

The University of New England Asbestos Management Plan

29 June 2007

Prepared for:

The University of New England
Facilities Management Services
Armidale NSW 2351

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**The University of New England
Asbestos Management Plan (AMP)**

29 June 2007

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1 INTRODUCTION

The University of New England (UNE) is a Tertiary Teaching Institution located on the New England Table Lands in Armidale NSW. The Armidale Campus consists of 130 buildings of various sizes and 7 residential colleges each of which accommodate 200 to 250 students. Approximately 1300 staff are employed and 3,500 internal and 13,500 external students attend the University.

UNE, as an employer, has a legal obligation under Sections 8 and 10 of the New South Wales Occupational Health and Safety Act 2000, to ensure the workplace health and safety of its staff, contractors, students and visitors. UNE also has an obligation to ensure the workplace health and safety of others is not affected by the way they conduct their business.

The purpose of the Asbestos Management Plan (AMP) is to address UNE's legal obligation under the NSW Occupational Health and Safety Act and Regulation, as it relates specifically to the presence of asbestos on UNE's properties. The AMP is a working document designed to effectively manage and minimise asbestos-related health risks to personnel working on or visiting UNE's properties. The AMP is to be read in conjunction with existing Asbestos Survey reports prepared for individual properties.

This AMP has been prepared to ensure the safety and health of students, visitors, staff and contractors at UNE properties. Future work undertaken on the UNE's properties may be in an asbestos containing environment and may involve asbestos removal. The works must be carried out in a manner, which ensures the protection of the health and wellbeing of UNE staff, contractors, students and visitors and ensures that all personnel employed at the site are aware of asbestos-containing materials (ACM) and their location.

With projects dealing with toxic and hazardous materials, it is a requirement of New South Wales legislation to put in place a hazardous materials management plan preceding the commencement of works.

2 DEFINITIONS

The use of italics in this document indicates the word or words have the following defined meaning:

<i>Asbestos:</i>	The fibrous form of those mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals, including actinolite, amosite (brown <i>asbestos</i>), anthophyllite, chrysotile (white <i>asbestos</i>), crocidolite (blue <i>asbestos</i>) and, tremolite or any mixture containing one or more of the mineral silicates belonging to the serpentine and amphibole groups.
<i>Asbestos-containing material (ACM):</i>	Any material, object, product or <i>debris</i> that contains <i>asbestos</i> .
<i>Asbestos Register:</i>	A register recording the type, condition and location of all <i>asbestos</i> and <i>asbestos containing materials</i> for all premises under GCC's control.
<i>Asbestos work:</i>	work undertaken in connection with a work process in which exposure to <i>asbestos</i> may occur and includes any work process involving the use, application, removal, mixing or other handling of <i>asbestos</i> or <i>asbestos containing material</i> .
<i>Bonded or non-friable asbestos material:</i>	Materials that contain asbestos in a bonded matrix (may consist of Portland cement or various resin/binders) and cannot be crushed by hand when dry.
<i>Competent person:</i>	a person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill, for the safe performance of the specific work.
<i>Control Level</i>	The airborne concentration of a particular substance which, if exceeded, indicates a need to implement a control, action or other requirement. Control levels are generally set at no more than half the NES for the substance. Control levels are occupational hygiene 'best practice', and are <i>not</i> health-based standards
<i>Control Monitoring</i>	means air monitoring, using static or positional o measure the level of airborne asbestos fibres in an area during work on ACM. Control monitoring is designed to assist in assessing the effectiveness of control measures. Its results are not representative of actual occupational exposures, and should not be used for that purpose.
<i>Dust and debris:</i>	visible particles, fragments or chunks of material, large and heavy enough to have settled in the work area, that are likely to have originated from ACM.

<i>Friable (Asbestos):</i>	<p>means ACM which, when dry, is or may become crumbled, pulverised or reduced to powder by hand pressure</p> <p>NOTE: This may include ACM that have been subjected to conditions that leave them in a state where they meet the definition, such as weathering, physical damage, water damage etc.</p> <p>Hierarchy of hazard control measures taken to minimise risk to the lowest level reasonably practicable in the descending order of: Elimination, Substitution, Engineering controls, Administrative controls, and PPE.</p>
<i>Licence:</i>	<p>a licence granted by the WorkCover Authority of NSW to carry on the business of <i>licensed work</i> under the OHS Regulation 2001.</p>
<i>Licensed work</i>	<p>means one of the following kinds:</p> <ul style="list-style-type: none">a) <i>Friable asbestos</i> removal work, other than:<ul style="list-style-type: none">i. Work done for the purpose only of obtaining a sample of <i>asbestos</i> for identification, orii. Work done by a person, at the person's usual place of business, at a frequency of one hour per week or less.b) <i>Bonded asbestos</i> removal work, other than:<ul style="list-style-type: none">i. Work done for the purpose only of obtaining a sample of <i>asbestos</i> for identification, orii. Work done in relation to <i>bonded asbestos material</i> having a total surface area of less than 200 square metres.
<i>Person with control</i>	<p>means, in relation to premises, a person who has control of premises used as a workplace. The person with control may be:</p> <ul style="list-style-type: none">i. The owner of the premises;ii. A person, who has, under any contract or lease, an obligation to maintain or repair the premises;iii. A person who is occupying the premises;iv. A person who is able to make decisions about work undertaken at the premises; orv. An employer at the premises.
<i>NOHSC</i>	<p>National Occupational Health & Safety Commission, now known as the Australian Safety & Compensation Council (ASCC).</p>

3 LEGISLATIVE REQUIREMENTS

This AMP and associated Standard Work Procedures satisfy the requirements of the National Occupational Health and Safety Commission's (NOHSC) Asbestos Codes of Practice and Guidance Notes, these being:

- Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018(2005)];
- Code of Practice for the Safe Removal of Asbestos, 2nd Edition [NOHSC: 2002 (2005)]; and
- Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibre, 2nd Edition [NOHSC: 3003 (2005)].

The AMP is consistent with New South Wales legislative requirements, these being:

- Occupational Health and Safety Act 2000;
- Occupational Health and Safety Regulation 2001;
- Protection of the Environment Act, 1997;
- Environmentally Hazardous Chemicals Act 1985;
- Protection of the Environment Operations (Waste) Regulation 1996.

In addition, the AMP has considered the following Australian Standards:

- Australian Standard 1319-1994 Safety Signs in the Occupational Environment;
- Australian Standard AS 1216:1995 Class Labels for Dangerous Goods
- Australia/New Zealand Standard 1715-1994 Selection, Use and Maintenance of Respiratory Protection Devices;
- Australia/New Zealand Standard 1716-2003 Respiratory Protection Devices;
- Australian Standard 3544-1988 Industrial Vacuum Cleaners for Particles Dangerous to Health;
- Australian Standard 4260-1997 High Efficiency Particulate Air (HEPA) Filters – Classification, Construction and Performance.

Exposure standards are referenced from:

- Adopted Exposure Standards for Atmospheric Standards on the Occupational Environment [NOHSC:1003(1995)].

4 ASBESTOS

Asbestos is a term applied to some mineral silicates present in a fibre form. There are many members of this mineral group; common among these are blue asbestos (crocidolite), white asbestos (chrysotile) and brown or grey asbestos (amosite).

Because of its unique properties – flexibility, tensile strength, insulation (from heat and electricity) and chemical inertness – asbestos was one of the most useful and versatile minerals known to mankind. It is the only natural mineral that can be spun and woven into useful fibres and fabrics in a similar way to cotton or wool.

Large deposits of asbestos have been discovered in many areas of the world including the Soviet Union, Northern Italy, Canada, USA, South Africa and Zimbabwe. In Australia, large deposits of crocidolite were found in the north of Western Australia at Wittenoom Gorge in the Hamersley Ranges, and some deposits of white asbestos have been mined in Northern New South Wales. Asbestos is no longer mined in Australia.

Uses of asbestos have included fibro-sheeting, corrugated roofing, asbestos cement pipes, thermal insulation and fireproofing. It has also been used as an additive in paints and sealants, in textiles such as felts and theatre curtains, in gaskets, and in friction products like brake linings and clutches. During the peak building years, i.e. 1950s, 60s and 70s, asbestos found its way into most public buildings, including hospitals, schools, libraries, office blocks and factories.

Due to the extensive use of asbestos in a wide variety of products it is present in many workplaces. Consequently it may pose an occupational health risk to persons who work in close proximity to ACM.

4.1 The Health Effects

The health effects from exposure to asbestos result from the inhalation of asbestos fibres.

If asbestos fibres are inhaled, they must first pass the filtration mechanisms lining the nose and the mouth down to the fine airways that lead to the small alveoli. Hence, only very small particles barely visible with a high-powered microscope, may eventually reach the alveoli. Fibres such as blue asbestos, which are relatively long and very fine, are more likely to reach the alveoli.

Asbestos fibres reaching the alveoli are handled in different ways. Some are carried out of the lung through the lymphatic system. Of those remaining some do not cause ill effects whilst some can lead to lung changes such as the following:

- **Pleural plaques** Benign plural effusion and fibrosis.
- **Asbestosis** This is a form of fibrosis (scarring) of the lungs, which results in breathlessness.
- **Lung cancer** A cancer of the larger and medium sized airways, which are similar to, that caused by smoking. The combination of asbestos exposure and smoking has a synergistic effect, which greatly increases the risk of lung cancer.
- **Mesothelioma** Rare cancer of the pleura and peritoneum. Crocidolite (blue asbestos) is very potent in inducing Mesothelioma and Amosite (brown asbestos) is to a lesser extent.

4.2 Application of Asbestos in Buildings

Since the early 1980s asbestos has not been mined, manufactured or used in Australia (except in some frictional products including brake linings). As ACM has been used extensively throughout the building industry asbestos is still present in numerous workplaces and it is still encountered by many occupational groups.

The asbestos related health risk to the occupants of buildings/workplaces, which contain asbestos, is negligible. Whilst ACM located within a workplace present a hazard they do not present a risk if no asbestos fibres are released to the air.

Asbestos has been used in several thousand different products. Common materials known to contain asbestos include but are not limited to:

- Sprayed on fire proofing to structural steel beams (limpet asbestos);
- Sprayed under roofs and ceilings as decoration and for sound/fire insulation properties (vermiculite);
- Sprayed on for rating wall brackets and joint seals;
- Asbestos cement products including roof, internal and external wall and ceiling cladding, moulded pipe and conduit, downpipes and guttering;
- Door seals;
- Insulation to boiler / heating pipes and other industrial plant;
- Permanent formwork;
- Expansion joints;
- Gasket material;
- Laboratory 'matts';
- Vinyl floor tiles;
- Paints;
- Insulation to fire doors,
- Waterproofing membrane;
- Electrical switchboards;
- Insulation to heaters coils inside air conditioning ducting;
- Muffler bandage;
- Brake linings and clutch pads;
- Wall and ceiling insulation.

5 RESPONSIBILITIES

Ultimately the Vice Chancellor and senior management are responsible for ensuring that appropriate preventative and control measures are implemented and maintained. This stems from a conscious commitment to establish this AMP as a preventative and control measure and to provide continued guidance and resources to ensure all personnel required to work at the UNE properties where ACM are present are adequately informed and protected and that their health, safety and well being is maintained.

Employees must also be committed to working in accordance with this AMP and participate in maintaining the health and safety of themselves and their co-workers.

To achieve the goals, consultation must occur between both management and employees in maintaining and improving the intentions of this AMP and ultimately ensuring health and safety conditions are maintained.

Full consultation, involvement and information sharing shall occur between management, OH&S Working Groups and employees through a well-established consultative mechanism.

UNE has a responsibility in relation to asbestos to:

- Provide and maintain, so far as practicable, safe and healthy work environments and practices generally, and have written policies on the control of asbestos;
- Comply with legislative provisions;
- Liaise where appropriate with employees on a continuous basis so that the existence and condition of asbestos in the working environment is known;
- Provide adequate instruction and training for employees and supervision of health and safety measures;
- Consult with employees, their representatives and organisations and the NSW WorkCover Authority on the control of exposure to airborne asbestos;
- Anticipate the need for the control of asbestos risks to be initiated in any particular case;
- Provide appropriate protective clothing and equipment, hygiene procedures and personal decontamination facilities; and
- Prepare, complete, and submit documents for obtaining necessary approvals.

UNE Employees and Contractors have a responsibility in relation to asbestos to:

- Comply with instructions given for their own safety and health and that of others generally;
- Comply with all work procedures and instructions related to asbestos;
- Co-operate with supervisors and managers in their fulfilment of legislative obligations;
- Take care of their safety and health and that of others, and abide by their duty of care provided for in legislation;
- Report immediately to their supervisor any perceived safety or health risk;
- Wear and maintain in good order all protective clothing and apparatus provided by the manager or supervisor for personal protection and maintain same in good order; and
- Ensure all equipment is in good working order.

Employer and employee organisations have a responsibility, in relation to asbestos for:

- Consulting on health and safety matters generally and on measures that may need to be taken on asbestos in occupied areas, on machinery and equipment;
- Keeping themselves informed of advice given by competent persons in relation to inspections and meeting health and safety commitments;
- Co-operating on any reasonable request for the variation to work hours and hours of work; and
- Advising members of their obligations and responsibilities under occupational health legislation.

UNE Students and Visitors have a responsibility in relation to asbestos to:

- Comply with instructions given for their own safety and health and that of others generally;
- Comply with all work procedures and instructions related to asbestos;
- Co-operate with UNE staff in their fulfilment of legislative obligations;
- Take care of their safety and health and that of others;
- Report immediately to the UNE any perceived safety or health risk.

6 ORGANISATIONAL RESPONSIBILITIES AND AUTHORITIES

The following key personnel are responsible for the implementation of the control measures discussed in this document:

Asbestos Management Plan Organisational Responsibilities		
Plan Preparation, Maintenance and Audit		
Item	Activities	Responsibility Centre
Plan compliance	Implementation Establish document controls AMP process audit Communication to key stakeholders	Director, Facilities Management Services
Asbestos audits	Building inspection program	Director, Facilities Management Services
Asbestos Awareness Training	Prepare program	Director, Facilities Management Services
Workplace Implementation		
Item	Activities	Responsibility Centre
Contractor compliance	Special conditions in work specifications Provision of safe operating procedures	Director, Facilities Management Services
Asbestos identification and management	Establish asbestos removal program Establish building identification systems	Director, Facilities Management Services
Implement asbestos awareness training	Communication of safe operating procedures	Director, Facilities Management Services

6.1 Consultant Occupational Hygienist

The “Consultant Occupational Hygienist” referred to in the AMP will be personnel from a laboratory registered and accredited by the National Association of Testing Authorities (NATA) Australia. Asbestos Identification Analysis and Airborne Asbestos Monitoring and Analysis must be undertaken by NATA Approved Identifiers and Counters.

The “Consultant Occupational Hygienist” will be employed by and at the cost of UNE to conduct asbestos monitoring, clearance inspections, auditing, risk assessment, consulting and other technical services relating to asbestos at UNE facilities and in accordance with the requirements of this AMP.

7 ASBESTOS MANAGEMENT SAFETY STATEMENT

UNE is committed to the implementation and execution of occupational health and safety practices which fully comply with the relevant statutory regulations in the State of New South Wales and which ensures the health and well-being of their staff, students, all other site personnel and the public.

This commitment will be actioned by the implementation of this Asbestos Management Plan and the allocation of staff that will be responsible for the implementation, monitoring and adjustment of procedures and processes, which will minimise the risk of exposure of workers to asbestos fibre.

The AMP is based on the identification and recognition of ACM and their risks, and the controls and precautions implemented. The strong involvement of all levels of the workforce including managers and employees will ensure the successful attainment of the objectives of the AMP.

UNE is committed to achieving the highest performance in occupational health and safety with the aim of creating and maintaining a safe and healthy working environment throughout its businesses.

This component of our OH&S objectives will be achieved by the commitment we show in our work and by our recognition of the hazards of asbestos.

The authority of this asbestos management safety statement is provided by the University's Hazardous Substances and Dangerous Goods Policy.

8 OBJECTIVES OF THE ASBESTOS MANAGEMENT PLAN

The long term goal for UNE is to have an asbestos-free workplace. In the interim, the UNE intends to manage asbestos hazards based on identification, assessment prioritisation of risk and control of asbestos.

A comprehensive asbestos survey program has been undertaken to update existing asbestos surveys of UNE properties and is an ongoing process. The purpose of the asbestos surveys is to identify the presence of ACM and to assess the risk to personnel working at or visiting the properties of being exposed to airborne asbestos fibre.

This AMP details the UNE's approach towards managing the asbestos hazards identified at its workplaces, by documenting procedures designed to minimise the risk of exposure to asbestos at UNE properties, for staff, students, maintenance personnel, contractors, construction workers and visitors.

This AMP has been developed in line with the *Code of Practice for the Management and Control of Asbestos in Workplaces* [NOHSC: 2018(2005)] produced by the National Occupational Health and Safety Commission (NOHSC).

The objective of this AMP is to ensure as far as possible, that no persons whether employed visiting, contracted to work on, study or conduct research at UNE properties are exposed to the risk of the inhalation of airborne asbestos fibre. In addition, it is essential that all staff, contractors, students and visitors be fully informed of the control strategies that have been established and the factual health consequences of exposure to airborne asbestos fibre.

9 PRINCIPLES OF ASBESTOS MANAGEMENT

9.1 General Principles

The principles of asbestos management have been adapted from the general principles published by the National Occupational Health and Safety Commission (2005). These principles are summarised below:

- The objective is to remove all ACM from UNE properties and to manage ACM whilst it is still located within their facilities.
- Asbestos removal may not be immediately necessary, but must be completed before a structure or part of a structure, is demolished.
- Removal of asbestos should be subject to priority setting, determined by the condition and location of the asbestos as well as scheduled refurbishment works.
- Asbestos presents a risk only when it is airborne. The risk to health increases as the number of fibres inhaled increases.
- Wherever practicable, substitutes will be found for ACM. Such substitutes shall be thoroughly evaluated before use, to ensure that they do not constitute a health hazard. Ultimately, all ACM should be eliminated.
- Asbestos, which has been incorporated into a stable matrix, can be found in many working environments. Provided the matrix remains stable and no airborne dust is produced, it presents a negligible health risk.
- The presence of asbestos shall be identified.
- No person shall be exposed to the risk of inhalation of asbestos in the course of employment without being provided with full information of the occupational health and safety consequences of exposure and appropriate control strategies.
- At present it is not possible to assess whether there is a level of exposure to asbestos in humans below, which an increased risk of cancer would not occur. Accordingly, exposure to asbestos should always be kept to a minimum.
- Asbestos removalists and maintenance workers in an asbestos environment must be suitably protected.
- The recognised occupational exposure standard for asbestos is that adopted by the National Occupational Health and Safety Commission or specified by legislation. The method used to measure exposure to asbestos is the Membrane Filter Method as endorsed by the NOHSC (refer **Section 16.3**).
- Where appropriate, products containing asbestos shall be labelled accordingly (refer **Section 15**).
- The spraying of asbestos shall be prohibited. All future use of asbestos for insulation purposes shall be prohibited.

The general principles of asbestos management are broadly covered by four separate phases. These are:

- 1 Identification phase;
- 2 Evaluation and Risk Analysis phase;
- 3 Control phase; and
- 4 On-going monitoring/re-assessment.

Procedures need to be designed and implemented to appropriately control any asbestos hazard and to ensure that personnel are not exposed to asbestos to an extent likely to cause danger to health. The procedures required may include:

- Removal;
- Substitution;
- Engineering controls;
- Safe working procedures;
- Personal protective equipment;
- Cleaning, decontamination and waste disposal;
- Education;
- Environmental monitoring; and
- Medical surveillance.

9.2 Control of Asbestos Hazards

The control of asbestos hazards should utilise the most appropriate method applicable to the particular circumstances. Based upon the assessment of the condition of the asbestos, it's potential to suffer damage or mechanically degrade, and the likelihood of exposing people to airborne asbestos, the following control strategies are relevant:

- Leave in situ (defer action);
- Encapsulation;
- Enclosure; and
- Removal

These control strategies are discussed below:

9.2.1 Leave in Situ (defer action)

The identification of asbestos in a building or plant does not automatically necessitate its removal. Asbestos in a stable condition and not prone to mechanical damage can generally remain in situ. The asbestos will need to be inspected on a regular basis to ensure its integrity is maintained, should be labelled with an appropriate warning, and must be removed under controlled conditions prior to demolition or refurbishment works that may disturb the asbestos.

9.2.2 Encapsulation or Sealing

Encapsulation refers to the coating of the outer surface of the asbestos material by the application of a sealant compound that usually penetrates to the substrate and hardens the material. Sealing is the process of covering the surface of the material with a protective coating impermeable to asbestos. Encapsulation or sealing helps protect the asbestos from mechanical damage, and is designed to reduce the risk of exposure by inhibiting the release of asbestos fibres into the airborne environment, and increase the length of serviceability of the product. The use of encapsulation or sealing may be of limited application. It is not considered to be an acceptable alternative to repairing or removing severely damaged ACM.

9.2.3 Enclosure

Enclosure involves installing a barrier between the asbestos material and adjacent areas. This is effective in inhibiting further mechanical damage to the asbestos, and friable products such as calcium silicate pipe lagging or sprayed limpet asbestos may be targeted for enclosure where removal is not an option. The type of barrier installed may include plywood or sheet metal products, constructed as boxing around the asbestos.

9.2.4 Removal

Removal of asbestos must be performed under controlled conditions, depending on the type of asbestos product to be removed. Removal is considered preferable to the other abatement options such as enclosure or encapsulation, as it eliminates the hazard from the workplace. The removal process, however, does pose an increased risk to personnel engaged in the removal, and may result in increased airborne fibre levels in adjacent occupied areas if the removal program is not strictly controlled. Asbestos removal is generally an expensive exercise, and can cause major disruptions to building occupants. The removal of asbestos is considered appropriate when the asbestos product is deteriorated, has reached an unserviceable condition, or is at risk of being disturbed, and the other control options are not feasible. Where demolition or refurbishment works are to occur, and this work is likely to impact on ACM, the asbestos must be removed under controlled conditions prior to the commencement of any site works.

9.3 Managing In Situ Asbestos

9.3.1 General

The management of in situ asbestos is important to ensure ACM are not damaged or deteriorate to such an extent that, workers or visitors are unnecessarily exposed to airborne asbestos fibres. It is also the aim of UNE to incorporate asbestos issues into internal works orders and building works contracts, designed to ensure that any asbestos that may be encountered during the work to be undertaken is dealt with in the appropriate manner.

9.3.2 Re-inspections

Re-inspections of ACM to be conducted by competent personnel trained in the identification of ACM and the risk assessment processes (i.e Consultant Occupational Hygienist). The inspections will involve visual assessment of the condition of the materials to determine whether the material remains in a satisfactory condition, or if deterioration has occurred since the previous inspection. Such re-inspections will determine if any remedial action, such as encapsulation, isolation or removal of the ACM, is required. Re-inspections will be performed on a regular basis. Normally, re-sampling of materials would not be required during re-inspections. If, however, previously unidentified or undocumented asbestos, or materials suspected of containing asbestos, are encountered during the re-inspection process, sampling and analysis will need to be performed. The asbestos register, where necessary, will be updated and re-issued at the completion of the re-inspection work.

10 EMPLOYEE INFORMATION AND TRAINING

Training and sharing of information is one of the most important elements of this AMP. All categories of personnel employed at the site and visitors to the site will be given appropriate Asbestos Awareness Training to ensure adequate awareness of the health risks of asbestos, methods of prevention and control, proper work practices, emergencies and use of personal protective equipment.

Asbestos Awareness Training will be conducted for employees as required to keep employees abreast of updated information and procedures and to reaffirm UNE's health and safety requirements.

The training will be conducted for personnel who may become involved with the handling of ACM in their day-to-day job activities. These personnel will include maintenance and trades staff that may encounter ACM during their normal course of work. Those personnel required to supervise asbestos removal projects will also receive the additional training.

The training for employees will be conducted in a manner which the employee is able to understand and will be given in verbal and written form and with the use of visual aids and worker participation. These approaches are to be used in a manner that will ensure adequate awareness of the health and safety risks in UNE properties, methods of prevention and control and appropriate work practices.

An important element of the information provided will be on the responsibilities of management and employees in relation to asbestos matters and the health hazards that may result if these responsibilities are neglected.

The training program will include, but not be limited to, the provision of information on the following:

- Identification of ACM
- Potential health effects of exposure to asbestos;
- Relationship between smoking and exposure to asbestos and the risk of lung cancer;
- Nature of operations which could result in asbestos exposure;
- Preventative and control measures;
- This AMP and the Procedures implemented at the site to protect employees from exposure to asbestos, including work practices, housekeeping, emergency responses and personal protective equipment;
- Labelling and Signage;
- Airborne Asbestos Monitoring Program; and
- Responses to airborne asbestos fibre releases.
- Individual responsibilities in relation to asbestos management

Training records will be maintained for each employee and visitor in the University records and/or at the site, as relevant.

Consultation and co-operation between all levels of management and employees is required to ensure that the prevention of exposure to airborne asbestos fibre is the main priority.

11 CONTRACTOR TRAINING

Contractors will be provided with an appropriate level of site specific training during the induction process to ensure that they are aware of the requirements of the AMP and also, that they are aware of any ACM that may impact upon their work. Site specific induction procedures will include where necessary, a copy of the relevant section(s) of the University Asbestos Register, asbestos management and personal protective requirements, with emphasis placed on the workers responsibility in relation to asbestos matters, and the health hazards that may result if these responsibilities are neglected.

12 ASBESTOS SURVEYS/REGISTERS

An updating of the existing Asbestos Surveys and Registers of ACM at UNE facilities is an ongoing process.

UNE has developed a standard asbestos survey report template that will ensure consistent reporting of information when buildings or structures are surveyed for asbestos. The standard asbestos survey report documents the location, extent, type, approximate quantity and condition of ACM identified during the survey and includes a qualitative risk assessment. Each asbestos situation identified is given a health risk rating, based on the extent, type, condition and accessibility of the asbestos at the time of the site assessment.

Generally, each asbestos survey will be undertaken by means of performing a visual assessment of the building, structure or property in question. The asbestos survey and assessments are only performed by persons/organizations trained and experienced in identifying and assessing the risk of asbestos. Representative samples of materials suspected of containing asbestos are collected during the survey. Analysis of these samples will only be undertaken by NATA Accredited personnel using polarised light microscopy (PLM), supplemented with dispersion staining techniques (i.e. Consultant Occupational Hygienist).

All visible and accessible sources of asbestos identified are documented in tabular format in the Asbestos Register, which will form part of the Asbestos Database. Those areas not able to be accessed during the course of the site survey are also documented. This is important for future reference.

Each survey report is accompanied by sample analysis reports, a photographic record of identified ACM, risk assessment of the ACM discovered, background information on typical applications and information on the health effects of asbestos.

13 SAMPLING AND IDENTIFICATION OF ASBESTOS

13.1 Material Sampling

Where a material, dust, debris, powder or similar substance suspected of containing asbestos is detected, a sample shall be taken by a competent person (e.g. Consultant Occupational Hygienist or Facilities Management person who has received appropriate training for working with asbestos).

Samples shall be placed in an airtight container, appropriately labeled and immediately dispatched for analysis or, where this is not possible, stored in a secure area until dispatched.

13.1.1 Labelling of Samples

Samples shall be adequately labeled, to enable follow-up action and shall include:

- 1 Name and location of the building, structure, plant or equipment from which the sample was taken;
- 2 Exact location of the sampled material giving sequential location number from the Asbestos Register;
- 3 Date of sampling;
- 4 Batch identification number (if appropriate);
- 5 Name and telephone number of the person who took the sample.

13.2 Material Analysis

Analysis of the sample material, dust, debris or powder shall only be performed at a laboratory accredited by the National Association of Testing Authorities (NATA).

When a sample is taken for analysis, the following information should be specified for inclusion in the analysis report provided by the testing authority:

- 1 The sample identification number;
- 2 The analysis method used;
- 3 A description of the sample appearance;
- 4 Proportion/concentration (if known) and type of *asbestos* present;
- 5 Comment on other materials detected.

This information shall be retained in the Asbestos Register.

13.3 Identification Requirements

When identifying asbestos for inclusion in the Asbestos Register, the following should, as far as practical, be included:

- 1 The location of the ACM;
- 2 Dates when identification was made;
- 3 Details of the competent person/s who identified the ACM;
- 4 Location of any ACM (including asbestos material in items of plant and equipment);

- 5 The type of asbestos material (eg. asbestos cement sheet, asbestos lagging on pipes and flues, asbestos gaskets in plant or machinery, etc);
- 6 Details of any material presumed to be asbestos;
- 7 Any inaccessible areas that are likely to contain asbestos material; and
- 8 Results of any analysis that has confirmed a material in a workplace is/is not an asbestos material.

13.4 Presumption Criteria

Rather than taking samples of material to determine whether it contains asbestos, the appropriate Facilities Management Services person may presume that the material contains asbestos. Once such a presumption is made, the material must be treated as if it has been identified as asbestos until it is either removed, or testing has been carried out that indicates it does not contain asbestos.

When there are inaccessible areas that are deemed likely to contain asbestos, it should be assumed that asbestos is present e.g. wall cavities or ceiling spaces that may contain asbestos material such as asbestos insulation, etc.

The Asbestos Register must reflect all presumptions made. This may include a generic statement that relates to all occurrences of a specific type of product or situation, eg. 'all wall cavities are presumed to contain asbestos'. All presumed asbestos material must be treated as asbestos and work practices and disposal criteria must be in accordance with the requirements of this AMP.

14 RISK ASSESSMENT AND HAZARD RATING

14.1 Risk Assessment

Risk assessments shall be conducted for all areas identified as having asbestos and/or ACM to determine appropriate control measures and inspection schedules.

Regular, periodic inspections to assess the potential for the release of asbestos fibres into the atmosphere from any ACM shall be conducted by a competent person.

The period between assessments will be determined by the risk assessment based on the condition and location of the asbestos and the likelihood of damage or deterioration. The timeframe for assessments is with the frequency of updates to the Asbestos Register unless the risk assessment identifies the need for more frequent inspections and assessments which will be identified in the Asbestos Register for the site.

Risk assessments of any ACM should include the following:

- 1 Date of the assessment;
- 2 Condition of the ACM (i.e. whether the ACM is friable or bonded and stable, or liable to damage or deterioration, etc.);
- 3 Likelihood of possible exposure;
- 4 Whether the nature or location of any work to be carried out is likely to disturb the ACM;
- 5 Control measures recommended as a result of the risk assessment.

Risk assessments should be reviewed regularly, particularly when:

- 1 There is evidence that the risk assessment is no longer valid;
- 2 A significant change is proposed in the place of work or in work practices or procedures to the area that the risk assessment relates;
- 3 There is a change in the condition of the ACM; or
- 4 The ACM has been removed, enclosed or sealed.

14.2 Priority Rating for Control of ACM

Asbestos is hazardous when it is airborne. The health risks posed by ACM or products in premises are due to a number of risk factors including:

- Accessibility of the material;
- Condition of the material;
- Friability of the material; and
- Location of the material.

A hazard level for ACM can be determined by multiplying the hazard level for the given asbestos type by the product of the risk factor hazard levels. The risk assessment methodology used in our assessment is based on the Australian Standard AS4360-2004 *Risk Management*. The hazard levels for this assessment have been assessed according to the criteria contained in **Table 1**:

Table 1: Risk Factor/Hazard Level

RISK FACTOR / DESCRIPTION			HAZARD LEVEL
ASBESTOS TYPE	Bonded or Non-Friable	Materials that contain asbestos in a bonded matrix (may consist of Portland cement or various resin/binders and cannot be crushed by hand when dry).	2
	Friable	ACM which, when dry, is or may become crumbled, pulverised or reduced to powder by hand pressure.	3
CONDITION	Good	No sign of damage or deterioration due to weather, non friable.	1
	Fair	Only mild damage or deterioration by weathering, friable with force.	2
	Poor	Severe damage or deterioration by weathering, very friable.	3
ACCESSIBILITY	Low	Totally enclosed behind a false ceiling or wall, sealed or painted, inaccessible due to height, minimal exposure to weathering, people and maintenance.	1
	Moderate	Partially protected by encapsulation, low activity area, low exposure to weathering, people and maintenance.	2
	High	No encapsulation, high activity area, exposed to weathering, people and maintenance.	3
AIRBORNE POTENTIAL	Low	Not present in return air plenum.	1
	Moderate	Exposed to natural ventilation.	2
	High	Exposed to forced ventilation (ie intakes/vents, air conditioners, fans).	3
EXPOSURE	Low	Only accessed by maintenance personnel.	1
	Moderate	Readily accessible to small numbers of employees and public.	2
	High	Readily accessible to large numbers of employees and public.	3

The product of the hazard level from each risk factor can be then used to determine the recommended health risk/action priority rating as presented in Table 2. All ACM identified in the *Asbestos Registers* shall be assessed and assigned a Priority Rating. Priority Ratings determine the level of risk from P1 (high risk) to P4 (negligible risk) according to the following criteria:

Table 2: Health Risk/Action Priority Rating

Health Risk	Hazard Level	Action Priority
High	>50	Priority 1 – P1
Moderate	20-49	Priority 2 – P2
Low	4-19	Priority 3 – P3
Negligible	0-3	Priority 4 – P4

HIGH/P1 - Materials that pose an immediate or elevated health risk to employees or the public. The level of risk is applicable to the presence of friable material such as limpet asbestos insulation and asbestos ropes. The materials are readily accessible, in poor or friable condition. Immediate actions should be taken. Removal by licensed asbestos removal contractor recommended.

MEDIUM/P2 - Products or materials that pose a potential health risk to employees and the public in their current state. This level of risk is applicable to damaged or unstable material that is friable with force, accessible within a high activity area such as broken or deteriorated cement sheeting, which presents a potential immediate health risk if disturbed. Control measures to stabilise the material should be initiated immediately and regular monitoring of the material is recommended for these materials. Formal abatement should be considered when capital allows or where planned maintenance, refurbishment or demolition works will disturb these materials. Removal, when required should be undertaken by licensed asbestos removal contractors.

LOW/P3 - Products or materials that pose little health risk to employees and the general public. They consist of materials that currently are in a damaged stable or non-friable condition with a low accessibility. The material does not present a health risk unless further disturbed. Maintenance work should be carried out to stabilise or repair the damaged area. Control must be implemented to protect these materials from further damage including materials identified by warning signs. Reassessment of the priority rating will be required if any planned maintenance, refurbishment or demolition works impact on their condition. If any damage is present, maintenance work should be carried out to stabilise and repair the damaged area. Removal, when required should be undertaken by licensed asbestos removal contractors.

NEGLIGIBLE/P4 – Products or Bonded ACM that pose negligible health risk to employees and the general public, such as painted cement sheeting, vinyl floor tiles etc. They consist of materials that currently are in an undamaged, stable, non-friable condition within a low accessible area. The material does not present a health risk unless disturbed by intrusive work such as drilling, cutting, breaking or sanding. Control must be implemented to protect these materials from damage including materials identified by warning signs. Reassessment of the priority rating will be required if any planned maintenance, refurbishment or demolition works impact on their condition. If damage, maintenance work should be carried out to stabilise and repair the damaged area.

14.3 Entry Requirements & Actions to Prevent Asbestos Exposure

14.3.1 Priority 1 (P1) Asbestos Area

- Posting of area with caution signs required.
- There is unavoidable contact with loose or friable ACM in this area.
- This is a confined area requiring half-face cartridge type respirator fitted with P1 filters, disposable coveralls and boot covers.
- Entry and exit can only be obtained through a decontamination unit.
- Air movement must be restricted in this area.
- Anyone required to work in this area should use a powered air-purifying respirator and have adequate training to work in this space and follow the documented Safe Work Procedures.
- Non trained staff using PPE as required would only be allowed entry for minor works where asbestos contamination is minimised.
- A vacuum cleaner (approved by WorkCover for use with asbestos) must be used to remove loose asbestos material from the coveralls prior to coverall removal. The coveralls should be wiped thoroughly with a wet rag and removed to just prior to exiting the area and place in a sealed/labelled plastic bag. The wet rag should also be treated as asbestos contaminated waste. Staff should then proceed to the nearest shower facilities.
- All renovations or alterations must take into account the presence of asbestos in this area which includes adequate funding for professional removal.
- The area should be given consideration as a future priority for removal.

14.3.2 Priority 2 (P2) Asbestos Area

- Posting of area with caution signs required.
- Minimum requirement for entry into this area is a half-face cartridge type respirator fitted with P1 filters, disposable coveralls and boot covers.
- Coveralls and boot covers must be taken off before exiting the area and disposed of into an asbestos waste bag.
- Where extensive work is to be carried out, entry requirement is the same as P1.
- All asbestos pipe lagging should be sealed with wet plaster bandages and then PVA paint should be applied with an airless sprayer.
- All debris should be removed by the wet method and placed in the approved asbestos decontamination bags and disposed of at an approved tipping facility.
- All the contaminated areas should then be vacuumed with an approved asbestos vacuum cleaner.
- All renovations or alterations must take into account the presence of asbestos in this area which includes adequate funding for removal.

14.3.3 Priority 3 (P3) Asbestos Area

- ACM is present in a damaged stable or non-friable condition with a low accessibility. The material does not present a health risk unless further disturbed.
- Posting of area with caution signs required.
- The condition of the ACM must not be disturbed or damaged in any form.
- No special entry precautions are necessary unless work is to be carried out that will further damage or affect the ACM.
- Where extensive work is to be carried out, entry requirement is the same as P1.
- All asbestos pipe lagging should be sealed with wet plaster bandages and then PVA paint should be applied with an airless sprayer.
- All the contaminated areas should be vacuumed with an approved asbestos vacuum cleaner.
- All renovations or alterations must take into account the presence of asbestos in this area which includes adequate funding for removal.

14.3.4 Priority 4 (P4) Asbestos Area

- ACM is present in well sealed condition.
- Posting of caution signs is required.
- The condition of the ACM must not be disturbed or damaged in any form.
- No special entry precautions are necessary.
- All renovations or alterations must take into account the presence of asbestos in this area which includes adequate funding for professional removal.

- In compliance with Legislation, power tools should not be used on asbestos cement (fibro) products as these generate large amounts of fine dust.
- Any damage to asbestos cement should be repaired and surfaces repainted.
- Compliant respiratory protection should be used.
- Wetting down the material reduces the release of dust.
- All asbestos cement products must be disposed of as asbestos waste (refer **Section 17.5**).

15 LABELLING

15.1 Warning Signs

All areas of a workplace, including plant, equipment and components that contain ACM shall, where practicable, be signposted with cautionary warning signs to ensure that the asbestos is not knowingly disturbed without correct precautions being taken. Signs should be located at all main entrances to the workplace or all entrances to the areas where asbestos is present.

All warning signs shall comply with Australian Standard *AS1319:1994 Safety Signs For The Occupational Environment*.

15.2 Labelling

In addition to warning signs, when a risk assessment has identified that the ACM may be disturbed or there is a potential health risk, the ACM must be labelled to warn of the presence of asbestos. The location of the label should be consistent with the location of the ACM as outlined by information in the Asbestos Register. A competent person should determine the number and positioning of labels required.

Labels used for this purpose must identify the material as containing asbestos and should comply with Australian Standard *AS1216:1995 Class Labels for Dangerous Goods*.

This procedure is designed to avoid exposure to asbestos fibre.

The following labelling standards shall be observed at UNE facilities to identify ACM.

Asbestos Sheeting

Standard black on yellow "Asbestos" signs shall be fixed at regular intervals to roof and wall asbestos sheeting. The international asbestos label (red and black) shall be fixed to internal asbestos cement sheet products.

Asbestos Lagged Pipe work

Standard black on yellow "Asbestos" stickers shall be affixed to metal cladding at regular intervals in order to recognise the presence of asbestos.

Asbestos Containing Gaskets

Flanges containing asbestos gaskets shall be painted with a luminous red paint, which should be applied with a brush.

Asbestos Under Steelwork Panels or Similar

Where ACM are located under heavy steel panel work, a black on yellow sign denoting "Asbestos Under" shall be used.

Asbestos Vinyl Tiles

Standard black and yellow "Asbestos" stickers shall be fixed on or adjacent to identified asbestos vinyl floor tiles.

Asbestos Electrical Boards and Components

Standard black and yellow "Asbestos" stickers, signs or the international (red and black) shall be fixed onto or adjacent to the asbestos electrical boards and components.

Labels or signs fixed adjacent to the asbestos product must direct personnel to the asbestos product with appropriate wording.

16 AIRBORNE ASBESTOS MONITORING

An airborne asbestos monitoring program will be established to assess the background levels of airborne asbestos fibre within UNE's buildings or facilities that contain ACM and that are assessed as being a risk for persons working in the vicinity of the products.

In addition, airborne asbestos monitoring programs will be established when deemed necessary during asbestos removal projects.

16.1 Background Asbestos Monitoring Program

A Background Airborne Asbestos Monitoring Program will be established to determine levels of airborne asbestos fibre at UNE's properties where the risk assessment process identifies the need. The Monitoring Program will be used to assess whether the control procedures being applied are satisfactory and that relevant airborne asbestos fibre levels are not being exceeded.

Background air quality monitoring will be undertaken periodically to determine levels of airborne asbestos fibre during normal operations and activities. This monitoring will establish background air quality data, which can be used for comparison during disturbance or removal of ACM, future background air quality monitoring results, or air clearance results.

The main goals of the Monitoring Program will be to:

- 1 Ensure the health of workers is being protected;
- 2 Ensure control measures and preventative actions are effective;
- 3 Assess changes in airborne asbestos fibre levels;
- 4 Ensure that changes to work practices and procedures do not result in increased levels of airborne asbestos fibre;
- 5 Promote the implementation of more effective preventative measures; and
- 6 Assess compliance with workplace and environmental goals.

16.2 Air Quality Criteria

The risk associated with asbestos relates to the inhalation of airborne asbestos fibres. These fibres may be liberated by disturbance of the ACM.

Air quality criteria for a range of contaminants including asbestos have been set by the NOHSC. In addition, the NSW Occupational Health and Safety Regulation 2001 has legislated the exposure standard for asbestos in New South Wales. The exposure standard sets out the time-weighted average (TWA) fibre concentration of the air breathed by the worker throughout a working shift, as calculated from one or more measurements taken over a sampling period of not less than four hours using the Membrane Filter Method.

The TWA airborne concentrations for asbestos shall not exceed the legislated exposure standard of:

- | | |
|--|---------------------------|
| • Chrysotile | 0.1 fibres per millilitre |
| • Crocidolite | 0.1 fibres per millilitre |
| • Amosite | 0.1 fibres per millilitre |
| • Other forms of asbestos | 0.1 fibres per millilitre |
| • Any mixture of these, or
where the composition is unknown | 0.1 fibres per millilitre |

Exposure Standards may be reviewed from time to time, therefore the most recent publication of the NOHSC *Exposure Standards* document [NOHSC: 1003 (1995)] and NSW Legislation should be consulted for any variations.

UNE management has undertaken to establish a standard whereby corrective action is instigated when the lowest detection limit possible using the required Membrane Filter Method – 0.01 fibres/mL is met or exceeded.

16.3 Asbestos Monitoring Methodology

Air quality monitoring will be carried out using the only internationally recognised sampling and analytical methodology – the Worksafe Australia endorsed “*Membrane Filter Method for Estimating Airborne Asbestos Fibre*” [NOHSC: 3003 (2005)]. All monitoring will be undertaken by personnel registered and accredited by NATA (‘Consultant Occupational Hygienist’).

Air sampling and filter analysis will only be carried out by the NATA Accredited Consultant Occupational Hygienist in accordance with the Asbestos Monitoring Procedure detailed in **Appendix 3**.

16.4 Air Monitoring for Asbestos Removal Projects

Asbestos removal projects requiring air monitoring on any UNE site include:

- Friable asbestos insulation material;
- Removal of asbestos contaminated materials and debris;
- Asbestos cement sheet (bonded asbestos) removal deemed necessary through risk assessment and due to close proximity of other staff, contractors, students or visitors;
- Any other asbestos removal project where air monitoring is deemed necessary due to close proximity of other staff, contractors, students or visitors.

Initially, background air quality monitoring will be undertaken to determine levels of airborne asbestos fibre during normal operations and activities. Monitoring will be continued at appropriate intervals during asbestos removal operations.

Monitoring data will include:

- 1 Exact location of static monitors including distinctive features of the workplace;
- 2 Names and job titles of workers, location of work;
- 3 Potential sources of asbestos emissions or exposure;
- 4 Information of the particular process and control measures;
- 5 Date and time of samplings;
- 6 Name of person conducting the sampling and analysis.

Para-occupational (static) air sampling will be carried out by the NATA Accredited ‘Consultant Occupational Hygienist’ engaged by the UNE, to ensure that the procedure used to remove ACM has kept the concentration of airborne asbestos dust to the minimum practical level and, below the prescribed threshold limit values (TLV) stated in current Regulations and detailed above.

Airborne asbestos fibre limits applicable to any asbestos removal project will include:

- **<0.01 fibres/mL - acceptable limit:** (Equal to background and detectable limits. Level to achieve for air clearances).
- **>0.01 fibres/mL - alert level:** (Locate source and rectify).
- **>0.02 fibres/mL - action level:** (Cease work, locate source and rectify. Work may only recommence following receipt of air clearance monitoring results of <0.01 fibres/mL).

Where a result of occupational (personal) or para-occupational (static) sampling is considered high and/or is outside the site acceptable limits, the cause of the high reading is to be ascertained by the Asbestos Removalist and the Consultant Occupational Hygienist with the Asbestos Removalist responsible to take all remedial action at his own expense to ensure that further high readings are not repeated. Procedures to be followed in the event of elevated air sampling readings are outlined in **Appendix 2**.

The minimum requirement for a large-scale asbestos material removal process is as follows:

- Para-occupational (static) samples will be taken at barriers to determine whether the barriers are correctly located.
- For work, which has been previously carried out with satisfactory air sampling results and where all conditions affecting dust control remain unchanged, further sampling may not be necessary.
- Static samples will be collected in the clean end of the decontamination unit, in the lunchroom, in the laundry and at areas nominated by the Consultant Occupational Hygienist.
- Occupational (personal) samples can be taken on staff in the area as required by the Consultant Occupational Hygienist.
- On completion of the clean-up process and before barriers are removed, further air sampling will be carried out by the Consultant Occupational Hygienist after the surfaces have dried out in the asbestos removal area, together with a visual inspection, to confirm that final detail cleaning has removed all asbestos dust. Settled dust analysis may also be undertaken at the discretion of the Consultant Occupational Hygienist.

General surveys, including visual inspection, settled dust analysis and/or air sampling, shall be carried out periodically as determined by the Consultant Occupational Hygienist having regard to the amount of, and condition of, asbestos material at the site.

16.4.1 Number of Monitors

The number of monitors used will depend on the scope of asbestos works. Monitors will be run continuously while asbestos removal works are in progress.

16.4.2 Duration and Location of Monitors

Static air monitoring will be undertaken continuously and reported in appropriate intervals (usually four-hourly). The location of monitors will be on workplace barriers at locations determined by the Consultant Occupational Hygienist in consultation with the UNE Project Manager, OH&S Co-ordinator or site owner. Personal or occupational monitoring may be conducted utilising employees working in or adjacent to the asbestos removal work area as required or if determined necessary.

16.4.3 Sample Flow Chart and Result Feedback

Monitoring results will be reported to the UNE Project Manager as soon as possible after the conclusion of the air-monitoring interval. Results will be readily available and accessible to both management and employees and shall be displayed in a prominent position. See sample documentation at **Appendix 5**.

16.5 Records of Monitoring Results

Records of all airborne asbestos fibre monitoring results will be maintained and any asbestos exposures documented. All monitoring data will be maintained, stored and preserved for a period of 30 years.

17 ASBESTOS REMOVAL WORK

A number of control procedures are to be put in place when working on asbestos to ensure that the generation of asbestos fibre does not occur during asbestos related activities.

17.1 Asbestos Removal

Asbestos removal work carried out at UNE properties will be such as to ensure that all equipment used and all facilities erected and procedures used are designed and operated to eliminate the emission of asbestos fibre into the atmosphere. Precautions will be taken to remove any risk to health arising from airborne asbestos dust caused by these activities.

Appropriate procedures are contained in this AMP (**Appendix 4**) and must be adhered to whenever asbestos removal activities are being undertaken to ensure that the health and wellbeing of UNE personnel is maintained and that these activities are monitored and conducted in accordance with the relevant legislative requirements. Reference must also be made to the requirements of the WorkCover Authority of New South Wales.

All asbestos removal works are to be performed in accordance with the following documents:

- 1 The NSW Occupational Health and Safety Act 2000;
- 2 The NSW Occupational Health and Safety Regulation 2001;
- 3 Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018(2005)];
- 4 Code of Practice for the Safe Removal of Asbestos, 2nd Edition [NOHSC: 2002 (2005)]; and
- 5 Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibre, 2nd Edition [NOHSC: 3003 (2005)].

In the case of conflict between these procedures and any Regulation or Act, then the more stringent requirement shall apply.

Any asbestos removal work requiring a license shall be undertaken by a licensed Asbestos Removal Contractor. Licensing requirements are as follows:

- Friable asbestos must only be removed by an AS1 licensed asbestos removal contractor;
- Up to 1 July 2007 bonded asbestos over 200 square metres must be removed by an AS1 or AS2 asbestos removal contractor or a demolition contractor with an Unrestricted Demolition license;
- From 1 July 2007 and until 1 January 2007 bonded asbestos over 50 square metres must be removed by an AS1 or AS2 asbestos removal contractor or a demolition contractor with an Unrestricted Demolition license;
- From 1 January 2007, bonded asbestos over 10 square metres must be removed by an AS1 or AS2 asbestos removal contractor or a demolition contractor with an Unrestricted Demolition license;
- Bonded asbestos under the square metre limits above can be removed by unlicensed persons but must be removed in accordance with the Asbestos Code of Practice or other WorkCover guidance material;

Personnel undertaking asbestos work must be appropriately trained and competent. Personnel involved must complete the Asbestos Activity Report (**AMP Form 2**) in **Appendix 1**.

The following procedures will apply for all asbestos removal work undertaken by licensed Asbestos Removal Contractors:

- The Asbestos Removal Contractor is to be licensed in accordance with the Occupational Health and Safety Regulation 2001. A copy of the current license is to be furnished by the Contractor prior to the commencement of work.
- The Asbestos Removal Contractor is to apply for and supply a copy of a "Permit to Work" for friable asbestos removal work issued by the NSW WorkCover Authority or notify WorkCover of the intention to remove bonded asbestos in accordance with the Regulation.
- All personnel employed by the Asbestos Removal Contractor are to be appropriately trained in asbestos removal in accordance with the requirements of the NSW WorkCover Authority.

Procedures to be undertaken during asbestos removal works include but are not limited to those contained in the Standard Work Procedures in **Appendix 4** this AMP.

17.2 Asbestos Monitoring

Para-occupational (static) air sampling will be carried out by a NATA Accredited Air Monitoring Consultant Occupational Hygienist to assess that the procedure used has kept the concentration of airborne asbestos dust to the minimum practical level (0.01 fibres/mL), below the prescribed threshold limit values (TLV) stated in current Regulations and the limits detailed in **Section 16.4**. The asbestos monitoring undertaken must be in accordance with the requirements detailed in **Section 16** of this AMP.

The Asbestos Monitoring Procedures are contained in **Appendix 3** of this AMP.

17.3 Clearance Certification

Clearance certification is required for all asbestos removal works to ensure that removal sites are left in a safe condition, free of residual asbestos material.

An inspection report shall be completed by the Consultant Occupational Hygienist for every asbestos removal project.

The asbestos removal works will only be considered complete and clearances issued when a visual inspection reveals no further evidence of ACM in the removal area and static air samples indicate a clear result of < 0.01 fibres/mL. The visual clearance inspection and air clearance monitoring are complimentary techniques and dismantling of the asbestos removal work area may only proceed after both techniques give clearances.

All visual and air clearances are to be undertaken by the Consultant Occupational Hygienist.

Following is the sequence of clearances that will be provided for ACM removal work:

- 1 Initially, visual clearances will be undertaken following the completion of the ACM removal work in each of the nominated Asbestos Work Areas to ensure all ACM have been removed and no visual contamination is remaining.
- 2 Air clearance monitoring will be undertaken inside the Asbestos Work Area following satisfactory visual inspection results at the completion of the ACM removal component of the work.
- 3 A final visual inspection will be carried out following dismantling of the Asbestos Work Area.

- 4 Final air clearance monitoring will be undertaken at completion of all works in the Asbestos Work Area and prior to re-occupation of the area to ensure that levels of airborne asbestos fibre are minimal and below the relevant limits.

Settled dust sampling will be undertaken as deemed necessary in the affected areas to determine the presence of residual asbestos contamination prior to air clearances being undertaken.

17.4 Construction and/or Demolition Work

When carrying out construction or demolition work, any asbestos work shall be completed before a structure or part of a structure is demolished.

When carrying out construction work where asbestos may be present the following shall apply:

- 1 All persons at the workplace are informed when asbestos work is being carried out;
- 2 Signs, labels or other similar measures warn of the presence of asbestos at the place where construction work is being carried out;
- 3 All persons (including contractors) required to work on any UNE building or equipment containing asbestos and who may be exposed to the asbestos during such work, are informed of its presence and their obligation to comply with safe work practices and legislative responsibilities;
- 4 Measures to prevent the uncontrolled disturbance of the asbestos shall be implemented while construction work is being carried out;
- 5 No asbestos, including asbestos cement, is to be reused in connection with the carrying out of construction work;
- 6 No high-pressure processes are to be used to clean the surface of any ACM or any structures that consist of or contain asbestos.
- 7 ACM that has been removed shall be stored clear of the worksite to prevent further disturbance or damage that may lead to further contamination of the site.

17.5 Disposal of ACM

Where ACM is to be disposed of, it shall be done so in accordance with **Standard Work Procedure #8** documented in **Appendix 4**. Personnel involved must complete the Asbestos Activity Report (**AMP Form 2**) in **Appendix 1**.

Arrange disposal of asbestos waste materials at an approved Waste Facility in a manner, which complies, with the requirements of the WorkCover Authority of NSW and the NSW Environment Protection Authority (EPA).

- Transport of waste to the disposal location should be in enclosed bins or containers and must comply with the Australian Dangerous Goods Code.
- Asbestos cement sheeting shall be wrapped in 0.2mm polyethylene sheeting and sealed with tape while bulk waste and friable asbestos waste and soiled PPE shall be placed into 0.2mm polyethylene low density plastic bags labelled as 'Asbestos Waste'. Bags are to be filled to no more than ½ full or so that the weight is manageable and does not result in manual handling injury or bag rupture. The asbestos bags are to be sealed, placed into a second bag and sealed for appropriate disposal.
- A maximum bag size of 1200mm x 900mm shall be observed, and bags filled to no more than 50 per cent capacity. Bags when purchased shall be labelled with appropriate regulatory labels (i.e. "Asbestos Waste").

18 ASBESTOS REMOVAL CONTRACTING

Contractors carrying out asbestos work at UNE facilities shall prepare procedures detailing steps they will take to comply with the requirements of this Asbestos Management Plan. The procedures will include an overview of the methodology to be used, containment procedures Job Safety Analysis and health protection methods and must be in accordance with but not limited to the Standard Work Procedures contained in **Appendix 4** of this AMP.

These procedures shall be compatible with the AMP and their implementation will be subject to audit by Facilities Management Services.

Where Contractors are engaged in asbestos removal works:

- All contractors tendering for asbestos works will be issued with tender documents, which include access to this AMP and the applicable section of the Asbestos Register.
- Prior to entering site to undertake works, the contractor will provide for approval, their proposed procedures related to the works.
- Only WorkCover NSW licensed and experienced asbestos removal contractors will be utilised.

All asbestos works requiring the use of outside Contractors may require the contractor to provide information concerning their experience, qualifications and approvals. The information sought at the time of tendering will include:

- Name of Company tendering;
- Evidence of currency of asbestos-related insurances;
- Evidence of currency of asbestos licence;
- Name of on-site supervisor, and their qualification;
- Name of workers to be employed on the project and evidence that they have undergone asbestos training;
- A list and details of past asbestos removal projects undertaken in the past six months;
- A list of referees and their contact telephone numbers;
- JSA (Job Safety Analysis) or WMS (Work Method Statements) to be used for the asbestos removal works;
- A copy of any training records for staff; and
- Copies of health surveillance and records of medicals for employees.
- Evidence of co-operation and collaboration with the Consultant Occupational Hygienist.

At the time of seeking tender for asbestos related works, a copy of the AMP will be made available to the prospective tenderer, and in award of contract the Contractor will be required to comply with the AMP.

19 UNCOVERING OF SUSPECTED ASBESTOS MATERIALS

The procedure to be followed in the event of suspected ACM being uncovered is shown in **Appendix 2**.

All incidents concerning the uncovering of suspected ACM are to be dealt with and recorded on the **Asbestos Incident Report - AMP Form 1 (Appendix 1)** by the University's Supervisor or nominated representative with the following details:

- Date and time of uncovering;
- Nature of the problem;
- Response action taken and date of action; and
- Noted for the purpose of updating the property Asbestos Register.

Once the material has been confirmed as containing asbestos, appropriate warning labels are to be affixed.

20 INCIDENTS

When an incident is identified, it will be recorded. The UNE Project Manager or the Consultant Occupational Hygienist will usually make these observations during routine site inspections.

All incidents are to be managed in accordance with UNE's AMP and the Emergency Procedures detailed in **Sections 19** and **21** and illustrated in **Appendix 2**.

All reportable incidents are to be documented within the UNE's Incident Reporting Procedures and on the Asbestos Incident Report (**Form 1**) located in **Appendix 1**.

21 EMERGENCY PROCEDURE

Emergency procedures on site will cover actions to be taken when asbestos is inadvertently uncovered, catastrophic events occur or air monitoring indicates high levels of airborne asbestos fibre. The procedures contained in **Appendix 2** shall be followed in an emergency.

It is important to remember that the first priority must always be the safety of any persons either workers or others involved in the events. Uncovering of asbestos may occur due to human error or to catastrophic event. Catastrophic events may include but not limited to:

- Explosion;
- Industrial Accident;
- Failure of construction structures;
- Failure of an asbestos control (i.e. encapsulation, equipment etc);
- Earthquake;
- Flood; and
- Fire.

In order to ensure that the occupational health impact of unavoidable catastrophic events is minimised, emergency procedures documented in **Appendix 2** are to be followed.

All emergency action should take place as soon as possible after the event and the first priority is to stabilise the situation and to prevent further hazard or employee exposure.

22 NON-CONFORMANCE AND CORRECTIVE ACTION

It is the responsibility of every employee who becomes involved in asbestos removal, or with an unsafe act involving asbestos, to report any event which does not comply with this AMP. This reporting must be provided as the event(s) occur, to the UNE Project Manager/Supervisor or the OH&S Office.

Non-conformances by employees will be managed in accordance with UNE's procedures.

Corrective action will involve:

- 1 Immediate positive action and notifications to the UNE Project Manager or the OH&S Office detailing the circumstances and action taken.
- 2 Longer term corrective action to prevent recurrence of the problem.

23 APPROVAL AND RECORD OF AMENDMENTS - DOCUMENT CONTROL

An amendment is described as a change, addition or deletion of controlled information in the AMP.

All amendments should be undertaken in accordance with UNE's procedures.

24 INSPECTION, MEASURING AND TEST EQUIPMENT

All measuring equipment used in providing a service will be calibrated according to its operating manual.

Calibrations will be performed at intervals required by NATA or other accrediting organisations. An external calibration database will be maintained. Periodic reports will be taken from the database to show the calibration status of the equipment.

A calibration label will be fixed to each piece of equipment showing its calibration status.

Statistical Control Measurements will be undertaken in the course of long term monitoring projects.

25 AUDITS OF THE ASBESTOS MANAGEMENT PLAN

Audits of the AMP will be performed in accordance with UNE's procedures.

Audits of the AMP will be shown to the OH&S Office.

The audit will encompass the entire workings of this AMP including such things as maintenance of registers, asbestos removal procedures, tendering, monitoring, reporting etc.

The purpose of an audit is to monitor compliance with the AMP and where appropriate improve it.

26 CONTRACTOR STANDARD WORK PROCEDURES AUDITS

Procedures to be used by contractors for asbestos removal works include but are not limited to those contained in the Standard Work Procedures in **Appendix 4** of this AMP.

26.1 Internal Audits

Sub-contractors undertaking work packages on site where requested by UNE will prepare Standard Operating Procedures (SOP) or Job Safety Analysis (JSA) detailing steps they will take to comply with the requirements of this AMP, and relevant statutory approvals. SOP's/JSA's must be submitted for review and approval before work commences.

These SOP's/JSA's shall form a section of the construction work package Project Plan. The implementation of the SOP's/JSA's will be audited by the UNE Project Manager at regular intervals according to established procedures.

26.2 Corrective Actions

Corrective Actions will be raised as a result of a finding of non-compliance arising from an audit of contractor's compliance with the AMP, statutory requirements or JSA/WMS.

26.3 Non-Conformances

A non-conformance will be recorded. These observations will usually be made during routine site inspections by UNE Supervisors, the Consultant Occupational Hygienist or his representative, or by the audit process.

Non-conformances Notices will be issued and managed in accordance with Facilities Management Services.

27 ASBESTOS MANAGEMENT RECORDS

All asbestos records will be stored and maintained within the University Records Management system. The records will be updated as required and copies sent to the responsible person in the University Records Management system.

The record system will include:

- Records of inspection and test plans;
- Records of corrective action;
- Records of audits;
- Original records of certification/approvals by statutory authorities;
- Records of surveys;
- Records of complaints from employees;
- Records of inspections, maintenance and tests results;
- Records of training and inductions;
- Records of employee involvement in site works; and
- Contractor reports of asbestos removal work.



Appendix 1: AMP Forms



AMP FORM 1 ASBESTOS INCIDENT REPORT

Report Number:

Location of Incident (including Building Name & Number):

.....
.....

Date & Time of Incident:

.....

Date Incident reported:

.....

Incident Reported By:

Reported To:

.....

Names of persons present/affected:

.....
.....

Details of Incident:

.....
.....
.....
.....
.....
.....
.....
.....
.....

Signed by Reporter:

Signed by Reportee:

.....

Classification of Incident:

☐ Minor Asbestos Incident ☐ Major Asbestos Incident ☐ Complaint
☐ Breach of Regulations ☐ WorkCover Inspection ☐ Uncovering of ACM

Immediate Action Taken:

.....
.....
.....
.....
.....

FMS Supervisor:.....

CC:.....



AMP FORM 2 ASBESTOS ACTIVITY REPORT

Location of Asbestos Works:

Building Name & Number:.....

Date of Commencement of Works:

Date of Conclusion of Works:

Brief Description of Works:

.....

Supervisor Name:

Employees Engaged on Works:

#1:

#2:

#3:

#4:

#5:

#6:

Site Inspected and Cleared By:

Brief Description of Findings:

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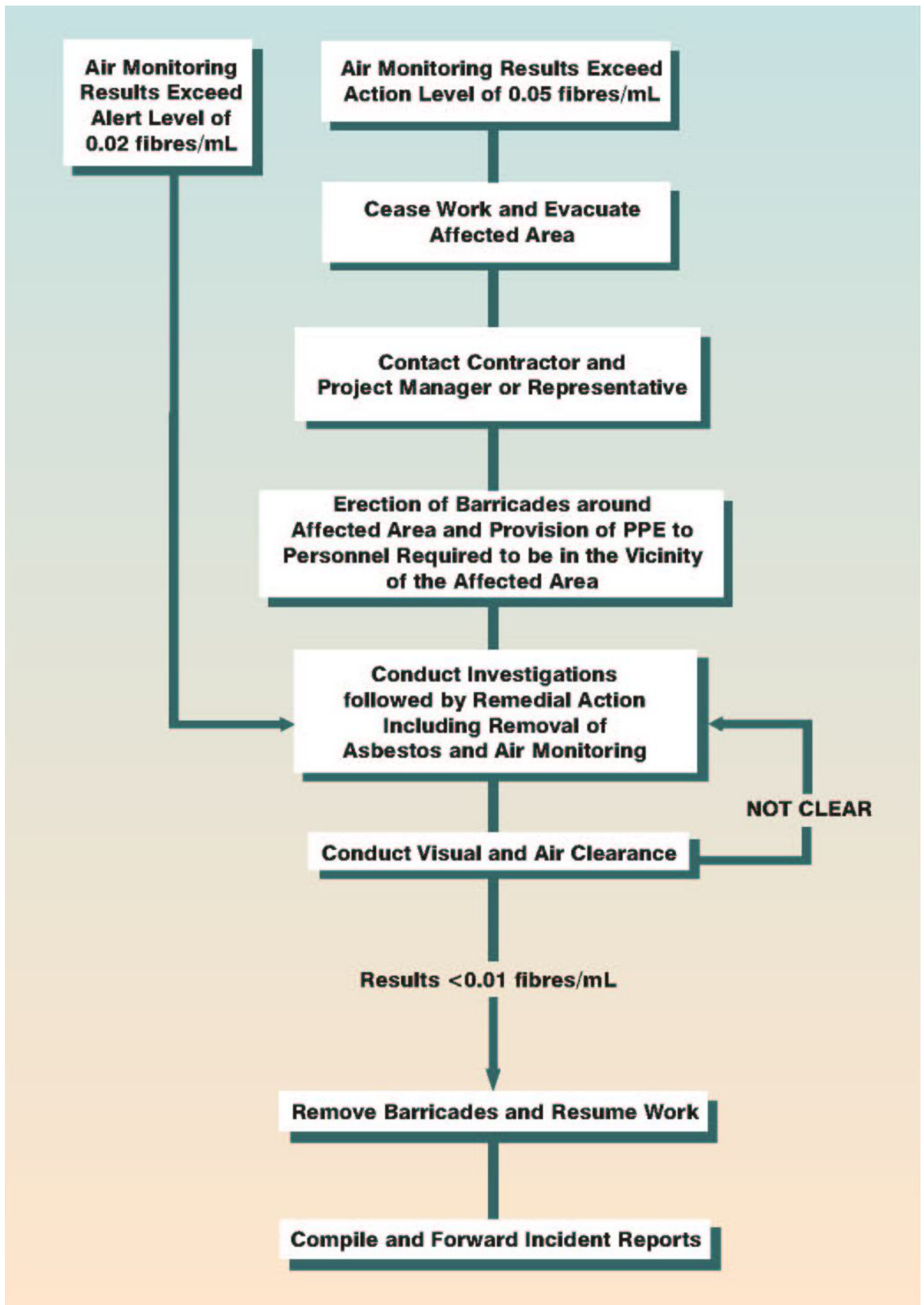
Signature:



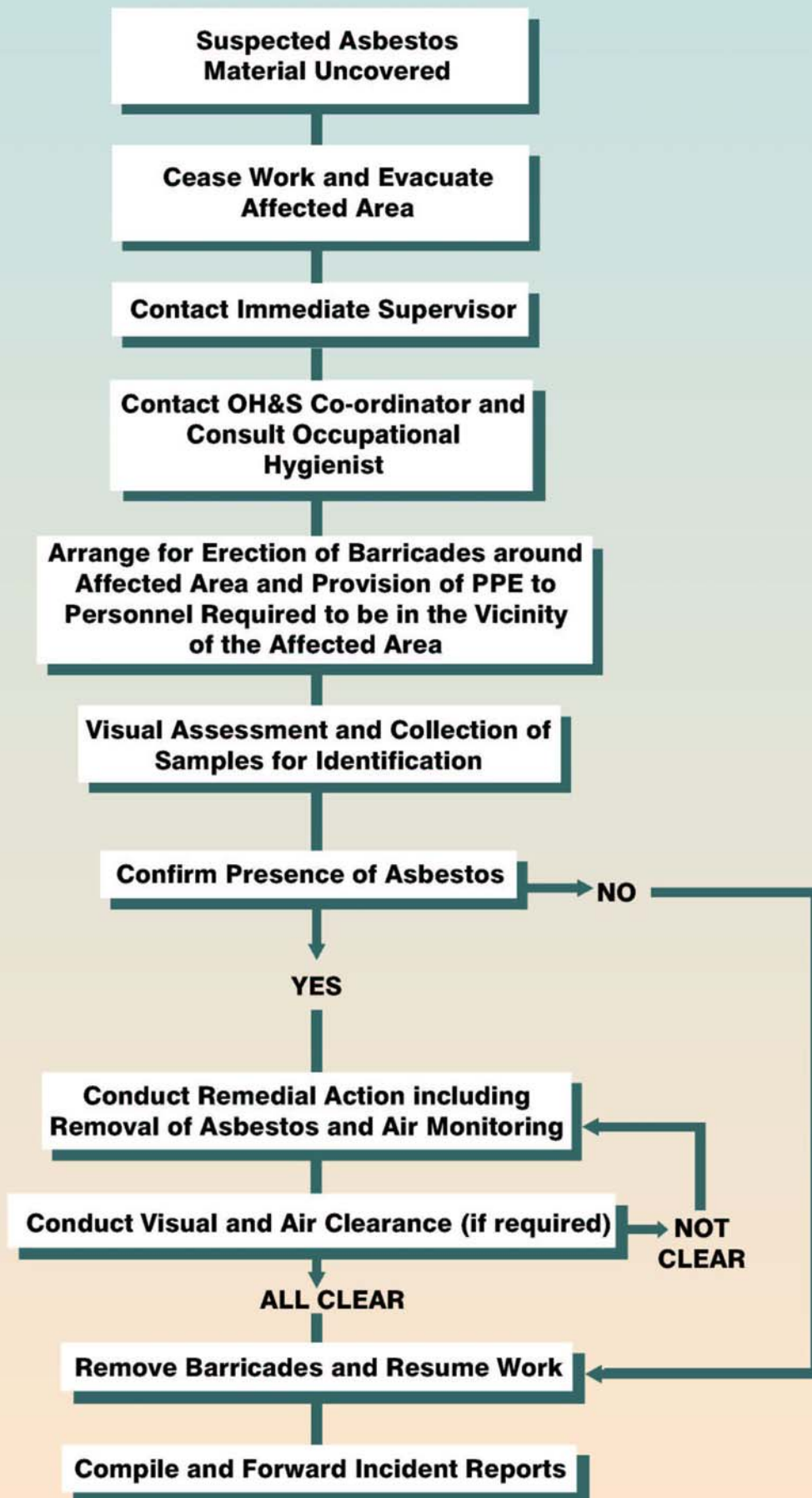
Appendix 2: Emergency Procedures



Emergency Procedure When Air Monitoring Limits Are Exceeded



Emergency Procedure When Suspected Asbestos Material Is Uncovered





Appendix 3: Air Monitoring Procedures

Asbestos Monitoring Procedure

Definitions

Personal Monitoring:	Personal samples are those samples taken within the <i>Worker Breathing Zone</i> and give results that are indicative of the worker's exposure under representative working conditions. As they represent actual personal exposure, the results of such sampling can be compared with occupational exposure standards.
Control Monitoring:	Control monitoring is taken as an indicator of the effectiveness of process control techniques and are not representative of actual occupational exposures. As the results obtained from para-occupational sampling do not reflect actual worker exposure, they cannot be compared with occupational exposure standards.

General Method Description

A sample is collected by drawing a measured quantity of air through a membrane filter by means of a sampling pump. The filter is later transformed from an opaque membrane into a transparent, optically homogeneous specimen. The fibres are then sized and counted, using a phase contrast microscope and eyepiece graticule. The result is expressed as fibres per millilitre of air, calculated from the number of fibres on the filter and the measured volume of air sampled.

Personal Monitoring

Involves the monitoring of exposure of workers, i.e. personnel (personal monitoring):

- 1 To assess the exposure relative to an occupational exposure standard so that appropriate dust control measures can be implemented.
- 2 To provide estimates of exposure for epidemiological investigations.

All sampling must be conducted in the breathing zone of a worker, so that the results are indicative of workers exposure. More than one single sample may be required, but the total sample duration should **never** be less than four hours and preferably over an entire shift.

Flow rates should be selected in the range 0.4 to 2.0 Litres/min so that a volume of 100 Litres \pm 20% (i.e. 80-120 L) is collected over the desired single sample duration.

For both occupational and paraoccupational situations, flow rates must be checked before and after sampling and if they differ by more than 10%, the sample should be rejected.

The samples are always static, i.e. fixed position. The sample should be taken over a single sample duration of not less than one hour.

The total sample duration should preferably be not less than four hours. In urgent situations, total sample duration may be reduced to 100 mins, with a high flow rate of 4000 ml/min. The flow rate should be selected in the range between 1.0 – 4.0 Litres/minute so that a volume of 500 Litres \pm 20% (i.e. 400-600 Litres) is collected over the desired single sample duration.

Control Monitoring

In-field Sampling Procedure:

- 1 Ensure that the sampling pump is set to the required flow rate before use (1.0 - 2.0 litres per minute or 4.0 litres per minute).
- 2 Ensure pump is located in a suitable place so as to collect a representative sample of the area being tested.
- 3 Ensure that the filter cassette is in free air at about chest height where possible. The filter cassette should not be located in a situation that could influence the result e.g. excessive heat, sampling head too close to a wall etc. The opening of the cowl should face downwards.
- 4 Sampling pumps placed outside should be protected from wet weather by covering them with a plastic bag, open at the base with the filter head and tubing uncovered.
- 5 At the completion of the sampling period, usually 4 - 8 hours, the pump flow rate must be checked prior to turning off the pump.
- 6 Filter heads must be stoppered at both ends for transportation to the laboratory for analysis. The sample cowls should be transported in a resealable plastic bag.



Appendix 4: Standard Work Procedures

STANDARD WORK PROCEDURE #1

Removal of Bonded Asbestos Cement Products

- 1 The Asbestos Removal Contractor is to have a current Class AS2 license in accordance with the NSW Occupational Health & Safety Regulation 2001. A copy of the current licence is to be furnished by the Asbestos Removal Contractor prior to the commencement of work and displayed in a prominent position during the asbestos removal work.
- 2 The Asbestos Removal Contractor must submit a Notification to commence bonded asbestos removal work to the NSW WorkCover Authority in accordance with the Regulation. A copy of the Notification stamped with acknowledgment by WorkCover is to be furnished by the Asbestos Removal Contractor prior to the commencement of work and displayed in a prominent position during the asbestos removal project.
- 3 All personnel employed by the Asbestos Removal Contractor are to be appropriately trained in asbestos removal. Copies of the appropriate certificates are to be supplied prior to the commencement of work and kept with the project documentation.
- 4 Signage is to be displayed on the Asbestos Work Area boundaries advising that asbestos removal works are being undertaken in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].
- 5 Appropriate precautions for working on a roof if required shall be undertaken and all Regulations and Codes of Practice observed.
- 6 An area should be selected to place the removed sheeting where it will not be subject to damage and can be stacked into bundles for sealing prior to removal from the site.
- 7 The selection of a wet or dry decontamination area is to be made through a risk assessment process or through consultation with the Consultant Occupational Hygienist.
- 8 Down pipes from gutters and drains at ground level that may be affected by the removal process should be covered with filter material to prevent asbestos residue entering the drainage system. Filter material shall be removed and disposed of as asbestos waste at completion of the removal process.
- 9 Power tools shall not be used in the removal process, with the exception of drills to remove fastening screws. Abrasive cutting, drilling or sanding tools shall not be used for work involving asbestos cement products. Use of any other powered tool with asbestos cement products must be approved by the NSW WorkCover Authority.
- 10 Personnel involved in the removal of the asbestos must wear, as a minimum, approved half-face cartridge-type respirators fitted with Class P2 particulate filters, disposable overalls, boot covers and gloves. All PPE is compulsory and must be worn by all personnel undertaking asbestos removal.

- 11 Vacuum cleaners used during the decontamination process are to be approved for use with asbestos and are to comply with *AS3544-1998 Industrial Vacuum Cleaners for Particulates Hazardous to Health* and are to be fitted with HEPA filters in accordance with *AS4260-1997 High Efficiency Particulate Air Filters (HEPA) – Classification, Construction and Performance*. Standard domestic or industrial vacuum cleaners are not suitable. The vacuum collection bags and filters are to be disposed of as asbestos waste.
- 12 The Asbestos Work Area is to be cleaned prior to commencement of asbestos removal work to minimise dust throughout project.
- 13 Prior to removal, sheeting shall be wetted down with light mist sprays of an approved PVA sealant to minimise dust generation. High-pressure water shall not be used. Wetting down should be maintained throughout the asbestos removal project with consideration given to slips and falls.
- 14 Breakage of sheeting to be minimised during removal from support structures. Sheeting shall be lowered to the ground, not dropped or thrown.
- 15 Sheeting shall be bundled and disposed of in an approved manner by wrapping in 0.2 mm thickness polyethylene plastic sheeting and sealing. Sheeting should not be left around the Asbestos Work Area where they may be further broken or damaged. When stacking the removed sheeting, care should be taken not to slide sections over the surface of others as this may result in the scuffing of surfaces and release of asbestos fibre. Keep the removed presumed AC lining wetted during this process.
- 16 Broken sheeting and associated waste including vacuum bags should be placed in 0.2 mm polyethylene plastic bags, marked "Asbestos", sealed, placed into a second bag and sealed for appropriate disposal. Bags are to be filled to no more than ½ full, sealed, placed into a second bag and sealed for appropriate disposal.
- 17 All surfaces located inside the Asbestos Work Area shall be thoroughly decontaminated by vacuuming using an approved vacuum cleaner fitted with a HEPA filter to remove residual dust at the completion of the bulk removal process. Wet-wiping techniques may be used to wipe clean metal or glass surfaces. Gutters, roof or ceiling spaces or other areas below the asbestos being removed are part of the Asbestos Work Area and must be cleaned as part of the asbestos removal process. Vacuum bags, HEPA filters and rags used for wet-wiping are to be disposed of as asbestos waste.
- 18 All soiled PPE shall be placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'. Bags are to be filled to no more than ½ full, sealed, placed into a second bag and sealed for appropriate disposal.
- 19 All equipment within the Asbestos Work Area shall be only used in that area and when removed from the Asbestos Work Area shall be thoroughly washed.
- 20 Asbestos waste and other waste are to be disposed of in the appropriate manner at an approved waste disposal facility. The Asbestos Removal Contractor shall provide dumping dockets to the Consultant Occupational Hygienist.
- 21 Transport and final disposal of asbestos waste material shall be carried out by the Asbestos Removal Contractor in a manner, which will prevent the liberation of asbestos dust into the atmosphere. Vehicles licensed for the transportation of asbestos waste shall only be used.
- 22 The Asbestos Work Area will be inspected to ensure asbestos contaminated waste and debris is removed. Clearance inspections and certification are to be carried out by the Consultant Occupational Hygienist.

- 23 All surfaces within the Asbestos Work Area are to be sprayed with PVA or a similar approved material following completion of the visual inspection.
- 24 Air monitors are to be placed around the Asbestos Work Area by the Consultant Occupational Hygienist during all stages of the work. Air clearance monitoring will also be carried out inside the Asbestos Work Area following successful completion of the visual inspection and application of PVA. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to WorkCover and NATA standards.
- 25 A final inspection will be carried out by the Consultant Occupational Hygienist to ensure all work has been carried out and areas cleaned satisfactorily. Settled dust sampling may be undertaken to confirm no residual asbestos contamination remains.
- 26 Final air clearance monitoring will then be undertaken. Upon receipt of the final air monitoring clearance results of <0.01 fibres/mL, the Asbestos Work Area may be entered without the need for personal protective equipment and re-occupation can occur.

Air monitoring should be undertaken whenever asbestos removal work is in progress. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to NATA Standards and in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].

Clearance inspections are to be undertaken prior to the application of PVA and at completion of all work prior to the removal of the Asbestos Work Area barriers.

STANDARD WORK PROCEDURE #2

Friable Asbestos Removal

- 1 The Asbestos Removal Contractor is to be an AS1 licensed Asbestos Removal Contractor in accordance with the NSW Occupational Health & Safety Regulation 2001. A copy of the current license is to be furnished by the Principal Contractor prior to the commencement of Work and displayed in a prominent position during the asbestos removal project.
- 2 The Asbestos Removal Contractor is to apply for and supply a copy of a "Permit to Work" issued by the NSW WorkCover Authority in accordance with the Regulation. A copy of the "Permit to Work" is to be furnished by the Asbestos Removal Contractor prior to the commencement of Work and displayed in a prominent position during the asbestos removal project.
- 3 All personnel employed by the Asbestos Removal Contractor are to be appropriately trained in asbestos removal. Copies of the appropriate certificates are to be supplied to the Consultant prior to the commencement of Work.
- 4 Signage is to be displayed on the Asbestos Work Area boundaries advising that asbestos removal works are being undertaken in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].
- 5 Personnel involved in the removal of the asbestos must wear, as a minimum, approved half-face cartridge-type respirators fitted with Class P2 particulate filters, disposable overalls, boot covers and gloves. All PPE is compulsory and must be worn by all personnel undertaking asbestos removal.
- 6 A four stage wet decontamination unit is to be established at the entrance to the Asbestos Work Area. Entry to and exit from the Asbestos Work Area shall only be permitted via the decontamination unit. The decontamination unit shall also have a clean change area adjacent to and separate from the clean end of the decontamination unit.
- 7 At the entry to the Asbestos Work Area an air lock chamber is to be erected. The wet decontamination unit is to be attached to this air lock chamber. The purpose of the air lock chamber is to provide a buffer zone between the Asbestos Work Area and decontamination unit to minimise the risk of asbestos contaminated dust escaping from the Asbestos Work Area. Entry to and exit from the Asbestos Work Area shall only be permitted via the decontamination unit. The decontamination unit shall also have a clean change area adjacent to and separate from the clean end of the decontamination unit.
- 8 A negative air dust control unit is to be attached to the air lock chamber adjacent to the decontamination unit to maintain airflow into the air lock chamber through the decontamination unit. The units should also be placed to exhaust externally to the building at other appropriate locations and operated continuously during the asbestos removal process to ensure negative pressure is maintained inside the Asbestos Work Area at all times. The exhaust equipment shall be provided to ensure that negative air pressure of minimum 12pa (water gauge) exists within the enclosure. A manometer will be used to check on the negative air pressure throughout the removal period. HEPA filters will be checked by the Consultant Occupational Hygienist prior to commencement of work.

- 9 An encapsulation is to be erected and all openings to the Asbestos Work Area are to be sealed with 0.2mm plastic or canvacon and tape. Plastic to overlap joins by 200mm. The floors are to be adequately protected with at least two layers of canvacon or 0.2mm plastic and any other protection deemed necessary by the Contractor to ensure that damage does not occur.
- 10 A 'bag-out' area is to be established for the storage of bagged asbestos waste prior to removal from the site.
- 11 All penetrations within the Asbestos Work Area are to be sealed using timber, impervious plastic, tape and foam sealant.
- 12 A visual inspection will be undertaken by the Consultant Occupational Hygienist to assess the completion and the integrity of the encapsulation prior to access the commencement of asbestos removal work. **Asbestos removal work may only commence following the encapsulation inspection.**
- 13 Water mist spray and approved vacuum cleaners are to be utilised at all times during the asbestos removal process. Vacuum cleaners used during the decontamination process are to be approved for use with asbestos and are to comply with *AS3544-1998 Industrial Vacuum Cleaners for Particulates Hazardous to Health* and are to be fitted with HEPA filters in accordance with *AS4260-1997 High Efficiency Particulate Air Filters (HEPA) – Classification, Construction and Performance*. Standard domestic or industrial vacuum cleaners are not suitable. The vacuum collection bags and filters are to be disposed of as asbestos waste.
- 14 Remove all asbestos, asbestos contamination and any debris from within the Asbestos Work Areas. Place all waste material inside in 0.2mm impervious plastic bags marked "Asbestos Waste" and seal with tape. Large items or manageable sections of asbestos insulated pipe work and other debris shall be wrapped in 0.2mm impervious plastic and sealed with tape for removal from the Work Area.
- 15 Where 'Asbestos Bags' are used for waste, they are to be sealed before being moved to the 'bag-out' area. Bags are to be filled to no more than ½ full, or so that the weight is manageable and does not result in manual handling injury or bag rupture. Bagged asbestos waste is to be placed into a second bag in the 'bag-out' area and sealed again and sprayed with poly-vinyl acetate (PVA) or 'Bondcrete' prior to removal from the 'bag-out' area.
- 16 The bagged asbestos waste is to be removed from the 'bag-out' area and placed into trucks or bins that are lined with 0.2mm impervious plastic. This should be done out on normal working hours if possible.
- 17 All surfaces located inside the Asbestos Work Area shall be thoroughly decontaminated by vacuuming using an approved vacuum cleaner fitted with a HEPA filter to remove residual dust at the completion of the bulk removal process. Wet-wiping techniques may be used to wipe clean metal or glass surfaces. All framing, pipes, ducts, fixed items etc, within the Asbestos Work Area are to be vacuumed and wet wiped of all visible asbestos contamination. This includes the cleaning of all fixed parts of the building structure. All loose items and debris are to be removed from these areas as asbestos contaminated waste. Vacuum bags, HEPA filters and rags used for wet-wiping are to be disposed of as asbestos waste.

- 18 All soiled PPE shall be placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'. Bags are to be filled to no more than ½ full, sealed, placed into a second bag at the 'bag-out' area and sealed for appropriate disposal.
- 19 All equipment within the Asbestos Work Area shall be only used in that area and when removed from the Asbestos Work Area shall be thoroughly decontaminated using vacuuming and wet-wiping techniques.
- 20 Asbestos waste and other waste are to be disposed of in the appropriate manner at an approved waste disposal facility. Permission to dump the asbestos waste is to be obtained from the appropriate authority prior to the commencement of work. The Asbestos Removal Contractor shall provide dumping dockets to the Consultant Occupational Hygienist.
- 21 Transport and final disposal of asbestos waste material shall be carried out by the Asbestos Removal Contractor in a manner, which will prevent the liberation of asbestos dust into the atmosphere. Vehicles licensed for the transportation of asbestos waste shall only be used.
- 22 The Asbestos Work Area will be inspected to ensure asbestos contaminated waste and debris is removed from the Work Area. Clearance inspections and certification to be carried out by the Consultant Occupational Hygienist. The Consultant Occupational Hygienist is to be accompanied by the Asbestos Removal Contractor at all times during clearance inspections.
- 23 All surfaces within the Asbestos Work Area are to be sprayed with a PVA or Bondcrete sealant following completion of the visual inspection.
- 24 Air clearance monitoring is to be carried out inside the Asbestos Work Area after the spraying of PVA.
- 25 All surfaces within the Asbestos Work Area are to be sprayed with PVA or a similar approved material following completion of the visual inspection.
- 26 Air monitors are to be placed around the Asbestos Work Area by the Consultant Occupational Hygienist during all stages of the work. Air clearance monitoring will also be carried out inside the Asbestos Work Area following successful completion of the visual inspection and application of PVA. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to NOHSC and NATA standards.
- 27 A final inspection will be carried out by the Consultant Occupational Hygienist to ensure all work has been carried out and areas cleaned satisfactorily. Settled dust sampling may be undertaken to confirm no residual asbestos contamination remains.
- 28 Final air clearance monitoring will then be undertaken. Upon receipt of the final air monitoring clearance results of <0.01 fibres/mL, the Asbestos Work Area may be entered without the need for personal protective equipment and re-occupation can occur.
- 29 All materials used for separation of the Asbestos Work Area from adjoining areas are to remain in place until the asbestos is removed from the adjoining areas.

Air monitoring should be undertaken whenever asbestos removal work is in progress. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to NATA Standards and in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)]. Clearance inspections are to be undertaken prior to the application of PVA and at completion of all work prior to the removal of the Asbestos Work Area barriers.

STANDARD WORK PROCEDURE #3

Minor Friable Asbestos Removal

- 1 Signage is to be displayed on the Asbestos Work Area boundaries advising that asbestos removal works are being undertaken in accordance with the *Asbestos Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].
- 2 A dry decontamination area shall be used and is to be located at the entry to the Asbestos Work Area:
 - a) Entry to the Asbestos Work Area is to be via the Decontamination Area where personnel will change into the required PPE.
 - b) The decontamination area is also the area in which contaminated PPE must be removed prior to personnel leaving the Asbestos Work Area. It is set up as a temporary adjunct to the Asbestos Work Area. It should be adjacent to the Asbestos Work Area but must not be used for purposes other than decontamination.
 - c) Disposable overalls, respirators and gloves must be disposed of as asbestos waste within this area. Hard hats, boots, goggles and any other site-specific PPE must be wiped with a damp cloth to remove all dust.
- 3 Dry decontamination procedures are to be as follows:
 - a) Workers are to don the PPE at the decontamination area. Two sets of disposable coveralls and boot covers are to be worn from the decontamination area to the Asbestos Work Area and while asbestos removal work is being carried out.
 - b) Upon leaving the Asbestos Work Area, the outer coveralls and boot covers are to be removed and placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'.
 - c) Remaining PPE is to be removed at the decontamination area and personnel are to decontaminate or wash any exposed parts of the body. Hard hats, boots, goggles and any other site-specific PPE must be wiped with a damp cloth to remove all dust.
- 4 Personal protection shall include half-face cartridge-type respirator fitted with Class P2 filters and disposable overalls, boot covers and gloves. All PPE is compulsory and must be worn by all personnel entering the Asbestos Work Area.
- 5 Drains at ground level that may be affected by the removal process should be covered with HEPA filter material or filter material capable of capturing particles down to 5µm to prevent asbestos residue entering the drainage system. Filter material shall be removed and disposed of as asbestos waste at completion of the removal process.
- 6 Work area to be cleaned prior to commencement of work to minimise dust throughout project.
- 7 Where pipe work is to remain in place, two removal methods - "plastic enclosure" or "glove-bags" may be utilised.

- 8 A "plastic enclosure" shall be constructed from polyethylene sheeting and can be small enough to restrict entry to the asbestos removal area to only one worker. "Glove-bags" are single use bags constructed from transparent, heavy-duty polyethylene with built-in arms and access parts.
- 9 Where "glove-bags" are used, dry decontamination facilities are required as is air monitoring. For "plastic enclosures", standard decontamination procedures shall be used and monitoring is required.
- 10 The work area is to be vacuumed where appropriate with an approved vacuum fitted with a HEPA filter prior to, during and at the completion of work.
- 11 Mist sprays of water are to be utilised to minimise dust generation (*Note: water application should be optimised such that the area is adequately, but not overly watered*).
- 12 Asbestos waste shall be placed in 0.2mm plastic bags marked "Asbestos Waste" and sealed. The bags shall then be placed inside another marked 0.2mm plastic bag and sealed again prior to leaving the enclosure for disposal. The asbestos waste will include vacuum bags, soiled personal protective equipment and materials used to construct the enclosure.
- 13 Air monitoring is to be carried out at all times at locations outside the plastic enclosure to assess levels of airborne asbestos fibre.
- 14 Following detail cleaning, the area is to be inspected by the Consultant Occupational Hygienist to ensure that all traces of asbestos have been removed.
- 15 PVA sealant paint is to be applied to all surfaces within the containment at completion of asbestos removal works and visual inspection, prior to dismantling the enclosure or glove bag.
- 16 Air clearance monitoring is to be carried out inside enclosure at the completion of asbestos removal work.
- 17 Waste material is to be disposed of in an approved manner at an approved waste disposal facility. The Asbestos Removal Contractor shall provide dumping dockets.

Air monitoring should be undertaken whenever asbestos removal work is in progress. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to NATA Standards and in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].

Clearance inspections are to be undertaken prior to the application of PVA and at completion of all work prior to the removal of the Asbestos Work Area barriers.

STANDARD WORK PROCEDURE #4

Vinyl Floor tile Removal

- 1 The Asbestos Removal Contractor is to have a current Class AS2 license in accordance with the NSW Occupational Health & Safety Regulation 2001. A copy of the current licence is to be furnished by the Asbestos Removal Contractor prior to the commencement of work and displayed in a prominent position during the asbestos removal work.
- 2 The Asbestos Removal Contractor must submit a Notification to commence bonded asbestos removal work to the NSW WorkCover Authority in accordance with the Regulation. A copy of the Notification stamped with acknowledgment by WorkCover is to be furnished by the Asbestos Removal Contractor prior to the commencement of work and displayed in a prominent position during the asbestos removal project.
- 3 All personnel employed by the Asbestos Removal Contractor are to be appropriately trained in asbestos removal. Copies of the appropriate certificates are to be supplied prior to the commencement of work and kept with the project documentation.
- 4 Signage is to be displayed on the Asbestos Work Area boundaries advising that asbestos removal works are being undertaken in accordance with the *Asbestos Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].
- 5 A dry decontamination area shall be used and is to be located at the entry to the Asbestos Work Area:
 - a) Entry to the Asbestos Work Area is to be via the Decontamination Area where personnel will change into the required PPE.
 - b) The decontamination area is also the area in which contaminated PPE must be removed prior to personnel leaving the Asbestos Work Area. It is set up as a temporary adjunct to the Asbestos Work Area. It should be adjacent to the Asbestos Work Area but must not be used for purposes other than decontamination.
 - c) Disposable overalls, respirators and gloves must be disposed of as asbestos waste within this area. Hard hats, boots, goggles and any other site-specific PPE must be wiped with a damp cloth to remove all dust.
- 6 Dry decontamination procedures are to be as follows:
 - a) Workers are to don the PPE at the decontamination area. Two sets of disposable coveralls and boot covers are to be worn from the decontamination area to the Asbestos Work Area and while asbestos removal work is being carried out.
 - b) Upon leaving the Asbestos Work Area, the outer coveralls and boot covers are to be removed and placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'.
 - c) Remaining PPE is to be removed at the decontamination area and personnel are to decontaminate or wash any exposed parts of the body. Hard hats, boots, goggles and any other site-specific PPE must be wiped with a damp cloth to remove all dust.

- 7 Personal protection shall include half-face cartridge-type respirator fitted with Class P2 filters and disposable overalls, boot covers and gloves. All PPE is compulsory and must be worn by all personnel entering the Asbestos Work Area.
- 8 Drains at ground level that may be affected by the removal process should be covered with HEPA filter material or filter material capable of capturing particles down to 5mm to prevent asbestos residue entering the drainage system. Filter material shall be removed and disposed of as asbestos waste at completion of the removal process.
- 9 Vinyl floor tiles containing asbestos may be removed by scraping or chipping using wide bladed tools. A heat source may be used to soften the adhesive if necessary, but should be used with caution to avoid generating hazardous fumes or a fire hazard. Abrasive cutting, drilling or sanding tools shall not be used for work involving ACM. Use of any other powered tool with ACM must be specifically approved by the NSW WorkCover Authority.
- 10 All equipment used within the Asbestos Work Area shall be only used in that area and when removed from the Asbestos Work Area shall be thoroughly washed.
- 11 Vacuum cleaners used during the decontamination process are to be approved for use with asbestos and are to comply with *AS3544-1998 Industrial Vacuum Cleaners for Particulates Hazardous to Health* and are to be fitted with HEPA filters in accordance with *AS4260-1997 High Efficiency Particulate Air Filters (HEPA) – Classification, Construction and Performance*. Standard domestic or industrial vacuum cleaners are not suitable. The vacuum collection bags and filters are to be disposed of as asbestos waste.
- 12 An area should be selected to place the removed tiles where it will not be subject to damage and can be stacked into bundles for sealing prior to removal from the site.
- 13 Removed vinyl floor tile material shall be gathered for disposal in 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'. Bags are to be filled to no more than ½ full or so that the weight is manageable and does not result in manual handling injury or bag rupture. The asbestos bags are to be sealed, placed into a second bag and sealed for appropriate disposal.
- 14 All soiled PPE, vacuum bags and other asbestos contaminated debris shall also be placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste' as detailed above.
- 15 All surfaces located inside the Asbestos Work Area shall be thoroughly decontaminated by vacuuming using an approved vacuum cleaner fitted with a HEPA filter to remove residual dust at the completion of the bulk removal process. Wet-wiping techniques may be used to wipe clean metal or glass surfaces. All framing, pipes, ducts, fixed items etc, within the Asbestos Work Area are to be vacuumed and wet wiped of all visible asbestos contamination. This includes the cleaning of all fixed parts of the building structure. Vacuum bags, HEPA filters and rags used for wet-wiping are to be disposed of as asbestos waste.
- 16 Asbestos waste and other waste are to be disposed of in the appropriate manner at an approved waste disposal facility. The Asbestos Removal Contractor shall maintain records of dumping events and keep all dump dockets.

- 17 The Asbestos Work Area will be inspected by the Consultant Occupational Hygienist to ensure that all waste and debris from the work is removed from the area and that no visible ACM remain. The Consultant Occupational Hygienist is to be accompanied by the Asbestos Removal Contractor at all times during clearance inspections.
- 18 PVA or Bondcrete sealant paint is to be applied to all surfaces within the Asbestos Work Area at the completion of asbestos removal works following the visual inspection.
- 19 Upon receipt of final air monitoring clearance results of <0.01 fibres/mL the Asbestos Work Area may be dismantled and demolition may commence.
- 20 A final inspection will be carried out by the Consultant following the dismantling of the Asbestos Work Area to ensure that the area has been cleaned to a satisfactory standard and that no visual ACM remain.
- 21 Final air clearance monitoring will then be undertaken. Upon receipt of the final air monitoring clearance results of <0.01 fibres/mL, the Asbestos Work Area may be entered without the need for personal protective equipment and the construction process can occur.

Air monitoring should be undertaken whenever asbestos removal work is in progress. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to NATA Standards and in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].

Clearance inspections are to be undertaken prior to the application of PVA and at completion of all work prior to the removal of the Asbestos Work Area barriers.

STANDARD WORK PROCEDURE #5

Removal of Asbestos Containing Conduit

- 1 The Asbestos Removal Contractor is to have a current Class AS2 license in accordance with the NSW Occupational Health & Safety Regulation 2001. A copy of the current licence is to be furnished by the Asbestos Removal Contractor prior to the commencement of work and displayed in a prominent position during the asbestos removal work.
- 2 The Asbestos Removal Contractor must submit a Notification to commence bonded asbestos removal work to the NSW WorkCover Authority in accordance with the Regulation. A copy of the Notification stamped with acknowledgment by WorkCover is to be furnished by the Asbestos Removal Contractor prior to the commencement of work and displayed in a prominent position during the asbestos removal project.
- 3 All personnel employed by the Asbestos Removal Contractor are to be appropriately trained in asbestos removal. Copies of the appropriate certificates are to be supplied prior to the commencement of work and kept with the project documentation.
- 4 Barriers shall be erected approximately 5 metres around the work area to restrict entry. Access to the work area should remain restricted until the works are complete and a visual clearance has been obtained. The effected area is to be known as the "Asbestos Work Area".
- 5 Signage is to be displayed on the Asbestos Work Area boundaries advising that asbestos removal works are being undertaken in accordance with the *Asbestos Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].
- 6 Any required isolations are to be undertaken in accordance with existing specifications. Any work permits required for the works are to be obtained in accordance with those specifications.
- 7 Personal protection for all personnel entering the Asbestos Work Area for any purpose shall include as a minimum a half-face cartridge-type respirator fitted with Class P2 particulate filters, disposable overalls and boot covers. All PPE is compulsory and must be worn by all personnel entering the Asbestos Work Area.
- 8 A dry decontamination area shall be used and is to be located at the entry to the Asbestos Work Area:
 - a) Entry to the Asbestos Work Area is to be via the Decontamination Area where personnel will change into the required PPE.
 - b) The decontamination area is also the area in which contaminated PPE must be removed prior to personnel leaving the Asbestos Work Area. It is set up as a temporary adjunct to the Asbestos Work Area. It should be adjacent to the Asbestos Work Area but must not be used for purposes other than decontamination.
 - c) Disposable overalls, respirators and gloves must be disposed of as asbestos waste within this area. Hard hats, boots, goggles and any other site-specific PPE must be wiped with a damp cloth to remove all dust.

- 9 Dry decontamination procedures are to be as follows:
 - a) Workers are to don the PPE at the decontamination area. Two sets of disposable coveralls and boot covers are to be worn from the decontamination area to the Asbestos Work Area and while asbestos removal work is being carried out.
 - b) Upon leaving the Asbestos Work Area, the outer coveralls and boot covers are to be removed and placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'.
 - c) Remaining PPE is to be removed at the decontamination area and personnel are to decontaminate or wash any exposed parts of the body. Hard hats, boots, goggles and any other site-specific PPE must be wiped with a damp cloth to remove all dust.
- 10 Each excavation shall be treated as a new Asbestos Work Area. The Asbestos Work Area should be wetted down prior to excavation works if possible. Excavation works shall be carried out under controlled asbestos conditions to clear an area of 200mm around the entire length of the section of conduit to be removed. Excavation works may be undertaken using hand tools. Care should be taken not to damage the asbestos material during the excavation.
- 11 If the conduit is found to be damaged upon excavation or has been previously broken up and left in-situ, the excavated soil shall be treated as asbestos contaminated. Excavated soil should be placed in 0.2mm low-density polyethylene plastic bags labelled as "Asbestos Waste" for disposal as asbestos waste.
- 12 The base of the excavation below the section of conduit to be removed shall be lined with 0.2mm low-density polyethylene plastic sheeting to capture asbestos waste. Suitable filter material should be placed on top of the plastic to ensure fibre is not washed onto the soil below if wet removal methods are used.
- 13 The asbestos conduit may be removed under controlled conditions by breaking the material with a cold chisel and hammer, or by use of other non-powered hand tools such as hand saws. Power tools are not to be used. If hand tools are ineffective, low speed battery powered tools may be used, but will require dismantling and decontamination at the completion of the project, or must be placed in sealed containers and labelled for future use only in asbestos removal work areas.
- 14 Techniques shall be used to minimise the generation of airborne fibres whenever possible. The surfaces of ACM being broken or cut shall be wetted prior to works taking place if possible. Wet removal methods should not be used if electrical hazards exist. The use of detergents and water may be used throughout the process to minimise airborne fibre generation. Thickened substances such as pastes or gels (shaving foam or hair gel) may also be used to capture and prevent the liberation dust along cut sections.
- 15 Shadow vacuuming techniques may be used if the use of wet methods or gels / pastes is not possible or proves to be ineffective. Vacuum cleaners used during the process are to be approved for use with asbestos and are to comply with *AS3544-1998 Industrial Vacuum Cleaners for Particulates Hazardous to Health* and are to be fitted with HEPA filters in accordance with *AS4260-1997 High Efficiency Particulate Air Filters (HEPA) – Classification, Construction and Performance*. Standard domestic or industrial vacuum cleaners are not suitable. The vacuum collection bags and filters are to be disposed of as asbestos waste.

- 16 Asbestos debris produced as the ACM are removed shall be bagged up as asbestos waste as they are produced to prevent material accumulating in the base of the excavation.
- 17 At the completion of the maintenance works, the plastic lining the base of the work area and any filter material shall be carefully folded up and disposed of as asbestos waste. An additional 100mm of soil shall also be removed from the base of the excavation to remove residual fibre which may be present.
- 18 Any infrastructure present should be wet wiped at the completion of the asbestos removal works to remove any visible dust which may contain asbestos and be sprayed with a PVA or Bondcrete sealant paint. Cut or broken ends left in situ should be painted with PVA or Bondcrete sealant paint.
- 19 All debris, asbestos waste and soiled PPE is to be collected and placed in 0.2mm low-density polyethylene plastic bags labelled as "Asbestos Waste". Bags are to be filled to no more than ½ full or so that the weight is manageable and does not result in manual handling injury or bag rupture. The asbestos bags are to be sealed, placed into a second bag and sealed for appropriate disposal.
- 20 Asbestos waste, all cleaning items and soiled personal protective equipment are to be disposed of in the appropriate manner at an approved waste disposal facility.
- 21 Transport and final disposal of asbestos waste material shall be carried out in a manner which will prevent the liberation of asbestos dust into the atmosphere.
- 22 The Asbestos Work Area will be inspected to ensure visible debris have been removed at the completion of works in each Asbestos Work Area. Clearance inspections and certification are to be provided by the Consultant Occupational Hygienist.

Air monitoring should be undertaken whenever asbestos removal work is in progress. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to NATA Standards and in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].

Clearance inspections are to be undertaken prior to the application of PVA and at completion of all work prior to the removal of the Asbestos Work Area barriers.

STANDARD WORK PROCEDURE #6

Live Electrical Areas

Where the spray and soaking techniques cannot be utilised the "Dry Removal" method may be employed.

This method is considered to be the least desirable removal technique. The greater potential for the generation of airborne asbestos dust demands particular attention be given to the following:

- 1 Area to be isolated with barrier tape and use of appropriate signage (i.e. **"Asbestos Removal Work Area – Do Not Enter"**).
- 2 Work area to be cleaned prior to commencement of work to minimise dust throughout project.
- 3 The work area shall be fully isolated with 0.2mm polyethylene sheeting and the interior maintained at a slight negative pressure using Negative Air Units equipped with HEPA filters.
- 4 The work area is to be vacuumed where appropriate with an approved vacuum fitted with a HEPA filter prior to, during and at the completion of work.
- 5 A four stage wet decontamination unit and change facility connected to the work area shall be used, and entry and exit from the work area shall only be via this unit.
- 6 Personal protection shall include an approved full-face air-purifying respirator fitted with Class P3 filters, disposable overalls and gloves.
- 7 Air monitoring is to be carried out at all times at locations outside the plastic enclosure to assess levels of airborne asbestos fibre.
- 8 Following detail cleaning, the area is to be inspected by the Consultant Occupational Hygienist to ensure that all traces of asbestos have been removed.
- 9 Air clearance monitoring is to be carried out inside enclosure at the completion of asbestos removal work.
- 10 Asbestos waste shall be placed in 0.2mm plastic bags marked "Asbestos Waste" and sealed. The bags shall then be placed inside another marked 0.2mm plastic bag and sealed again prior to leaving the enclosure for disposal. The asbestos waste will include vacuum bags, soiled personal protective equipment and materials used to construct the enclosure.
- 11 Waste materials to be disposed of in an approved manner at an approved waste disposal facility. The Asbestos Removal Contractor shall provide dumping dockets.

Air monitoring should be undertaken whenever asbestos removal work is in progress. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to NATA Standards and in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].

Clearance inspections are to be undertaken prior to the application of PVA and at completion of all work prior to the removal of the Asbestos Work Area barriers.

STANDARD WORK PROCEDURE #7

Removal of Asbestos Gaskets

- 1 Area to be isolated with barrier tape and use of appropriate signage.
- 2 Signage is to be displayed on the Asbestos Work Area boundaries advising that asbestos removal works are being undertaken in accordance with the *Asbestos Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].
- 3 Any required isolations are to be undertaken in accordance with existing specifications. Any work permits required for the works are to be obtained in accordance with those specifications.
- 4 Personal protection for all personnel entering the Asbestos Work Area for any purpose shall include as a minimum a half-face cartridge-type respirator fitted with Class P2 particulate filters, disposable overalls and boot covers. All PPE is compulsory and must be worn by all personnel entering the Asbestos Work Area.
- 5 A dry decontamination area shall be used and is to be located at the entry to the Asbestos Work Area:
 - a) Entry to the Asbestos Work Area is to be via the Decontamination Area where personnel will change into the required PPE.
 - b) The decontamination area is also the area in which contaminated PPE must be removed prior to personnel leaving the Asbestos Work Area. It is set up as a temporary adjunct to the Asbestos Work Area. It should be adjacent to the Asbestos Work Area but must not be used for purposes other than decontamination.
 - c) Disposable overalls, respirators and gloves must be disposed of as asbestos waste within this area. Hard hats, boots, goggles and any other site-specific PPE must be wiped with a damp cloth to remove all dust.
- 6 Dry decontamination procedures are to be as follows:
 - a) Workers are to don the PPE at the decontamination area. Two sets of disposable coveralls and boot covers are to be worn from the decontamination area to the Asbestos Work Area and while asbestos removal work is being carried out.
 - b) Upon leaving the Asbestos Work Area, the outer coveralls and boot covers are to be removed and placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'.
 - c) Remaining PPE is to be removed at the decontamination area and personnel are to decontaminate or wash any exposed parts of the body. Hard hats, boots, goggles and any other site-specific PPE must be wiped with a damp cloth to remove all dust.
- 7 Work area to be cleaned prior to commencement of asbestos removal to minimise dust throughout project.
- 8 The work area is to be vacuumed where appropriate with an approved vacuum fitted with a HEPA filter prior to, during and at the completion of work.
- 9 Whilst removing the gasket/jointing it must be sprayed regularly with a soapy solution using a small hand held spray bottle.

- 10 The gasket/jointing shall not be removed by use of grinder, saw, file or any tool that may cause fibres to become airborne. The gasket must be removed with a sharp instrument such as a knife/chisel.
- 11 Whilst the gasket/jointing is being removed, 0.2mm polyethylene sheeting must be placed below the material so as to retain any material that may fall.
- 12 A HEPA fitted vacuum cleaner shall be used during any gasket removal to vacuum dust and debris.
- 13 Air monitoring may be undertaken when work is in progress and for clearance purposes if deemed necessary.
- 14 Following detail cleaning, the area is to be inspected by the Consultant Occupational Hygienist to ensure that all traces of asbestos have been removed.
- 15 When the removal is completed the waste material along with vacuum bags, disposable overalls and polyethylene sheeting are to be placed into 0.2mm polyethylene bags and sealed and must be disposed of in the approved manner at an approved waste disposal facility. The Asbestos Removal Contractor shall provide dumping dockets.

Air monitoring should be undertaken whenever asbestos removal work is in progress. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to NATA Standards and in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].

Clearance inspections are to be undertaken prior to the application of PVA and at completion of all work prior to the removal of the Asbestos Work Area barriers.

STANDARD WORK PROCEDURE #8

Disposal of Asbestos Contaminated Materials or Orphan Asbestos Waste

This SWP applies to the disposal of minor amounts of asbestos contaminated materials or ACM during cleaning operations or the cleaning up of dumped asbestos waste.

- 1 Personal protection for all personnel entering the Asbestos Work Area for any purpose shall include as a minimum a half-face cartridge-type respirator fitted with Class P2 particulate filters, disposable overalls and boot covers. All PPE is compulsory and must be worn by all personnel entering the Asbestos Work Area.
- 2 A dry decontamination area shall be used and is to be located at the entry to the Asbestos Work Area:
 - a) Entry to the Asbestos Work Area is to be via the Decontamination Area where personnel will change into the required PPE.
 - b) The decontamination area is also the area in which contaminated PPE must be removed prior to personnel leaving the Asbestos Work Area. It is set up as a temporary adjunct to the Asbestos Work Area. It should be adjacent to the Asbestos Work Area but must not be used for purposes other than decontamination.
 - c) Disposable overalls, respirators and gloves must be disposed of as asbestos waste within this area. Hard hats, boots, goggles and any other site-specific PPE must be wiped with a damp cloth to remove all dust.
- 3 Dry decontamination procedures are to be as follows:
 - a) Workers are to don the PPE at the decontamination area. Two sets of disposable coveralls and boot covers are to be worn from the decontamination area to the Asbestos Work Area and while asbestos removal work is being carried out.
 - b) Upon leaving the Asbestos Work Area, the outer coveralls and boot covers are to be removed and placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'.
 - c) Remaining PPE is to be removed at the decontamination area and personnel are to decontaminate or wash any exposed parts of the body. Hard hats, boots, goggles and any other site-specific PPE must be wiped with a damp cloth to remove all dust.
- 4 Solid asbestos waste shall be collected and double bagged in heavy duty, low-density polyethylene 0.2mm thick bags. A maximum bag size of 1200 mm (length) x 900 mm (width) shall be used and bags shall be filled to no more than 50 per cent capacity.
- 5 To reduce bag rupture and to minimise asbestos contamination, asbestos waste shall be double bagged; once at the workface or receptacle and a second time away from the workface and before loading waste transport vehicle.
- 6 The loaded weight of the bag shall not exceed 20kg. Each bag or other container shall be labelled on its outermost surface with warning statements.
- 7 Bags or primary containers that have held asbestos material shall not be re-used, and containers marked as above shall not be used for any other purpose.

- 8 Asbestos waste material shall be conveyed in leak-proof vehicles covered so that no spillage or dispersal of the waste to the atmosphere occurs. Vehicles licensed for the transportation of asbestos waste shall only be used.
- 9 Care must be taken to ensure that the integrity of the containment is not damaged during handling or transportation. In particular, bags of asbestos waste shall not be thrown or dropped from a height, which may rupture the bag.
- 10 Should it be necessary to temporarily store asbestos waste prior to disposal, all plastic bags containing asbestos waste will be held in leak-proof metal containers or bins suitably marked and held in a secured area displaying appropriate warning signs.
- 11 Controlled wetting of waste shall be employed, where practicable, to reduce asbestos dust emission during bag sealing and in cases of accidental bag rupture during transportation. Excessive waterlogging shall be avoided as the excess of contaminated water may leak out of the bags, thereby creating a future source of airborne asbestos dust.
- 12 The asbestos waste shall be disposed of at a site and in a manner as approved by the Local and State authorities. Documentary evidence of the disposal shall be provided. This will include name of the authorised tip, weighbridge docket and registration number of vehicle for every disposal. This information is to be supplied to the Consultant Occupational Hygienist.

Air monitoring should be undertaken whenever asbestos removal work is in progress. All air monitoring and clearance inspections will be carried out by the Consultant Occupational Hygienist to NATA Standards and in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)].

Clearance inspections are to be undertaken prior to the application of PVA and at completion of all work prior to the removal of the Asbestos Work Area barriers.

STANDARD WORK PROCEDURE #9

Removal of Minor Amounts of Asbestos Containing Materials from Parks and other Public Places

This SWP applies for picking up of minor amounts of asbestos containing materials that may be discovered during routine inspections of University grounds and other public areas.

- 1 University staff should conduct regular inspections of the site as part of other regular duties.
- 2 The University staff conducting the inspections should undergo asbestos removal training or attend an asbestos awareness course so that they are aware of the hazards associated with asbestos and the requirements for handling, removal and disposal.
- 3 If suspected ACM are discovered at the site by other persons, the material or area should be marked and the appropriate Council staff contacted to remove the asbestos.
- 4 A nominated staff member from the University is to attend the site and collect the suspect asbestos material and place into a sealable sample bag for removal from the site. Disposable gloves should be used and disposed of with the asbestos if the materials must be handled. It would be useful for UNE to document the locations and dates that the asbestos is discovered for future reference.
- 5 The suspected ACM contained in the sample bag is to be placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'. Bags are to be filled to no more than ½ full, sealed, placed into a second bag and sealed for appropriate disposal. Due to the expected small volumes of asbestos waste expected, the asbestos waste may be stored in a receptacle or bin that should be labelled and lockable and the asbestos bags disposed of as required.
- 6 Asbestos waste is to be disposed of in the appropriate manner at an approved waste disposal facility. Dumping dockets should be retained.
- 7 Transport and final disposal of asbestos waste material shall be carried out in a manner which will prevent the liberation of asbestos dust into the atmosphere. Vehicles licensed for the transportation of asbestos waste shall only be used.



Appendix 5: Sample Asbestos Monitoring Report



Date: / / 20.....

Listed below are the results of air monitoring carried out at the site.

*Sampling and reporting of results are carried out in accordance with the National Occupational Health and Safety Commission's Guidance Note on the Membrane Filter Method for Estimation of Airborne Asbestos Fibres 2nd Edition [NOHSC:3003 (2005)] (HLA-Envirosciences' Method No.1).

WORK PRACTICES

Time on: Time Off: Microscope No.:

FILTER
IDENTIFICATION

RESULTS
(No. Fibres in "x" fields)

RESULTS
(No. Fibres per/mL)

VOLUME
(Before/After)

Sample / /
..... Fibres per Fields Fibres/mL

Sample / /
..... Fibres per Fields Fibres/mL

Sample / /
..... Fibres per Fields Fibres/mL

Sample / /
..... Fibres per Fields Fibres/mL

Sample / /
..... Fibres per Fields Fibres/mL

Sample / /
..... Fibres per Fields Fibres/mL

Sample / /
..... Fibres per Fields Fibres/mL

Counter / Approved Counter

*Sampling Procedure not covered by terms of accreditation

Interim Report issued to client

☐

Yes

☐

No

Client:	
Attention:	
Sampled From:	
Project Description:	
Lab Report No:	Date Sampled:
Sampled By:	Counted By:
Time On:	Time Off:

TEST METHOD: In accordance with the HLA-Envirosiences Asbestos Procedures Manual with reference to Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC:3003(2005)].

SAMPLING PROCEDURES: Controlled monitoring in accordance with NOHSC:3003 (2005).

This report supersedes the Interim Report for sample numbers _____ to _____ issued on _____.

NAME & ADDRESS OF TESTING LABORATORY: HLA-Envirosciences Pty Limited, 18 Warabrook Boulevard Warabrook NSW 2304

Sampled and analysed by HLA Warabrook Laboratory.

[illegible]

<NAME>

Approved NATA Signatory

Date of Issue:

HLA-Envirosciences Pty Limited ABN 34 060 204 702

Email. mail@hla-enviro.com.au

sustainable solutions for environmental, OHS and natural resource management

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