Hazardous Materials Report

University of New England

Bellevue Campus, Armidale NSW

July 2008

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Noel Arnold & Associates Pty Ltd
Level 2, 11 Khartoum Road
North Ryde NSW 2113
Ph: (02) 9889 1800 Fax: (02) 9889 1811
www.noel-arnold.com.au

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66007 Bellevue Campus Hazardous Materials Report July 2008

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University of New England

Bellevue Campus, Armidale NSW

Executive Summary

Purpose

This report presents the findings of Hazardous Materials Surveys conducted of the University of New England (UNE) Bellevue Campus, Armidale NSW located in Armidale NSW. The survey was undertaken to identify any potential hazardous materials located on-site within the majority of buildings throughout the Bellevue Campus. Noel Arnold & Associates Pty Ltd (NAA) carried out this survey at the request of Colin Barry, Energy Management Officer, of the University of New England.

Scope

The survey involved a visual inspection of representative construction materials and the collection and analysis of suspected asbestos-containing materials. Hazardous materials assessed included Asbestos, Synthetic Mineral Fibre (SMF), Polychlorinated Biphenyls (PCBs) capacitors in light fittings and Lead Containing Paint.

Findings

The table below presents a summary of hazardous materials identified at the buildings of the University of New England Bellevue Campus, Armidale NSW.

Building Name	Asset ID	Asbestos Present	SMF Present	Lead Paint Present	PCBs Present	Remedial Works Required
Wright Centre	B016	✓	✓	✗	✓	✗
Wright College – Masters Residence	B017	✓	✓	✓	✗	✗
Robb College – North Court	B021	✓	✓	✓	✓	✗
Robb College – West Court	B022	✓	✓	✗	✗	✗
Robb College – Kitchen	B023	✓	✓	✓	✗	✗
Robb College – South Court	B024	✓	✓	✓	✗	✗
Robb College – Masters Residence	B025	✓	✓	✗	✗	✗
Earle Page College – Dining Hall	B031	✓	✓	✗	✓	✗
Earle Page College – Block 1	B032	✓	✗	✗	✓	✓
Earle Page College – Block 2	B033	✓	✓	✗	✓	✗
Earle Page College – Block 3	B034	✓	✓	✗	✓	✗
Earle Page College – Block 4	B035	✓	✓	✗	✓	✗
Earle Page College – Masters Residence	B036	✓	✓	✓	✗	✗
Sport Pavilion	B037	✓	✗	✓	✗	✗
Austin College – Dining Hall	B041	✗	✓	✓	✓	✗
Austin College – Block A	B042	✗	✓	✓	✓	✗

Building Name	Asset ID	Asbestos Present	SMF Present	Lead Paint Present	PCBs Present	Remedial Works Required
Austin College – Block B	B043	✓	✓	✓	✓	✘
Austin College – Block C	B044	✓	✓	✓	✓	✘
Duval College – Blocks A-F	B051	✓	✘	✘	✘	✘
Duval College – Blocks G-L	B052	✓	✘	✘	✘	✘
Duval College – Dining Hall & Kitchen	B053	✓	✓	✘	✘	✘
Wright Village – Block A Flats 1-8	B061	✓	✓	✘	✘	✘
Wright Village – Block B Flats 9-16	B062	✓	✓	✓	✘	✘
Wright Village – Block C Flats 17-24	B063	✓	✓	✘	✘	✘
Wright Village – Block D Flats 25-32	B064	✓	✓	✓	✘	✘
Wright Village – Block A Flats 40-41	B065A	✘	✓	✘	✘	✘
Wright Village – Block B Flats 42-43	B065B	✘	✓	✘	✘	✘
Wright Village – Block C Flats 44-45	B065C	✘	✓	✘	✘	✘
Wright Village – Block D Flats 46-47	B065D	✘	✓	✘	✘	✘
Wright Village – Block E Flats 48-49	B065E	✘	✓	✘	✘	✘
Wright Village – Block F Flats 50-51	B065F	✘	✓	✘	✘	✘
Wright Village – Block G Flats 52-53	B065G	✘	✓	✘	✘	✘
Wright Village – Block H Flats 54-55	B065H	✘	✓	✘	✘	✘
Student Health Centre	B066	✓	✘	✓	✘	✘
Drummond Smith College – Office and Dining Hall	B081	✓	✓	✘	✘	✘
Drummond Smith College – Block 1A	B082	✓	✓	✘	✘	✘
Drummond Smith College – Block 2B	B083	✓	✘	✘	✘	✘
Drummond Smith College – Block 3C	B084	✓	✘	✘	✘	✘
Drummond Smith College – Block 4D	B085	✘	✘	✘	✘	✘
Bellevue Boiler House	B087	✓	✓	✓	✘	✘
Creative Arts Centre	B089	✓	✘	✓	✘	✘
UNE Conference Company	B092	✘	✓	✘	✘	✘

Recommendations

High Priority Recommendations

- ❑ Engage an AS-1 licensed contractor to encapsulate the pipe lagging within the Kitchen Cupboard Riser adjacent Room 211 within the Earle Page College Block 1 under controlled conditions.

Management Recommendations

- All asbestos containing materials given a Priority Control recommendation of P1 or P2 require removal or remediation. See individual buildings hazardous materials registers for further information.
- Ensure all asbestos containing materials remaining in situ are labelled appropriately and re-assessed periodically (yearly is recommended). These materials should be managed through an Asbestos Management Plan;
- All materials that are suspected of containing asbestos materials should be confirmed prior to planned refurbishment or demolition works; &
- Conduct a destructive hazardous materials survey prior to the refurbishment or demolition of any buildings within Bellevue Campus.

Hazardous Materials Report

University of New England

Bellevue Campus, Armidale NSW

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Statement of Limitations

This report has been prepared in accordance with the agreement between University of New England and Noel Arnold & Associates Pty Ltd.

Within the limitations of the agreed upon scope of services, this assessment has been undertaken and performed in a professional manner, in accordance with generally accepted practices, using a degree of skill and care ordinarily exercised by members of its profession and consulting practice. No other warranty, expressed or implied, is made.

This report is solely for the use of University of New England and any reliance of this report by third parties shall be at such party's sole risk and may not contain sufficient information for purposes of other parties or for other uses. This report shall only be presented in full and may not be used to support any other objective than those set out in the report, except where written approval with comments are provided by Noel Arnold & Associates Pty Ltd.

This report was prepared for University of New England solely for the purpose set out herein and it is not intended that any other person use or rely on it. Whilst this report is accurate to the best of our knowledge and belief Noel Arnold & Associates Pty Ltd cannot guarantee completeness or accuracy of any descriptions or conclusions based on information supplied to it during site surveys, visits and interviews. Responsibility is disclaimed for any loss or damage, including but not limited to, any loss or damage suffered by University of New England arising from the use of this report or suffered by any other person for any reason whatsoever.

This report relates only to the identification of asbestos containing materials used in the construction of the building and does not include the identification of dangerous goods or hazardous substances in the form of chemicals used, stored or manufactured with the building or plant.

The following should also be noted:

While the survey has attempted to locate the asbestos containing materials within the site it should be noted that the review was a visual inspection and a limited sampling program was conducted and/or the analysis results of the previous report were used. Representative samples of suspect asbestos materials were collected for analysis. Other asbestos materials of similar appearance are assumed to have a similar content.

Not all suspected asbestos materials were sampled. Only those asbestos materials that were physically accessible could be located and identified. Therefore it is possible that asbestos materials, which may be concealed within inaccessible areas/voids, may not have been located during the audit. Such inaccessible areas fall into a number of categories, including but not restricted to:

- In set ceilings or wall cavities.
- Those areas accessible only by dismantling equipment or performing minor localised demolition works.
- Service shafts, ducts etc., concealed within the building structure.
- Energised services, gas, electrical, pressurised vessel and chemical lines.
- Voids or internal areas of machinery, plant, equipment, air-conditioning ducts etc.
- Totally inaccessible areas such as voids and cavities created and intimately concealed within the building structure. These voids are only accessible during major demolition works.
- Areas deemed unsafe or hazardous at time of audit.

Only minor destructive auditing and sampling techniques were employed to gain access to those areas documented in Appendix A. Consequently, without substantial demolition of the building, it is not possible to guarantee that every source of asbestos material has been detected.

During the course of normal site works care should be exercised when entering any previously inaccessible areas or areas mentioned above and it is imperative that work cease pending further sampling if materials suspected of containing asbestos or unknown materials are encountered. Therefore during any refurbishment or demolition works, further investigations and assessment may be required should any suspect material be observed in previously inaccessible or areas not fully inspected previously i.e. carpeted floors.

This report is not intended to be used for the purposes of tendering, programming of works, refurbishment works or demolition works unless used in conjunction with a specification detailing the extent of the works. To ensure its contextual integrity, the report must be read in its entirety and should not be copied, distributed or referred to in part only.

1. Introduction

This report presents the findings of Hazardous Materials Surveys conducted at the University of New England (UNE) Bellevue Campus, Armidale NSW located in Armidale NSW. The survey was undertaken to identify any potential hazardous materials located on-site within the majority of buildings in the Bellevue Campus. Noel Arnold & Associates Pty Ltd (NAA) carried out the survey during June - July 2008 at the request of Colin Barry, Energy Management Officer of the University of New England.

2. Scope of Work

The Hazardous Materials Survey included the following University of New England buildings located in the Bellevue Campus, Armidale NSW, which are listed in Section 3.

The following is a list of services provided as part of this survey:

- Complete a Hazardous Materials Survey and Risk Assessment of representative construction materials and structures;
- Collection of suspected asbestos containing samples and analysis in a NATA accredited laboratory;
- Prepare hazardous materials registers that includes a concise description of the location, nature and extent of asbestos containing materials, synthetic mineral fibres (SMF), lead containing paint, polychlorinated biphenyls (PCBs) and results of samples collected. A risk assessment of each material is required. The risk assessment is to include recommendations for remedial works required, whether the materials are labelled and determination of an appropriate re-inspection period; &
- Prepare specific site plans of all buildings indicating asbestos sampling points and where positive asbestos containing materials are located.

The survey was generally conducted during normal business hours and the areas surveyed were occupied during the assessment.

3. Site Description and Locations

Bellevue Campus, Armidale NSW consists of forty-two (42) buildings and is part of the main university campus adjacent to the Academic Campus in Armidale, NSW.

The buildings inspected during the survey program were:

Building Name	Asset ID	Building Name	Asset ID
Wright Centre	B016	Wright Village – Block A Flats 1-8	B061
Wright College – Masters Residence	B017	Wright Village – Block B Flats 9-16	B062
Robb College – North Court	B021	Wright Village – Block C Flats 17-24	B063
Robb College – West Court	B022	Wright Village – Block D Flats 25-32	B064
Robb College – Kitchen	B023	Wright Village – Block A Flats 40-41	B065A
Robb College – South Court	B024	Wright Village – Block B Flats 42-43	B065B
Robb College – Masters Residence	B025	Wright Village – Block C Flats 44-45	B065C
Earle Page College – Dining Hall	B031	Wright Village – Block D Flats 46-47	B065D
Earle Page College – Block 1	B032	Wright Village – Block E Flats 48-49	B065E
Earle Page College – Block 2	B033	Wright Village – Block F Flats 50-51	B065F
Earle Page College – Block 3	B034	Wright Village – Block G Flats 52-53	B065G
Earle Page College – Block 4	B035	Wright Village – Block H Flats 54-55	B065H
Earle Page College – Masters Residence	B036	Student Health Centre	B066
Sport Pavilion	B037	Drummond Smith College – Office and Dining Hall	B081

Building Name	Asset ID	Building Name	Asset ID
Austin College – Dining Hall	B041	Drummond Smith College – Block 1A	B082
Austin College – Block A	B042	Drummond Smith College – Block 2B	B083
Austin College – Block B	B043	Drummond Smith College – Block 3C	B084
Austin College – Block C	B044	Drummond Smith College – Block 4D	B085
Duval College – Blocks A-F	B051	Bellevue Boiler House	B087
Duval College – Blocks G-L	B052	Creative Arts Centre	B089
Duval College – Dining Hall & Kitchen	B053	UNE Conference Company	B092

*Refer to the site plan of Bellevue Campus in Attachment A.

4. Previous Reports

There are existing Asbestos Material Survey Reports for various buildings within Bellevue Campus conducted by an unknown consulting company. These surveys were restricted to identifying friable asbestos materials such as pipe lagging and rope lagging. These reports were reviewed as part of the inspection process.

5. Hazardous Materials Background Information

5.1 Asbestos Background

5.1.1 General

Asbestos is a naturally occurring fibrous mineral that possesses numerous properties that make it suitable for insulating and reinforcing applications. Asbestos materials were therefore used extensively in building products in Australia and throughout the world, particularly in the 1950s to 1970s.

The health effects associated with asbestos exposure are due to the inhalation of airborne respirable asbestos fibres. Respirable fibres are asbestos fibres that can be breathed into the lower reaches of the lung and conform to the following constraints: < 3 microns in width, > 5 microns in length & possessing a length to width ratio of at least 3:1. Current scientific knowledge suggests that a person must have sufficient exposure to airborne asbestos fibres to develop asbestos related health-effects. Risk management procedures should be instituted for all asbestos products to minimise the exposure to respirable fibres.

5.1.2 Bonded/Friable Asbestos

Asbestos is usually classed as either *bonded* or *friable*. Friable asbestos is material that can be crumbled, pulverised or reduced to powder by hand pressure when dry. Bonded asbestos materials are usually well encapsulated within the matrix of the product and therefore not able to be rendered into respirable asbestos fibres unless released by high speed machining processes such as sanding or drilling.

Examples of friable asbestos include lagging of hot water pipes and sprayed insulation on boilers/structural beams for heat insulation. Asbestos cement (AC) material and vinyl floor tiles are examples of bonded/non-friable asbestos materials. Friable asbestos is usually classed as being more hazardous than bonded asbestos materials as asbestos fibres are more easily released into the air when disturbing the materials.

AC sheeting was commonly used in a wide range of construction applications such as cladding, roofing, guttering on housing, commercial and industrial buildings. It is relatively uncommon to find AC fragments beneath concrete slabs, except where they were used as formwork.

AC products typically contain between 5–15% of asbestos by weight, and usually chrysotile asbestos (white asbestos) is the main type of asbestos present.

The main purpose of asbestos fibres being present in AC products is for re-enforcement. Chrysotile fibres are very flexible and strong, and when AC products are broken, some of the bundles may be pulled out, rather than fracture along the break. In general these fibres are present as fibre bundles and are not able to be inhaled because they are too large.

5.1.3 Friable Asbestos

The current NSW *Occupational Health & Safety (OHS) Regulation* 2001 outlines friable asbestos materials as material that contains asbestos and is in the form of a powder or can be crumbled, pulverised or reduced to powder by hand pressure when dry.

Hence, under the *OHS Regulation* 2001 and the current NSW WorkCover Authority requirements it is mandatory for all necessary disturbance works to materials classified as friable asbestos to be conducted under an AS-1 friable asbestos license. The AS-1 Contractor will be required to notify the WorkCover Authority NSW of the intention to conduct asbestos works.

The *National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council (NEPC), 1999 provides a framework for the

assessment of site contamination in Australia. No numeric guidelines are however provided for asbestos in this document.

According to NSW WorkCover, asbestos inappropriately buried (ie. not in accordance with any environmental legislative requirements) is considered friable asbestos material (*Your Guide to Working with Asbestos; Safety Guidelines and Requirements for Work Involving Asbestos*, NSW WorkCover, March 2003).

For contaminated sites, the NSW EPA has advised that no asbestos in soil at the surface is permitted. The EPA suggests that their advice was based upon health concerns regarding loose asbestos fibres in soil at the surface. Unlike most other significant soil contaminants, the EPA has not published any criteria for the acceptable level of contamination in soils below the surface.

The document *Asbestos in Soil, Code of Practice*; Australian Contaminated Land Consultants Association (ACLCA); Version 2, 25 February 2002 was developed with a number of key industry practitioners to develop a standardised approach to enable pragmatic and safe remediation solutions. The document also aims to provide NSW EPA accredited Site Auditors with a default position in assessing sites.

This document builds on the common remedial methods described in the relevant NOHSC Asbestos Codes of Practice, documents, and applies them to asbestos in soils.

5.2 Information on Common Asbestos Materials

Asbestos containing materials can be classified into the following main categories:-

- Sprayed or trowelled asbestos materials applied to ceilings, walls and other surfaces for fire-rating purposes. This material is commonly referred to as limpet asbestos;
- Asbestos containing insulation on pipes, boilers, tanks, ducts etc. which is often referred to as asbestos lagging;
- Asbestos cement products, cementitious or concrete like products;
- Asbestos paper products, millboard in electrical switchboards or underlaying lining for linoleum or vinyl floor coverings;
- Asbestos textiles, braided asbestos, rope, tape, gaskets etc (note that rope and millboard are potentially friable);
- Vinyl tiles, linoleum and vinyl flooring mastic and associated adhesives;
- Asbestos containing compounds, gaskets and mastic from mechanical fittings, and roofing membranes;
- Electrical switchboards containing compressed asbestos tar electrical boards, asbestos cement sheeting, asbestos rope to spark arresters and asbestos millboard from inside auxiliary switchboxes/fuse boards;
- Roofing sealants, bituminous membranes, tar composites and similar materials were occasionally mixed with asbestos materials; &
- Some office furnishings such as wall partitions may contain an asbestos cement internal lining inside plaster or “Stramit” type panelling. Certain types of older vinyl covered desktops and workbenches may contain an underlying asbestos millboard lining.

5.2.1 Sprayed Asbestos Materials

Sprayed asbestos or limpet asbestos is most often found on structural steel members to provide a fire rating. Limpet asbestos is a friable material. Friable materials are those, which can easily be crumbled, pulverised or reduced to powder by hand pressure. Limpet asbestos tends to be the most friable of all asbestos containing materials and can contain relatively high percentage of asbestos (30% - 90%).

Limpet asbestos can slowly release fibres as the materials age ie. as its friability increases, direct mechanical damage or excessive machinery vibration can lead to more significant release of airborne asbestos fibres.

5.2.2 Asbestos Containing Lagging Materials

Insulation such as lagging usually contains a smaller percentage of asbestos (usually 20% - 50%). Protective jackets on the insulation materials (such as metal jacketing or calico on pipe lagging) prevent asbestos fibre release. Physical damage to the protective jacket however, may lead to the release of respirable fibres. The binding material in the insulation can deteriorate with age rendering it more friable.

5.2.3 Asbestos Cement Sheeting Materials

Asbestos cement products and asbestos gaskets generally do not present a significant health risk unless they are cut, sanded or otherwise disturbed so as to release asbestos dust. Fibre release due to occasional damage is negligible and thus not a significant health risk. Care must be taken therefore in the removal of asbestos cement products to avoid the release of airborne fibres. Unless analysis of fibro-cement products indicates otherwise, these materials should be considered as containing asbestos.

External asbestos cement claddings become weathered after many years by the gradual loss of cement from the exposed surface. This leaves loosely bound layers enriched with asbestos fibres. In other words, the material becomes more friable through the weathering process.

5.2.4 Asbestos Containing Vinyl Products

Vinyl tiles and linoleum flooring manufactured before 1984 may contain asbestos in various quantities in a well-bound cohesive matrix. Asbestos containing vinyl floor and wall coverings generally do not present a significant health risk unless they are sanded or otherwise mechanically abraded so as to release asbestos dust. Fibre release due to occasional damage is negligible and thus not a significant health risk. Care must be taken therefore, in the removal of asbestos containing vinyl tiles to avoid the release of airborne fibres. Unless analysis of vinyl tiles and linoleum flooring indicates otherwise, these materials should be considered as containing asbestos. Older bituminous adhesives may also contain asbestos and must be removed as an asbestos process in circumstance where the floor is to be renewed and re-levelled by floor sanding or grinding.

5.2.5 Asbestos Containing Gaskets

Gaskets and sealing compounds in equipment, duct work and re-heat air conditioning boxes may contain asbestos. These should be replaced with non-asbestos equivalents during routine maintenance. In addition, asbestos containing mastic and seals in air handling duct work joints. These usually do not pose a hazard as the asbestos fibres are firmly held within the plastic resinous compound and should be replaced as part of routine maintenance or removed during the demolition of the plant equipment.

5.2.6 Asbestos Insulation to Re-Heat Boxes

Insulation to internal lining of ductwork sections and electrical re-heat air conditioning boxes generally contain asbestos millboard. These should be replaced with non-asbestos equivalents during routine maintenance.

5.2.7 Asbestos Containing Mastics and Sealants

Many mastic and sealant products contain Chrysotile asbestos within the pliable, resinous matrix. The nature of the substrate is such that it does not readily dry out in situ, and therefore the fibres are well bound and pose a low risk.

5.3 Management of Asbestos Materials

The health effects associated with asbestos exposure are due to the inhalation of airborne respirable asbestos fibres. In general, the asbestos fibres cannot be released to become

airborne in significant quantities unless the asbestos containing material is severely disrupted such as in the case of cutting asbestos cement products with power saws etc.

A range of control measures are available for the abatement of asbestos hazards. The selection of the appropriate control measure is based on the assessment risk for each specific location. These measures include:

- **Leave and maintain** in existing condition;
- **Repair and maintain** in good condition;
- **Enclose** asbestos or synthetic mineral fibre material by providing a barrier such as a box enclosure or steel cladding;
- **Remove** by approved methods under controlled conditions; &
- **Labelling** of asbestos materials that are to remain in situ should be undertaken where practical to ensure that the asbestos materials are not damaged inadvertently by maintenance contractors etc.

5.4 Synthetic Mineral Fibre (SMF)

General

In the late 1980's the International Agency for Research on Cancer (IARC) evaluated certain SMF materials as being possibly carcinogenic to humans. The similarity in application and appearance to asbestos has resulted in some community concern regarding the health effects associated with exposure to SMF.

Current medical research indicates that the slightly increased risk of lung cancer for workers employed in the early days of rockwool and slagwool manufacture, and workers in the glasswool sector is not anticipated under present day working conditions. However, acute health affects such as eye, skin and upper respiratory tract irritation may occur with certain SMF products.

Caution is required when handling SMF products in order to minimise disturbance of the materials and subsequent airborne SMF fibre levels. Where SMF materials are to be installed or removed, then suitable controls and appropriate personal protection are to be provided.

It is recommended that the following Code of Practice be closely adhered to for appropriate procedures when handling such materials:

- *WorkSafe Australia Synthetic Mineral Fibre, National Standard & National Code of Practice, May 1990.*

5.5 Polychlorinated Biphenyls (PCBs)

General

PCBs are usually identified as a colourless to darker coloured oily liquid. PCBs are considered probable carcinogens. They can be absorbed through the skin, inhaled as a vapour or ingested, therefore contact with them should be prevented. They are often found in old transformers and metallised capacitors of fluorescent light fittings. These synthetic compounds are chemically stable, have good insulating properties and do not degrade appreciably over time or with exposure to high temperatures. It is these properties that made PCBs useful in electrical devices.

5.6 Lead-containing Paint

General

Lead paint, as defined by the Australian Standard *AS4361.2 – 1998 Guide to Lead Paint Management – Part 2: Residential and Commercial Buildings,* is that which contains in excess of 1% Lead by weight.

Lead carbonate (white lead) was once the main white pigment in paints for houses and public buildings. Paint with lead pigment was manufactured up until the late 1960's, and

in 1969 the National Health and Medical Research Council's Uniform Paint Standard was amended to restrict lead content in domestic paint.

Many older Australian homes and buildings still contain lead paint, even though it may be covered with layers of more recent paint. Lead paint was used mainly on exterior surfaces, and to a lesser degree on interior doors plus door and window architraves, especially in undercoats and primers, where concentrations of up to 20% lead content were used. Interior walls weren't commonly painted with paint containing white lead pigment, though some colours did contain red, orange and yellow lead pigments.

All paints manufactured for Australian dwellings from the 1970's onwards have been required to contain less than 1% lead, though higher lead-content industrial paints may have been applied since then to housing and commercial buildings.

Lead in any form is toxic to humans when ingested or inhaled, with repeated transmission of particles cumulating in lead poisoning. Lead paint removal poses two potential avenues of transmission. Firstly by inhalation or ingestion by workers and public in the vicinity of the works, and secondly by the deposition of particles on nearby footpaths, streets or soil where they may be resuspended, tracked into houses or buildings where it can be inhaled or ingested.

6. Methodology

The following section outlines the methodology used for conducting the hazardous materials survey and risk assessment for the University of New England Project.

6.1 Site Inspection

6.1.1 Asbestos

A thorough inspection of each of the assets on the site was conducted to locate, identify and record the typical locations and applications in which asbestos materials have been used. The scope of the survey was limited to a visual examination of the accessible structural elements of the buildings, the construction and finishing materials and the fixed equipment (associated with the building services), and the collection and analysis of building materials suspected to contain asbestos. Materials not associated with the building fabric and operational services (e.g. non-fixed manufacturing equipment, stored materials, etc.) were not included in the survey.

This assessment was carried out in accordance with the guidelines documented in the document *Code of Practice for the Management and Control of Asbestos in Workplaces* [NOHSC: 2018 (2005)].

6.1.2 Synthetic Mineral Fibres

This report broadly identifies SMF materials found or suspected of being present during the survey based on a visual assessment.

6.1.3 Lead containing Paint

Representative painted surfaces were tested unobtrusively for the presence of lead using the LeadCheck paint swab method in several locations. This method can detect lead in paint at concentrations of 0.5% and above, and may indicate lead in some paint films as low as 0.2%. The sampling program was representative of the various types of paints found within the site, concentrating on areas where lead based paints may have been used (eg. Exterior gloss paints, window and door architraves, skirting boards etc). The objective of lead paint identification in this survey is to highlight the presence of lead-based paints within the building, not to specifically identify every source of lead-based paint.

6.1.4 Polychlorinated Biphenyls (PCBs)

Where safe access was gained, detailed information of capacitors in light fittings and other electrical equipment were noted for cross-referencing with ANZECC Identification of PCB-containing capacitors database (1997). Due to the inherent hazard in accessing electrical components, or other reasons such as height restrictions, immovable equipment and furniture, some light fittings may not be safely accessed. In these instances, comment is made on the likelihood of PCB-containing materials based upon age and appearance.

6.2 Areas Not Accessible

It is noted that given the constraints of practicable access encountered during the risk assessment survey, the following areas were not accessed or inspected:

- All St. Alberts College buildings (as requested by the client);
- Within wall cavities;
- Within those areas accessible only by dismantling equipment;
- Within service shafts, ducts etc., concealed within the building structure;
- Within voids or internal areas of plant, equipment, air-conditioning ducts etc;
- Energised services, gas, electrical, pressurised vessel and chemical lines;
- Areas deemed unsafe or hazardous at time of audit;
- Within totally inaccessible areas such as voids and cavities created and intimately concealed within the building structure. These voids are only accessible during major demolition works; &

- Height restricted areas and inaccessible ceiling spaces.

Locations of specific areas not inspected in each building are detailed in each buildings' individual Hazardous Materials Register.

We advise that should refurbishment and demolition operations entail possible disturbance of materials in these locations, further investigation and sampling of specific areas should be conducted as part of an asbestos management and abatement program prior to any works proceeding.

It should be noted that the presence of any residual asbestos insulation and applications on steel members, concrete surfaces, pipe work, equipment and adjacent areas from prior abatement or refurbishment works cannot be ascertained without extensive removal and damage to existing insulation, fittings and finishes.

6.3 Asbestos Sample Analysis

The survey involved a visual inspection of accessible and representative construction materials and the collection and analysis of materials suspected of containing asbestos. Limited destructive sampling techniques were undertaken where practicable. Materials suspected of containing asbestos were sampled and collected during the survey. These samples were analysed in Noel Arnold & Associates' NATA-accredited laboratory for the presence of asbestos by Polarised Light Microscopy in accordance with *AS4964-2004 'Method for the Qualitative Identification of Asbestos in Bulk Samples'*.

6.4 Hazardous Materials Register

Following completion of the inspection of each building and analysis of the samples collected, the information was transposed into the Hazardous Materials Register for each asset number. Details of the content of the registers are included in the register explanation diagram outlined later in this report. The Hazardous Materials Register for the University of New England properties is contained in Section 1 of the individual Building reports. The hazardous materials register includes the following information:

- Building Location, Asset I.D Number, reference number and general construction details;
- Specific location of the hazardous material item;
- Sample details (description, friability and extent) and asbestos analysis results;
- Condition ranking for the hazardous material item;
- Priority rating for the asbestos item and outlines the necessary action to undertake for all hazardous materials; &
- Recommended hazard control strategy, removal, labelling requirements, whether PPE is required in the area, maintenance and periodical re-inspection options.

6.5 Risk Assessment

A qualitative assessment of the risk posed by the hazardous materials located during the survey inspection was conducted. Please refer to the explanation risk-ranking matrix overleaf, that was used throughout the University of New England Hazardous Materials Survey project.

The qualitative risk assessment is based upon an evaluation of factors, such as the friability, location and condition of the identified materials, whether the nature of the work carried out in the area is likely to disturb the asbestos and other hazardous materials, the potential for airborne asbestos fibres to enter the occupied space, the potential for personal exposure and any other information considered important or relevant. These factors were also utilised in the process of determining appropriate recommendations for the timing of future assessment activities.

The qualitative risk assessment and recommended hazard control strategies for the asbestos and hazardous materials were prepared within the guidelines documented in the '*Code of Practice for the Management and Control of Asbestos in Workplaces'* [NOHSC:

2018 (2005)], Australian Standard *AS4361.2 – 1998 Guide to Lead Paint Management – Part 2: Residential and Commercial Buildings, WorkSafe Australia Synthetic Mineral Fibre, National Standard & National Code of Practice* 1990 and the *New South Wales Protection Of The Environment Operations Act,* 1997.

The qualitative risk assessment includes a condition rating system and a priority ranking system to rank the occurrence of asbestos and hazardous materials by location and risk to facilitate implementation of the recommendations. This will assist with the development of a comprehensive asbestos and hazardous materials management control and abatement program.

6.6 Risk Assessment Factors

6.6.1 Asbestos-containing Materials

To assess the health risk posed by the presence of asbestos materials, all relevant factors must be considered. These factors include:

- Evidence of physical damage;
- Evidence of water damage;
- Proximity of air plenums and direct air stream;
- Friability of asbestos material;
- Requirement for access for building operations;
- Requirement for access for maintenance operations;
- Likelihood of disturbance of the asbestos material;
- Accessibility;
- Exposed surface areas; &
- Environmental conditions.

These aspects are in turn judged upon; (i) potential for fibre generation, and, (ii) the potential for exposure. Where these factors have indicated that there is a possibility of exposure to airborne fibres, appropriate recommendations for repair, maintenance or abatement of the asbestos containing materials and other hazardous materials are made.

6.6.2 Risk Assessment Factors for SMF

Risk assessment factors for Synthetic Mineral Fibre is very similar for asbestos products, where evidence of damage, accessibility, likelihood of disturbance etc is used when assessing SMF materials. Similarly SMF condition, accessibility and risk status headings used above for asbestos can be applied to SMF materials.

There are two basic forms of SMF insulation, bonded and un-bonded.

- *Bonded* SMF is where adhesives or cements have been applied to the SMF before delivery and the SMF product has a specific shape.
- *Un-bonded* SMF has no adhesives or cements and the SMF is loose material packed into a package.

Removal of bonded materials is easier and less hazardous than removal of un-bonded SMF material.

6.6.3 Risk Assessment Factors for Polychlorinated Biphenyls

The handling and disposal of PCBs must be performed in accordance with *The New South Wales Protection Of The Environment Operations Act,* 1997.

The following Personal Protective Equipment should be worn when handling items containing Polychlorinated Biphenyls - nitrile gloves, eye protection, and disposable overalls. The PPE should be worn when removing capacitors from light fittings in case Polychlorinated Biphenyls material leaks from the capacitor housing.

Generally, metal-cased capacitors contain PCBs. Plastic–cased capacitors usually do not. However, all leaking capacitors should be treated as if they contain PCBs unless proven otherwise.

6.6.4 Risk Assessment Factors for Lead Paint

Lead paint, as defined by the Australian Standard *AS4361.2 – 1998 Guide to Lead Paint Management – Part 2: Residential and Commercial Buildings,* is that which contains in excess of 1% Lead by weight.

Lead carbonate (white lead) was once the main white pigment in paints for houses and public buildings. Paint with lead pigment was manufactured up until the late 1960's, and in 1969 the National Health and Medical Research Council's Uniform Paint Standard was amended to restrict lead content in domestic paint.

Lead in any form is toxic to humans when ingested or inhaled, with repeated transmission of particles cumulating in lead poisoning. Lead paint is assessed based on two potential routes of exposure. Firstly by the likelihood of inhalation or ingestion by people working in the vicinity of the paint and secondly by the condition of the paint. Paint that is flaking or in poor condition is more likely to be ingested than paint that is in a good, stable condition.

The following risk ranking matrix was utilised in standardising the risk assessment as part of the University of New England Hazardous Materials Survey.

6.6.5 Table 1 – University of New England Hazardous Materials Risk Ranking Matrix

Hazardous Materials Risk Ranking Matrix

Friability		Friable/Bonded			Non Friable/Unbonded		
Condition		Poor	Fair/ Damaged	Good	Poor	Fair/ Damaged	Good
Disturbance Potential	High	High	High	High	High	High	Med
	Med	High	Med	Med	Med	Med	Low
	Low	Med	Low	Low	Low	Low	Low

6.7 Personal Protective Equipment (PPE)

As part of the hazardous materials survey, a component included the identification of whether PPE is required to enter the area where damaged hazardous materials were located. Refer to each buildings individual hazardous materials register for reference. The PPE that should be worn is as follows, but a risk assessment should also be conducted to determine the level of PPE required:

- P2 filtered half faced disposable respirator;
- Disposable coveralls;
- Disposable gloves; &
- Disposable booties (optional).

7. Risk Status Priority Rating

The following schedule of risk status priority rating is adopted to assist in the programming of the removal or containment of risks of asbestos materials in the buildings.

Priority 1: Hazard with High Risk Potential

Status:- Area has asbestos materials, which are either damaged or are being exposed to continual disturbance. Due to these conditions there is an increased potential for exposure and/or transfer of the material to other parts with continued unrestricted use of this area.

Recommendation:- It is recommended that the area is isolated, air-monitoring be conducted (if relevant) and the asbestos material is promptly removed. After abatement of the asbestos material a re-inspection should be conducted to confirm that the area has been satisfactorily cleared of the material.

Priority 2: Hazard with Medium Risk Potential

Status:- Area has asbestos materials with a potential for disturbance due to the following conditions:

1. Material has been disturbed or damaged and its current condition, while not posing an immediate hazard, is unstable.
2. The material is accessible and can, when disturbed, presents a short-term exposure risk.
3. The material could pose an exposure risk if workers are in close proximity.

Recommendation:- Appropriate abatement measures to be taken as soon as is practical (3-6 months). Negligible health risks if materials remain undisturbed under the control of an asbestos materials management plan.

Priority 3: Hazard with Low Risk Potential

Status:- Area has asbestos materials where:

1. The condition of any friable asbestos material is stable and has a low potential for disturbance or;
2. The asbestos material is in a non-friable condition, however has been damaged, but does not present an exposure risk unless cut, drilled, sanded or otherwise abraded. The damaged bonded material must be removed or repaired by a licensed contractor.

Recommendation:- Negligible health risks if the materials are left undisturbed under the control of an asbestos material management plan. Consider abatement within 12 months of the damaged bonded asbestos materials (e.g. asbestos cement material).

Priority 4: Hazard with Negligible (very low) Risk Potential

Status:- The asbestos material is in a non-friable form and in good condition. It is most unlikely that the material can be disturbed under normal circumstances. Even if it were subjected to minor disturbance the material poses a negligible health risk.

Recommendation:- These materials should be left and their condition monitored during subsequent reviews.

8. Legislative Obligations

This Hazardous Materials Survey report and register is designed to assist University of New England in fulfilling the company's general obligation to ensure the health and safety of employees, contractors, visitors and others accessing the site. The following also addresses specific asbestos related legislative requirements and guidelines in approved industry standards.

The following legislation and industry standard documentation are relevant:

- **Occupational Health and Safety Act 2000 (NSW)**

Section 8 of the OHS Act states that as an employer (you the employer) 'must ensure the health, safety and welfare at work of all the employees'. To meet your responsibilities under the Act, employers must provide:

- Safe premises;
- Safe machinery and substances;
- Safe systems of work;
- Provision of information, instruction, training and supervision; &
- Suitable working environment and facilities.

The Act also states that an employer is responsible for the health and safety of people other than your workers, who may be present at the workplace.

- **Occupational Health and Safety Regulation 2001 (NSW)**

The Regulation outlines requirements for:

- Consultation with employees on health and safety matters (Chapter 3);
- Risk assessment, personal protective equipment, supervision and training provisions (Chapter 2);
- Controller of premises in relation to asbestos containing product and exposure standards for asbestos (Chapter 4);
- Employers in relation to hazardous substances and carcinogenic substances (all forms of asbestos are carcinogenic substances) including a register of employees, letter of termination and health surveillance (Chapter 6); &
- Use of asbestos in the form of chrysotile, crocidolite, amosite, fibrous anthophyllite, tremolite or actinolite is prohibited except for the purpose of sampling or analysis, maintenance, removal, disposal, encapsulation or enclosure (Chapter 6).

- **Code of Practice for the Safe Removal of Asbestos 2nd Edition [NOHSC:2002 (2005)]**

This updated National Code of Practice provides guidance on the safe removal of asbestos and asbestos containing material from buildings and structures, plant and equipment and vehicles. This Code of Practice should be applied whenever any amount of asbestos or asbestos containing material (ACM) is to be removed from a workplace.

- **Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC:2018 (2005)]**

This updated National Code of Practice sets out the steps to be taken to safely manage asbestos containing materials currently installed in workplaces. These steps include identifying ACM, performing risk assessments and implementing control measures, such as Management Plans.

9. Management Responsibilities

The following tasks are required to be undertaken by the University of New England:

- Maintain the Hazardous Materials Register and ensure that the asbestos containing materials and other hazardous materials are **regularly re-assessed** to comply with the NSW *Occupational Health and Safety Regulation, 2001* and the *Code of Practice for the Management and Control of Asbestos in Workplaces* [NOHSC: 2018 (2005)];
- Liaise with client facilities managers (cfm's), tenants, contractors and maintenance personnel and **ensure that all contractors whose work may impact on asbestos containing materials and hazardous materials are informed of the presence of asbestos and hazardous materials within the University's buildings;**
- Administer **hazardous materials inductions** for contractors and other key personnel as necessary;
- **Ensure** the in situ asbestos containing materials and other hazardous materials **are not damaged;**
- **Inform employees** of all asbestos and hazardous materials remedial works and air monitoring results;
- Engage a **licensed asbestos removal contractor** as required by state legislative requirements to conduct asbestos abatement works;
- **Prior to renovation** or demolition works, ensure materials identified as containing asbestos or other hazardous materials are safely removed from any proposed work area or appropriately contained so as to prevent accidental damage;
- Ensure exposure to asbestos is kept as low as reasonably achievable and that no person is exposed to airborne asbestos fibres in excess of the exposure standard; &
- **Ensure** hazardous materials-related **records are maintained**. Documentation must be archived for an indefinite period and be accessible to Workplace Health and Safety representatives if requested. Information to be filed should include summaries of asbestos register updates, asbestos removal specifications, contractor SWMS, air monitoring and clearance inspection certificates and asbestos waste disposal documents.

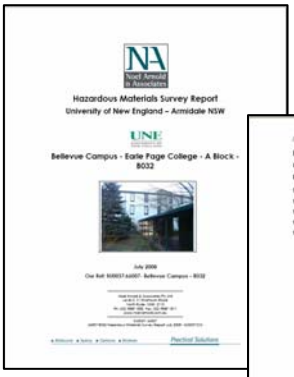
9.1 WorkCover NSW

WorkCover New South Wales administers and enforces the asbestos related state legislation. The NSW *Occupational Health and Safety Regulation, 2001* requires building owners to identify, assess and control risks arising from asbestos materials in buildings. The NSW *Occupational Health and Safety Act 2000* also details the overriding general obligation of various parties including employers, self-employed persons and persons in control of workplaces to ensure the workplace health and safety of persons affected by their work activities.

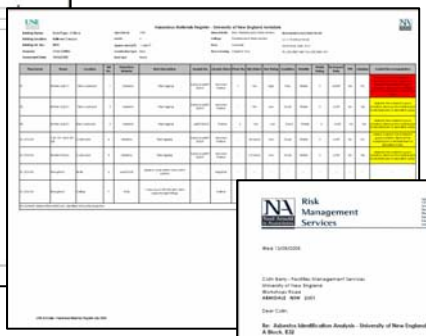
WorkCover New South Wales inspectors may request access to asbestos related documentation from time to time. The NSW *Occupational Health and Safety Act 2000* outlines the powers of inspectors.

10. Hazardous Materials Register

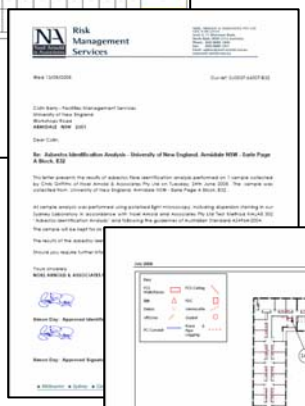
Each buildings hazardous materials register report is set out as below:



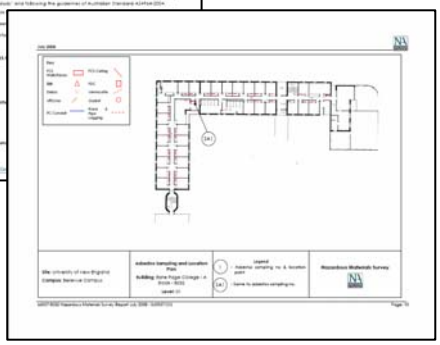
Title Page



Hazardous Materials Register



Bulk Sample Analysis Report



Site Plan

10.1 Layout of the Hazardous Materials Registers

The hazardous materials register for each building/structure include the specific location, description and quantity of each asbestos item identified within an asset together with details of samples collected, condition and priority ratings of each asbestos item and recommended removal, labelling requirements, maintenance and re-inspection options.

The register is found in Section 2 of each properties individual Hazardous Materials Survey Report.

Each register is sorted by an asset I.D. number. Each separate occurrence of a hazardous material within an asset forms an entry in the register. Materials that were sampled, but were found not to contain asbestos are also included in the register. Similarly, materials that typically may contain asbestos or were identified *in situ* as asbestos materials by visual inspection, are also listed in the register.

Please refer to 10.2.2 that outlines an asbestos/hazardous materials register page and outlines how to interpret this information.

10.2 Structure of the Hazardous Materials Registers

Outlined below is an explanation of the information included in each item of the register.

10.2.1 Asset Description Block

The asset description block lists the Asset I.D. Number during the site inspection. The building name was either that identified during the site inspection or as listed in information provided by University of New England.

The asset description block also contains a description of the principal material used for the roof, internal and external walls and floor of the asset, if applicable. This description block also contains information concerning the approximate construction date, area and the number of levels to the structure surveyed.

Register Column 1 – Floor/Level

This column contains a description of the level i.e. internal or external or level one or two etc.

Register Column 2 – Room

This column contains a description of the room where the hazardous material was identified.

Register Column 3 – Location

This column contains a specific location of the hazardous material and where it was identified in the room.

Register Column 4 – Reference Number

This column gives a number that the reader of the register can refer to. The order of the reference numbers is in chronological order.

Register Column 5 – Hazardous Material

This column indicates what type of hazardous material has been identified i.e. asbestos, lead containing paint, SMF or PCBs.

Register Column 6 – Item Description

The column gives an indication of the type of application for the hazardous material identified. For example fibre-cement sheeting, rope lagging, compressed ceiling tiles or single tubed fluorescent light fittings.

Register Column 7 - Sample Number

This column defines whether the item was sampled. Not all items were sampled. If an item was deemed similar to one previously sampled, a reference to the previous sample is included. Items that could not be sampled but are suspected to contain asbestos are included in this column. The unique sample number (e.g. 66007-CN12-01) corresponds to samples included in each of the analytical reports.

Register Column 8 – Sample Status

This column defines whether the item sampled contained asbestos or did not contain asbestos. These are reported as positive (asbestos containing material) or negative (non-asbestos materials). If an item was deemed similar to one previously sampled, reference to the previously sampled material is included and the results given (positive or negative). Items that could not be sampled but are suspected to contain asbestos are included in this column. This column also identified whether lead containing paint was negative or positive, whether PCBs were identified in fluorescent light fittings and whether SMF materials were identified.

Register Column 9 – Photo Number

This column indicates the number of the photograph that displays the hazardous material in its current form. Photographs can be found within Section 3 of the buildings individual hazardous materials survey report.

Register Column 10 – Quantity/Extent

The quantity of the item is included in column five. The most appropriate measure for the specific item was chosen, e.g. area (m^2) for sheeting materials, length (linear metres) for pipe lagging and number of units for gaskets.

Register Column 11 – Risk Rating

The risk factors described above are used to rank the health risk posed by the presence of asbestos containing materials.

- A *low* risk level describes hazardous materials that pose a low health risk to personnel, employees and the general public providing they stay in a stable condition, for example hazardous materials that are in good condition and have low accessibility.
- A *medium* risk level applies to materials that pose an increased risk to people in the area.
- Hazardous materials that posses a *high* risk level pose a high health risk to personnel or the public in the area of the material. Materials with a high risk ranking will also possess a Priority 1 recommendation to manage the asbestos (usually removal) and reduce the risk.

Register Column 12 – Condition

The condition of the hazardous material products identified during the survey is usually reported as either being good, fair or poor.

- *Good* refers to hazardous materials, which have not been damaged or have not deteriorated.
- *Fair* damage refers to the hazardous material having suffered minor cracking or de-surfacing.
- *Poor* describes hazardous materials, which have been damaged, or their condition has deteriorated over time.

Register Column 13 – Friability

The friability of asbestos products describes the ease of which the material can be crumbled, and hence to release fibres.

- *Friable asbestos* (eg limpet beam insulation, pipe lagging) can be easily crumbled and is more hazardous than non-friable asbestos products.
- *Non-friable asbestos,* (e.g. asbestos cement products, vinyl floor tiles, electrical backing boards) commonly known as bonded asbestos, is typically comprised of asbestos fibres tightly bound in a stable non-asbestos matrix.

Register Column 14 – Control Priority

Priority 1: Hazard with High Risk Potential - Area has asbestos materials, which are either damaged or are being exposed to continual disturbance.

Priority 2: Hazard with Medium Risk Potential - Area has asbestos materials with a potential for disturbance.

Priority 3: Hazard with Low Risk Potential - Area has asbestos materials where the condition of any friable asbestos material is stable and has a low potential for disturbance and the asbestos material is in a non-friable condition, however has been damaged, but does not present an exposure risk unless cut, drilled, sanded or otherwise abraded. The damaged bonded material must be removed or repaired by a licensed contractor.

Priority 4: Hazard with Negligible (very low) Risk Potential - The asbestos material is in a non-friable form and in good condition. It is most unlikely that the material can be disturbed under normal circumstances.

Register Column 15 – Re-Inspect Date

Periodical re-inspection of hazardous materials is a critical component in the ongoing management. Where hazardous materials have been identified and the control recommendation is not removal, a re-inspection date of one year from the original survey is advised.

Register Column 16 – PPE

This column refers to whether personal protective equipment (PPE) is required to be worn in the area when conducting works. Refer to Section 5 of this report to determine what PPE should be worn.

Register Column 17 – Labelled

This column refers to whether the asbestos-containing material has been labelled.

Register Column 18 – Control Recommendations

This column provides recommendations regarding the management of the hazardous material.

10.2.2 How to use this Report

How to Use this Report

The table below outlines the layout of the tabulated hazardous materials register and the information presented.

These three rows detail the level, room location of the Hazardous Materials.

The reference no. row refers to chronological order of the materials.

The photo number refers to the photograph of the asbestos material included in this report.

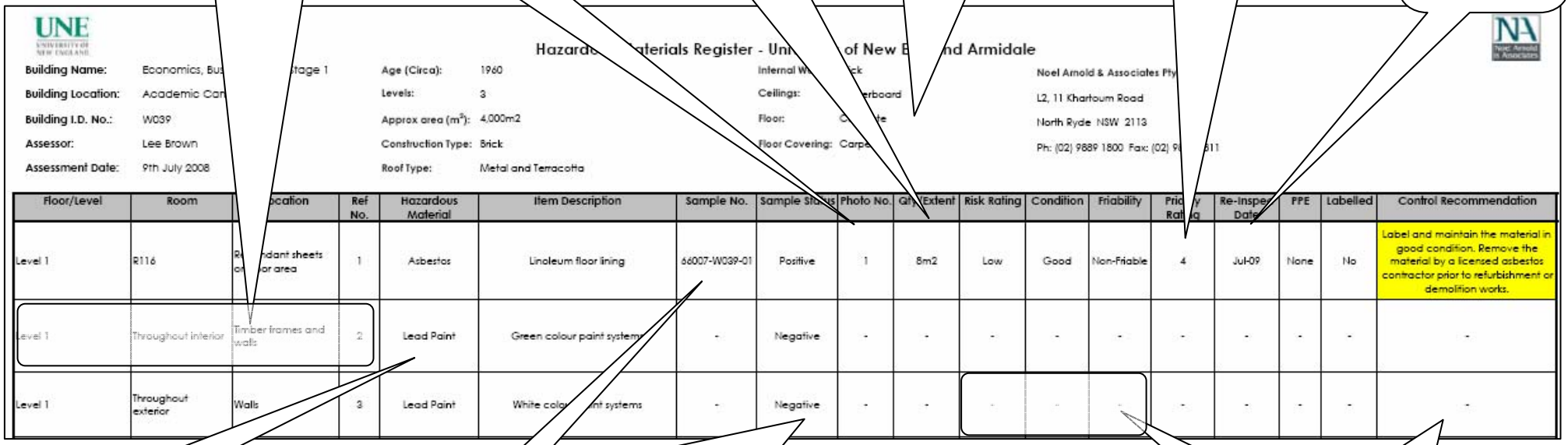
An estimated amount of the hazardous materials present is included in this column.

UNE premises details are recorded at the top of each register, including the assessment date.

Each asbestos item is given a Priority Rating (P1 – P4).

P1 issues require immediate attention.

This column refers to when the hazardous material needs a re-inspection



Hazardous Materials Register - Univ of New E nd Armidale

Building Name:	Economics, Bus tage 1	Age (Circa):	1960	Internal W ck	Noel Arnold & Associates Pty														
Building Location:	Academic Cen	Levels:	3	Ceilings: erboard	L2, 11 Khartoum Road														
Building I.D. No.:	W039	Approx area (m²):	4,000m2	Floor: C te	North Ryde NSW 2113														
Assessor:	Lee Brown	Construction Type:	Brick	Floor Covering: Carpe	Ph: (02) 9889 1800 Fax: (02) 9 11														
Assessment Date:	9th July 2008	Roof Type:	Metal and Terracotta																

Floor/Level	Room	Location	Ref No.	Hazardous Material	Item Description	Sample No.	Sample Status	Photo No.	Qty/Extent	Risk Rating	Condition	Friability	Priority Rating	Re-Inspect Date	PPE	Labelled	Control Recommendation
Level 1	R116	R dant sheets or or area	1	Asbestos	Linoleum floor lining	66007-W039-01	Positive	1	8m2	Low	Good	Non-Friable	4	Jul-09	None	No	Label and maintain the material in good condition. Remove the material by a licensed asbestos contractor prior to refurbishment or demolition works.
Level 1	Throughout interior	Timber frames and walls	2	Lead Paint	Green colour paint system	-	Negative	-	-	-	-	-	-	-	-	-	-
Level 1	Throughout exterior	Walls	3	Lead Paint	White colo nt systems	-	Negative	-	-	-	-	-	-	-	-	-	-

The hazardous materials and item description rows refer to the type of hazardous materials identified and the description of the material.

The unique sample number refers to samples in the Analytical Report located at the rear of the register.

This column identifies if the laboratory analysis determined if the sample contains asbestos.

Positive indicates that the sample contains asbestos.

Negative indicates that the sample does not contain asbestos.

Where the material was not sampled, but is similar to another sample, this column will indicate that the sample is **Assumed Negative** or **Assumed Positive**.

Suspected Positive indicates that the material was inaccessible at the time of inspection, however is likely that it contains asbestos.

Condition, friability and risk rating identify the risk factors associated with the asbestos material. This then equates to a Risk Level (Low, Medium, High) for the item.

The control recommendations refer to the remedial actions required for the identified hazardous material

11. Survey Findings Overview

11.1 Hazardous Materials Identified

The table below presents a summary of hazardous materials identified at the buildings of the University of New England Bellevue Campus, Armidale NSW.

Building Name	Asset ID	Asbestos Present	SMF Present	Lead Paint Present	PCBs Present	Remedial Works Required
Wright Centre	B016	✓	✓	✗	✓	✗
Wright College – Masters Residence	B017	✓	✓	✓	✗	✗
Robb College – North Court	B021	✓	✓	✓	✓	✗
Robb College – West Court	B022	✓	✓	✗	✗	✗
Robb College – Kitchen	B023	✓	✓	✓	✗	✗
Robb College – South Court	B024	✓	✓	✓	✗	✗
Robb College – Masters Residence	B025	✓	✓	✗	✗	✗
Earle Page College – Dining Hall	B031	✓	✓	✗	✓	✗
Earle Page College – Block 1	B032	✓	✗	✗	✓	✓
Earle Page College – Block 2	B033	✓	✓	✗	✓	✗
Earle Page College – Block 3	B034	✓	✓	✗	✓	✗
Earle Page College – Block 4	B035	✓	✓	✗	✓	✗
Earle Page College – Masters Residence	B036	✓	✓	✓	✗	✗
Sport Pavilion	B037	✓	✗	✓	✗	✗
Austin College – Dining Hall	B041	✗	✓	✓	✓	✗
Austin College – Block A	B042	✗	✓	✓	✓	✗
Austin College – Block B	B043	✓	✓	✓	✓	✗
Austin College – Block C	B044	✓	✓	✓	✓	✗
Duval College – Blocks A-F	B051	✓	✗	✗	✗	✗
Duval College – Blocks G-L	B052	✓	✗	✗	✗	✗
Duval College – Dining Hall & Kitchen	B053	✓	✓	✗	✗	✗
Wright Village – Block A Flats 1-8	B061	✓	✓	✗	✗	✗
Wright Village – Block B Flats 9-16	B062	✓	✓	✓	✗	✗
Wright Village – Block C Flats 17-24	B063	✓	✓	✗	✗	✗
Wright Village – Block D Flats 25-32	B064	✓	✓	✓	✗	✗

Building Name	Asset ID	Asbestos Present	SMF Present	Lead Paint Present	PCBs Present	Remedial Works Required
Wright Village – Block A Flats 40-41	B065A	✘	✓	✘	✘	✘
Wright Village – Block B Flats 42-43	B065B	✘	✓	✘	✘	✘
Wright Village – Block C Flats 44-45	B065C	✘	✓	✘	✘	✘
Wright Village – Block D Flats 46-47	B065D	✘	✓	✘	✘	✘
Wright Village – Block E Flats 48-49	B065E	✘	✓	✘	✘	✘
Wright Village – Block F Flats 50-51	B065F	✘	✓	✘	✘	✘
Wright Village – Block G Flats 52-53	B065G	✘	✓	✘	✘	✘
Wright Village – Block H Flats 54-55	B065H	✘	✓	✘	✘	✘
Student Health Centre	B066	✓	✘	✓	✘	✘
Drummond Smith College – Office and Dining Hall	B081	✓	✓	✘	✘	✘
Drummond Smith College – Block 1A	B082	✓	✓	✘	✘	✘
Drummond Smith College – Block 2B	B083	✓	✘	✘	✘	✘
Drummond Smith College – Block 3C	B084	✓	✘	✘	✘	✘
Drummond Smith College – Block 4D	B085	✘	✘	✘	✘	✘
Bellevue Boiler House	B087	✓	✓	✓	✘	✘
Creative Arts Centre	B089	✓	✘	✓	✘	✘
UNE Conference Company	B092	✘	✓	✘	✘	✘

11.2 Summary of Findings

The following table indicates the percentage of buildings that contain hazardous materials and what materials were generally identified throughout the project:

Hazardous Material	Buildings containing Hazardous Materials (%)	Type of Hazardous Material Identified
Asbestos	71%	Fibre-cement sheeting, pipe lagging, rope lagging, millboard insulation within heater banks, gaskets, electrical backing boards, fibre-cement conduits
Synthetic Mineral Fibres (SMF)	78%	Compressed SMF ceiling tiles, insulation batts, pipe work insulation, internal insulation within hot water heaters
Lead containing Paint	35%	Lead containing paint on walls, door frames, window frames and doors
Polychlorinated Biphenyls (PCBs)	26%	Capacitors within single tubed and double tubed fluorescent light fittings

11.3 High Risk Hazardous Materials

The following table indicates high risk hazardous materials identified that require remedial action within 6 months:

Buildings	Description	Recommendation	Photograph
Earle Page College Block 1 – B032	Level 01, Pipe lagging in Riser Cupboard in Kitchen adjacent to Room 111	Encapsulate the material by an AS-1 licensed contractor as soon as possible	

11.4 Asbestos Management Program

Any option that involves leaving asbestos materials in situ is required to ensure that they remain undisturbed and are maintained in a good and stable condition. This is achieved by the development and implementation of an Asbestos Management Program. Such a program is required to minimise the possibility of accidental disturbance or damage, identify deterioration of asbestos materials at an early stage, co-ordinate periodical re-inspections and repairs that may be required, and ensure that asbestos materials are maintained in a good and stable condition until they are removed.

As the removal of the asbestos materials is programmed over a relatively long time period (eg; 10 years), we recommend the Asbestos Management Program be developed in conjunction with the Asbestos Removal Program. As outlined above, the Asbestos Management Program will ensure that the asbestos materials are maintained in good condition and that early signs of deterioration that may result in an increased asbestos related health risk are detected, all asbestos materials remain undisturbed and the potential for accidental damage to the asbestos materials is minimised prior to their removal.

All asbestos materials should be labelled in accordance with the guidelines documented in the *Code of Practice for the Management and Control of Asbestos in Workplaces* [NOHSC: 2018 (2005)].

The asbestos registers contain recommendations for basic asbestos management and periodical re-inspection options for each item.

11.5 Relevant Parties Involved in Asbestos Remedial Works

Prior to the commencement of any asbestos remedial works the following parties must be engaged depending on the nature of the asbestos remedial works. Please consider the various scenarios involved with asbestos remedial works.

11.5.1 Occupational Hygienist

Suspected or concealed asbestos containing materials may from time to time be uncovered. Where the material is previously unidentified, an Occupational Hygienist can sample and analyse the material for the presence of asbestos. This will normally be by polarised light microscopy, supplemented with dispersion staining. Other approved methods may be used where required. A NATA accredited laboratory must conduct all analysis work.

Depending on the nature of the abatement operations, a licensed asbestos removal contractor needs to be engaged.

Should a licensed asbestos removal contractor be required, a suitably qualified Occupational Hygienist must provide independent verification of the work practices, engineering controls and standard of workmanship employed during removal operations (ie a clearance inspection and issue of a clearance certificate).

All asbestos removal or remedial works must be carried out using daily hygiene asbestos air monitoring. At the completion of asbestos remedial or removal works clearance asbestos air monitoring must take place as part of the clearance process to ensure the safe return of non-asbestos personnel to an area or building.

11.5.2 Licensed Asbestos Removal Contractor

As prescribed by the NSW *Occupational Health and Safety Regulation 2001*, only a licensed AS-1 asbestos removal contractor (i.e. a contractor holding a business certificate for the prescribed activity of asbestos removal) can conduct works involving the removal of friable and bonded asbestos materials at the site. A licensed AS-2 asbestos removal contractor can remove bonded asbestos materials only.

The asbestos removal contractor must prepare a Safe Work Method Statement (SWMS), detailing the proposed work methodologies to be used in order to safely and effectively remove, enclose or encapsulate (as directed by Facilities Management) the asbestos containing materials. This SWMS must be submitted to Facilities Management and/or the nominated Occupational Hygienist for review and approval prior to commencing work on site.

The removal of asbestos must be controlled within a strict asbestos removal technical specification or asbestos removal plan. This specification/removal plan should include:

- Work area isolation (barrier protection, buffer zone);
- Removal methods (friable/non-friable);
- Contamination control methods (decontamination procedures); &
- Health and safety procedures (respiratory protection).

Asbestos abatement works must be performed in accordance with all legislative requirements. The statutory requirements for asbestos removal are prescribed in the NSW *Occupational Health and Safety Regulation 2001* (sections 257 to 261). The NOHSC *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC: 2002 (2005)] provides useful guidelines for the safe removal of friable and bonded asbestos containing materials.

11.6 Removal Works Records

This section with each buildings individual reports details information following asbestos remedial works. The information within this section includes:

- Asbestos scope of works, work outlines, procedures and specifications;
- Reports of asbestos removal and clean-up works;
- Asbestos clearance certification;
- Air monitoring reports;
- Reports of inspections by an Asbestos Consultant;
- Reports of accidental damage and clean-up procedures;
- Details of licensed asbestos removal contractors; &
- Details of staff and tenant briefings/training.

12. Recommendations

The following is a brief list of the main asbestos and hazardous materials management recommendations for the University of New England Bellevue Campus:

High Priority Recommendations

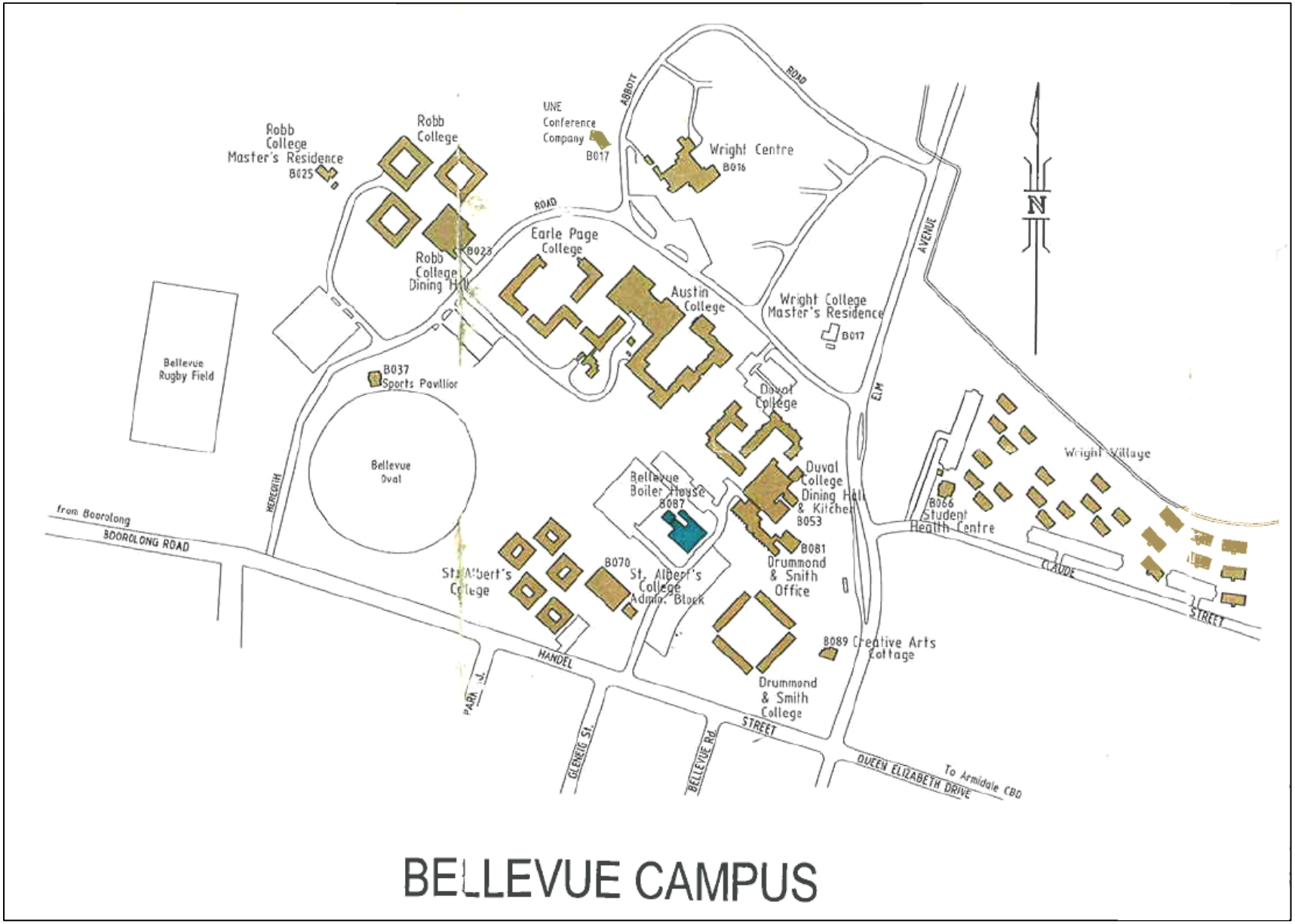
- Engage an AS-1 licensed contractor to encapsulate the pipe lagging within the Kitchen Cupboard Riser adjacent Room 211 within the Earle Page College Block 1 under controlled conditions.

Management Recommendations

- All asbestos containing materials given a Priority Control recommendation of P1 or P2 require removal or remediation. See individual buildings hazardous materials registers for further information.
- Ensure all asbestos containing materials remaining in situ are labelled appropriately and re-assessed periodically (yearly is recommended). These materials should be managed through an Asbestos Management Plan;
- All materials that are suspected of containing asbestos materials should be confirmed prior to planned refurbishment or demolition works; &
- Conduct a destructive hazardous materials survey prior to the refurbishment or demolition of any buildings within Bellevue Campus.

Hazardous Materials Survey Report
University of New England
Bellevue Campus, Armidale NSW

Attachment A: Bellevue Campus Site Plan


Robb College Master's Residence B025
Robb College
UNE Conference Company B017
Wright Centre B016
ABBOTT ROAD
Robb College Dining Hall B023
Earle Page College
Austin College
Wright College Master's Residence B017
ELM AVENUE
N
Bellevue Rugby Field
B037 Sports Pavilion
Duval College
Bellevue Oval
MEREDITH
Bellevue Boiler House B087
Duval College Dining Hall & Kitchen B053
Wright Village
B066 Student Health Centre
from Boorolong
BOOROLONG ROAD
St Albert's College
B070 St. Albert's College Admin. Block
B081 Drummond & Smith Office
CLAUDE STREET
B089 Creative Arts Cottage
HANDEL
PARK St
Drummond & Smith College
GLENEIG ST
BELLEVUE Rd
STREET
QUEEN ELIZABETH DRIVE
To Armidale CBD
BELLEVUE CAMPUS