recording the location, extent and condition of the doors in the site Asbestos Register and addressing them in the site Asbestos Management Plan. A copy of the Asbestos Register and Management Plan should be held by the Building Manager who is to ensure that no work is carried out on the doors without their prior knowledge and the implementation of adequate health and safety precautions.
- Regular inspection and reporting of the condition of the doors.

If the fire doors are damaged then access to the area is to be appropriately restricted and advice sought from a suitably qualified and experienced consultant such as SLR.

Any asbestos removal and/or remediation/decontamination work should be undertaken by a licensed Asbestos Removal Contractor.