Hazardous Building Materials Survey Report

Building 95 Chapel, RPA Hospital, Camperdown NSW

Sydney Local Health District (c/- Cardno)

Report No: 1284-HBMS-04-250522.v1f
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Project Title:	Royal Prince Alfred (RPA) Hospital Redevelopment
Site Address:	Building 95, Royal Prince Alfred (RPA) Hospital, Camperdown NSW
Subject Areas:	Building 95: Ground level (excluding crypt)
Client Name:	Sydney Local Health District (c/- Cardno (NSW) Pty Ltd)
Site Size:	Building 95: Ground Floor (excluding crypt) ≈ 220 m^2
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EXECUTIVE SUMMARY

Sydney Environmental Group Pty Ltd (SE) was engaged by Sydney Local Health District (c/- Cardno (NSW) Pty Ltd) (the client), to undertake a Hazardous Building Materials Survey of Building 'B95' (Chapel) located within Royal Prince Alfred (RPA) Hospital, Camperdown NSW (hereafter referred to as 'the site') (refer to **Figure 1** and **Figure 2**) prior to the commencement of refurbishment/demolition works.

SE has the following project appreciation:

- The structures within the site are proposed for refurbishment works; and
- A hazardous building materials survey is required prior to refurbishment / demolition works as part of the Royal Prince Alfred Hospital Redevelopment Project to identify and document hazardous building materials within the structures situated within the site.

The objectives of this investigation were to:

- Confirm the presence/ absence of hazardous building materials (HBM) within accessible areas of the structures on site;
- Provide a qualitative risk assessment of the hazardous building materials identified (if any);
- Provide recommendations on control measures and strategies for removal; and
- Prepare a Hazardous Materials Register for the site to ensure legislative compliance.

The scope of works undertaken to address the investigation objectives, included:

- Fieldwork, including investigation of subject areas;
- Collection of suspect building materials (as required);
- Analysis of samples by a NATA accredited laboratory;
- Provide recommendations for the removal of hazardous building materials where identified; and
- Prepare a Hazardous Building Materials Register for the site, detailing location and type of HBMS present within the site.

For this report, HBM are limited to the following:

- Asbestos Containing Materials (ACM);
- Lead Containing Paint (LCP);
- Lead Containing Dust (LCD);
- Polychlorinated Biphenyls (PCBs);
- Synthetic Mineral Fibres (SMF); and
- Ozone Depleting Substances (ODS).

A summary of hazardous building materials identified within the site is provided in **Table 1.1** below. For an exhaustive list of hazardous building materials identified, refer to **Attachment 3 – Hazardous Building Materials Register**).

Table 1.1 Summary of Hazardous Building Materials Identified

Item	Areas Identified
Asbestos Containing Materials (ACM)	ACM was identified to be present within B95 in the eaves and beneath the carpet in the chapel.
Lead Containing Paint (LCP)	No LCP was identified, presumed, or suspected to be present within the site
Lead Containing Dust (LCD)	No LCD was identified, presumed, or suspected to be present within the site
Polychlorinated Biphenyls (PCB)	All fluorescent light fittings are presumed to contain PCB capacitors.
Synthetic Mineral Fibres (SMF)	SMF was identified to be present within the site. All air conditioning ducting and insulation material is presumed to contain SMF.
Ozone Depleting Substances (ODS)	All air conditioning units are presumed to contain ODS.

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LIST OF ABBREVIATIONS

ACM	Asbestos Containing Materials
EPA	Environmental Protection Authority
LCD	Lead Containing Dust
LCP	Lead Containing Paint
m	Metres
m^2	Square Metres
PCBs	Poly-Chlorinated Biphenyls
SE	Sydney Environmental Group Pty Ltd
SMF	Synthetic Mineral Fibres
ODS	Ozone Depleting Substances

1 INTRODUCTION

1.1 Background

Sydney Environmental Group Pty Ltd (SE) was engaged by Sydney Local Health District (c/- Cardno (NSW) Pty Ltd) (the client), to undertake a Hazardous Building Materials Survey of Building 'B95' (Chapel) located within Royal Prince Alfred (RPA) Hospital, Camperdown NSW (hereafter referred to as 'the site') (refer to **Figure 1** and **Figure 2**) prior to the commencement of refurbishment/demolition works.

1.2 Objectives

The objectives of this investigation were to:

- Confirm the presence/ absence of hazardous building materials (HBM) within accessible areas of the residences;
- Provide a qualitative risk assessment of the hazardous building materials identified (if any);
- Provide recommendations on control measures and strategies for removal; and
- Prepare a Hazardous Materials Register for the site to ensure legislative compliance.

1.3 Scope of Work

The scope of works undertaken to address the investigation objectives, included:

- Fieldwork, including investigation of subject areas within the residences (or portions thereof);
- Collection of suspect building materials (as required);
- Analysis of samples by a NATA accredited laboratory;
- Provide recommendations for the removal of hazardous building materials where identified; and
- Prepare a Hazardous Building Materials Register for the site, detailing to location and type of HBMS present within the site.

1.4 Previous Relevant Reports

SE were provided with a HAZMAT Register and an Asbestos Management Plan for Building 95 (report ref: EMS17 4835 and EMS17 4836), prepared by Environmental Monitoring Systems Pty Ltd (EMS), dated April 2017.

ACM was identified in the following locations within Building 95:

- Vinyl floor tiles beneath the carpeted floor area of the chapel;
- The electrical distribution insulation panelling in the 'Ground Floor Records' room is suspected of containing asbestos (no sample possible due to electrical hazard); and
- Presumed asbestos fibre cement eaves at the rear of the chapel and the annex.

At the time of the inspection by EMS, all identified ACM were in a stable condition were not considered a health risk if left undisturbed.

1.5 Access Restrictions / Areas Not Accessed

It is possible that hazardous building materials may have been concealed within restricted and/or inaccessible areas/voids at the time of the survey. These areas include:

Restricted Areas:

- Locations behind locked doors;
- In-set ceilings or wall cavities;
- Areas only accessible by dismantling equipment or performing minor localised demolition works;
- Service shafts, ducts etc concealed within the building structure;
- Height restricted areas and surfaces greater than three (3) metres in height;
- Voids or internal areas of plant, equipment, air-conditioning ducts, etc;

- Inaccessible areas, such as voids and cavities created and intimately concealed within the building structure. These voids are only accessible following major demolition works;
- Sub-floor space; and
- Basement or 'crypt' level of the Chapel (B95).

2 SITE IDENTIFICATION

The site identification details and associated information are presented in **Table 2.1**.

Table 2.1 Site Identification Information

Attribute	Description
Street Address	Portion of Building 89 and Building 95, RPA Hospital, Camperdown NSW
Lot and Deposited Plan (DP)	Portion of Lot 1000 DP1159799
Geographical Coordinates	33°52'7.3"S 151°16'22.4"E (Centre of site)
Site Area	Building 95: Ground Floor (excluding crypt) ≈ 220 m^2
Local Government Area (LGA)	City of Sydney
Subject Areas:	Building 95: Ground level (excluding crypt) (Refer to **Figure 2**)

The general layout and boundary of the site is set out in **Figure 1**.

The subject areas examined are provided in **Figure 2**.

3 FIELDWORKS

3.1 Survey Methodology

Hazardous Material (hazmat) surveys are performed using a risk assessment approach in agreement with the legal regulations and current Codes of Practice. The hazmat surveys involve the site identification and inspection of Asbestos Containing Materials (ACM), Synthetic Mineral Fibres (SMF), lead based paint systems, Lead Containing Dust (LCD), Polychlorinated Biphenyls (PCBs) when applicable.

The Occupational Hygienist performs a visual inspection within all accessible areas to identify the hazardous building materials. When a potentially hazardous building material is suspected, a sample of the material is collected and sent to a NATA accredited laboratory for the required analysis. Where identical suspected hazardous materials are detected at different locations, only visual confirmation is made rather than the collection of additional samples. The following observations were recorded at the time of the inspection:

- Location;
- Description;
- Quantity;
- Condition; and
- Friability (where applicable).

Additionally, the survey will include minor destructive sampling within the properties. This is to allow the occupational hygienist to accurately determine which building materials may contain hazardous materials by collecting an adequate sample for laboratory analysis. Following the completion of sampling, any minor holes/scratches made by the occupational hygienist at the property will be sealed with a clear adhesive spray to contain and potential hazardous material that was disturbed during sampling.

3.2 Hazardous Building Materials Identification

3.2.1 Asbestos Containing Materials

Asbestos is defined as the fibrous form of mineral silicates. There are two major groups of asbestos:

- Serpentine group minerals: chrysotile (white asbestos); and
- Amphibole group minerals: amosite (brown asbestos), crocidolite (blue asbestos) and minor forms including actinolite, tremolite and anthophyllite.

Asbestos minerals have separable long fibres that are strong and flexible enough to be spun and woven and are heat resistant. Because of these characteristics, asbestos has been historically used for a wide range of manufactured goods, mostly in building materials, friction products, heat-resistant fabrics, gaskets, and coatings.

Asbestos mainly affects the lungs; breathing in high levels of asbestos fibres over time can lead to a number of diseases and cancers (asbestos is a known carcinogen). The aim is to minimise the risk of exposure to ACM. This management plan aids in ensuring that ACM in the workplace are managed in such a way that they do not become damaged and increase the risk of exposure.

During the survey, the occupational hygienist will collect samples of suspected asbestos containing materials (ACM). If sampling is not possible for whatever reason, the occupational hygienist may presume an item to contain asbestos. For example, most power distribution boxes found in older structures (built prior to 1983) will have an asbestos backing board, however due to the electrical hazard present, a sample will not be taken but the material will be presumed to contain asbestos.

3.2.2 Lead Containing Paint (LCP)

Lead is a naturally occurring metal. Pure lead can combine with other substances to form various lead compounds. Lead based paint is defined as “Any paint containing greater than 0.1% by dry weight of lead” in the Australian/New Zealand Standard (AS/NZS) 4361.2:2017 Guide to hazardous paint management: Part 2: Lead paint in residential and commercial buildings.

Distinct paint systems are initially tested with a 3M 'leadcheck' swab. Should the swab return a positive result for lead, then the paint will be sampled by the occupational hygienist for laboratory analysis. Paint samples returning a result of above 0.1% w/w lead are classified as lead paint.

3.2.3 Lead Containing Dust (LCD)

Lead dust is found everywhere in the urban environment, resulting from air, water, and soil pollution from industrial processes, house renovations, and as a by-product of the combustion of leaded fuels. Over an extended period of time, the lead from these sources may have contaminated the dust found in the ceiling voids of most houses examined. Significant lead levels are likely to occur in the ceilings of older homes, near major roads, or near current or previously heavily industrialised areas.

As a consequence of lead contamination, samples will be collected where significant amounts of dust are observed during the inspection. This will generally be limited to the ceiling void space.

In the absence of a legislative standard for classifying lead containing dust as hazardous within a ceiling space, SE have adopted a threshold criterion of 10 µg/cm^2 or 300 mg/kg for lead in dust which is considered appropriate for demolition of structures. An adjustment of the threshold criteria may be undertaken based on further risk assessment.

3.2.4 Polychlorinated Biphenyls (PCBs)

PCBs are a group of chlorinated organic compounds. PCBs are very stable chemicals that resist change over time and temperature variation. They are fire resistant and very good insulators. Reference is made to the document 'Identification of PCB-Containing Capacitors' – Australian & New Zealand Environment and Conservation Council (ANZECC), 1997 for identification of PCB-containing capacitors'.

The major use of PCBs has been as an insulating fluid inside transformers and capacitors. These transformers and capacitors range in size but generally are encased within a cylindrical or rectangular metal casing. PCBs have been commonly used in closed or semi-closed systems such as electrical transformers, heat transfer systems, hydraulic fluids, feeder cabling and in the metal case capacitors to fluorescent lights, sodium vapour and mercury vapour lights, and starter capacitors to electrical motors. PCBs will generally only be found in capacitors made before the late 1970's (though some electrical equipment imported after this period may contain PCBs). High voltage and medium voltage feeder cables prior to the use of PVC insulation, particularly the armoured type of cabling may contain PCBs in concentrations sufficient to be a scheduled PCB waste.

For de-energised premises, all accessible fluorescent light fittings are visually inspected for PCB containing capacitors or PCB containing ballast, listed in '*Scheduled Waste Management: Identification of PCB-containing Capacitors* – (ANZECC. 1997).

Where premises are energised, direct inspection of these components is not possible due to the significant electrical hazard present. Under these circumstances, all fluorescent light fittings are treated as potentially containing PCB capacitors until proven otherwise.

3.2.5 Synthetic Mineral Fibres

SMF is a generic term used to collectively describe a number of amorphous (non-crystalline) fibrous materials, commonly referred to as "Man Made Mineral Fibres" (MMMF).

SMF materials include fibreglass, rockwool and ceramic fibre based products. These products are used in a number of areas throughout buildings. These materials are generally used as insulation within ceilings and walls, as well as heating hot water pipework and associated mechanical equipment.

SMF materials are classified as bonded and unbonded materials. Unbonded SMF material includes loose fill fibreglass or rockwool dry wall or ceiling insulation, and sprayed rockwool to structural steel and acoustic finishes. Bonded SMF insulation materials include sectional fibreglass and rockwool pipe insulation; ceiling batts, duct blankets (lined and unlined with mesh/foil), dry wall batt insulation and acoustic mineral fibre ceiling tiles etc.

3.2.6 Ozone Depleting Substances

No Ozone depleting substances (ODSs) were found on site, following information is provided for future reference.

ODSs refer to those substances that deplete the ozone layer and are widely used in refrigerators, air conditioners, fire extinguishers, dry cleaning and cleaning solvents, electronic equipment and as agricultural fumigants.

In 1987, an international protection agreement was made, named the Montreal Protocol, which sets out a schedule that countries must follow to phase out ODSs based on their effect on the earths' ozone layer. In Australia, the Commonwealth Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 controls the manufacture, import and export of ODSs in accordance with the Montreal Protocol.

The release of large amounts of ODSs in an enclosed area is harmful to humans as it can act as an asphyxiator by reducing the amount of oxygen in the air. Liquid refrigerant is extremely cold and can burn your skin. SE will identify any HVAC system and presume it to contain ODS. All removal or refurbishment works that relating to HVAC systems must be undertaken by a licensed air-conditioning technician with experience working with and properly disposing of refrigerant fluids including ODS.

4 HAZARDOUS BUILDING MATERIALS MANAGEMENT PLAN

4.1 Regulatory Framework

The success of any option involving hazardous materials remaining in-situ is dependent on the need to ensure the hazardous material remains undisturbed and in good condition.

Accordingly, the purpose of this Hazardous Building Materials Management Plan (HBMMP) is to ensure that all practicable steps are taken to prevent, or minimise the risk of exposure to hazardous materials, for all occupants of the site. This is driven by state legislation and is achieved through the identification and listing of the known and typical locations of hazardous materials and the implementation of appropriate control measures including engineering and administrative systems.

Hazardous materials to be managed by this plan are as follows:

- Asbestos-Containing Materials (ACM);
- Synthetic Mineral Fibre (SMF)-containing materials;
- Lead-containing paint (LCP);
- Lead-containing dust (LCD);
- Polychlorinated Biphenyls (PCBs); and
- Ozone Depleting Substances (ODSs).

To accomplish this, the HBMMP specifies work practices and procedures to:

- Maintain the hazardous materials in good condition;
- Ensure implementation of hazard control strategies;
- Nominate the management plan controller;
- Monitor the condition of the hazardous materials; and
- Minimise the possibility of accidental damage or exposure to hazardous materials.

The HBMMP must be made available to, and understood by, all participants involved in the management and operation of the site. The appropriate personnel at the site should be aware of the presence of the hazardous materials and the need to ensure they remain undisturbed and in good condition. They should also understand their role in achieving this.

4.2 Hazardous Building Materials Management Plan Objectives

The HBMMP represents an integrated risk management approach to ensure that all practicable steps are taken to prevent or minimise the risk of exposure to hazardous materials in the buildings located at the Site.

The HBMMP therefore:

- Outlines the necessary actions to control the risk as required by state legislation;
- Identifies and describes the administrative line of authority for the site, outlining responsibilities, procedures and systems for the effective management and control of hazardous materials at the site;
- Establishes a timetable for the review and assessment of the hazardous materials;
- Where appropriate, instigates a work permit system, which ensures that any proposed maintenance, installation, alteration, or renovation at the site are notified to the Management Plan Controller;
- Requires that all participants involved in the management and operations at the site are clearly informed and where necessary trained to manage the hazardous material risks; and
- Forms an integral part of an effective HBMMP. The HBMMP and Hazardous Materials Register must be made available as required for inspection by tenants, other employers, employees, union representatives, government representatives, contractors and maintenance personnel.

4.3 Legislative Requirements

This HBMMP is designed to assist the client in fulfilling its general obligation to ensure the health and safety of employees, contractors, visitors and others accessing the site. The HBMMP also addresses specific hazardous materials related legislative requirements and guidelines in approved industry standards.

Chapter 8, Part 8.3 Management of Asbestos and Associated Risks of the Work Health and Safety Regulation 2017 (NSW) states that a person with management or control of a workplace must ensure that a register (an asbestos register) is prepared and kept at the workplace. All asbestos or ACM at the workplace are to be identified by a competent person as far as is reasonably practicable. Asbestos sample analysis must be carried out by a National Association of Testing Authorities (NATA) Australia accredited laboratory for the relevant test method (Australian Standard AS4964-2004).

The person responsible for the management of the workplace must ensure the review of the asbestos register and management plan is conducted as necessary. This should take place if further ACM are identified, if ACM are removed, disturbed or encapsulated and/or at least once every 5 years. A health and safety representative has the authority to request a review of the asbestos register and management plan if they believe that the health and safety of an employee is at risk.

The personnel responsible for the management plan must ensure that the document is available for review to contractors, health and safety representatives and workers who are and/or intend to be conducting work within the workplace.

The following legislation and industry standard documentation are relevant to this HBMMP and are to be construed as forming an integral part of this HBMMP:

- Work Health and Safety Act 2011 (NSW);
- Work Health and Safety Regulation 2017 (NSW);
- Code of Practice: How to Safely Remove Asbestos (SafeWork NSW, 2019);
- Code of Practice: How to Manage and Control Asbestos in the Workplace (SafeWork NSW, 2019);
- Code of Practice for the Safe Use of Synthetic Mineral Fibres [NOHSC:2006 (1990)];
- AS 4361.2 Guide to lead paint management – Part 2 Residential and commercial buildings, Standards Australia, 2017 (previously AS 4361.2-2017 Australian Standard Guide to lead paint management Part 2: Residential and commercial buildings);
- ANZECC Polychlorinated Biphenyls Management Plan, Revised Edition 2003; and
- NSW Protection of the Environment Operations Act 1997.

4.4 Remedial Options

A range of measures are available for the control of hazardous materials risks. The selection of the appropriate control measures are based on the assessed risk for each specific location. These measures may include:

- Leave and maintain in existing condition;
- Repair and maintain in good condition;
- Encapsulate/seal using sealant paints, adhesive or mastic or providing a barrier such as a box enclosure or steel cladding;
- Remove/decontaminate by approved methods under controlled conditions;
- Safe Working Practices and Safe Systems of Work; and
- Labelling of ACM 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.

All known or suspected ACM should be identified with warning labels. ACM and other hazardous materials should be re-inspected on a 5-yearly basis (or earlier if the materials are damaged or removed) to ensure the materials are kept in good condition and that there is no damage to the materials (refer to Section 3.2 of the Code of Practice: How to Manage and Control Asbestos in the Workplace (SafeWork NSW, 2016)).

5 HAZARDOUS BUILDING MATERIALS ABATEMENT STRATEGIES

The following section outlines general remedial methodologies for hazardous building materials.

5.1 Asbestos Containing Materials

Materials identified as containing asbestos should be removed from any proposed work area or satisfactorily contained prior to commencement of refurbishment or demolition works. It is recommended that a specific scope of works document be produced to manage the asbestos abatement project.

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

- Work area isolation (barrier protection, buffer zone);
- Removal methods (friable/non-friable);
- Contamination control methods (negative air pressure/decontamination procedures); and
- Health and safety procedures (respiratory protection, working at heights, scaffolding).

Asbestos abatement works must be performed in accordance with all legislative requirements. The statutory requirements for asbestos removal are prescribed in the NSW Work Health and Safety Regulation 2017 (Part 8.7). The Code of Practice: How to Safely Remove Asbestos (SafeWork NSW, 2016) provides guidelines for the safe removal of friable and non-friable asbestos-containing materials.

Depending on the nature of the abatement operations, it may be necessary to engage a licensed asbestos contractor.

A suitably qualified consultant must provide independent verification of the work practices, engineering controls and standard of workmanship employed during removal operations.

5.2 Lead Paint and Dust

The health risk associated with lead occurs via an accumulative effect within the human body. Depending on the amount of exposure, side effects of lead poisoning would not be apparent for many years. It is therefore recommended that workers associated with lead processes have regular medical examinations to monitor the amount of lead in their system.

The most common exposure risks faced by workers are the inhalation of lead dust or fumes. The creation of the hazards generally relates to abrading or burning lead or lead coated surfaces. Other common sources of lead dust or fumes are as follows:

- Lead based paints – when removing paint by sanding or heat (e.g. creating dust), or when welding; or cutting steel coated with lead or lead based paints;
- Welding, oxy cutting of steel coated with lead based paint or primer; and
- Dismantling of equipment containing lead based paint.

The abatement of lead painted surfaces and reduction of potential lead exposure risks to workers and the environment requires a review of the potential exposure pathways to lead dust during the abatement project. Local authority requirements, public safety and health requirements, site preparation, waste disposal and contamination control all need to be fully considered therefore, prior to the commencement of the abatement project.

Lead exposure is likely where painted surfaces are to be removed or treated by mechanically sanding, scraping or other cleaning techniques creating airborne dust and fall-out contaminating ground and building surfaces. Accordingly, lead abatement work must fully contain and control airborne emissions and remove resultant lead contaminated dusts and sludge from work surfaces. The painting contractors must prepare a waste management plan prior to any lead paint management work.

Workers must also be fully protected against exposure with personnel protective clothing and respiratory protection and employers of these workers must fully comply with the Work Health and Safety Regulation 2017 (NSW), including organising medical testing of their employees.

The Australian Standard AS 4361.2 Guide to lead paint management – Part 2 Residential and commercial buildings, Standards Australia, 2017 provides guidance for the management of lead-paint and lead-dust on non-industrial structures such as residential, commercial and public buildings.

The options available for the management of lead painted surfaces include:

- Report and Document;
- Stabilise the paint;
- Carrying out lead paint and lead dust abatement (removal); and
- A combination of these options.

5.2.1 Report and Document

This is only appropriate for painted surfaces that are generally inaccessible and are in sound condition and will not be disturbed during the refurbishment of the site.

The presence of lead paint, even under existing non-lead painted surfaces should be documented and recorded and regular inspection conducted for evidence of deterioration.

5.2.2 Lead Paint Stabilisation

The easiest option in dealing with lead painted surfaces is to over-paint using a lead free paint. This can only be done effectively where the existing lead paint is in good condition and does not require extensive preparation for re-painting. Below is a summarised procedure of lead paint encapsulation:

- Remove all loose surface material in accordance with lead paint removal procedures;
- Remove surface gloss with a de-glossing solution;
- Ensure new paint is compatible with existing paint, i.e.: no leaching of lead compounds from old to new surfaces;
- Oil based paint is preferable;
- Carry out over-painting in accordance to Australian Standard AS 2311-1992 The Painting of Structures;
- Undercoat sealer be applied;
- Two (2) coats of topcoat; and
- Monitor surface for any signs of deterioration.

Usually, the existing paint will need to be washed to remove grime and dirt using sugar soap (tri-sodium phosphate) or removing a glossy surface by wet sanding with a de-glossing solution etc. Small areas of flaking paint will require rectification prior to stabilisation.

5.2.3 Lead Paint and Lead Dust Removal

In the event that some surfaces are in poor condition and over-painting is not appropriate, the lead paint will need to be removed. Any lead paint & lead dust removal must be carried out with the appropriate guidelines for any lead work activity involving machine sanding, grinding, discing, buffing of surfaces coated with paint containing greater than 0.1% of lead by dry weight.

Lead processes involving such activities with lead paint will require:

- Enclosure to prevent escape of lead bearing dusts;
- Adequate signage around work area;
- Appropriate personal protective equipment;
- Personal hygiene – no smoking, washing of hands prior to eating etc.;
- Removal of lead paint via wet sanding or chemical stripping;

- Vacuuming of all surfaces (with a HEPA filter fitted) within and including the enclosure to remove all remaining traces of lead paint;
- Decontamination;
- Clearance testing via surface soil or dust sampling; and
- Medical surveillance of lead workers (blood tests).

Any work processes involving lead paint must be undertaken in a manner to ensure that no worker is exposed to lead at concentrations above the Workplace Exposure Standard (WES) of 0.15 mg/m^3 over an eight-hour day. Furthermore the levels should not exceed 0.03 mg/m3 at the boundary of the regulated area, i.e. boundary of area surrounding a lead paint worksite where it can be reasonably expected not to exceed the ES.

In a lead abatement operation, it is recommended that a certified lead abatement contractor be engaged (as recommended by the Federation of Master Painters Australia or the Painting Contractors Certification Program). This contractor should then perform any lead abatement work. Contractors involved in lead paint removal must have medical surveillance, including blood tests, conducted in accordance with the regulations.

A detailed work procedure should be reviewed based on assessment of options available to the builder for the various painted surfaces and nature of refurbishment activities to be conducted.

5.3 Synthetic Mineral Fibres

In all cases, it is essential that SMF materials be handled appropriately to control dust and debris, as they are irritating to the skin and mucous membranes. SMF fibres are generally thick and will scratch and puncture the skin causing rashes and irritation to the skin, nose and eye if exposed to high levels of dust and debris. Protective eyewear therefore should be worn if handling SMF materials above the head, i.e. entering ceiling cavities.

Action should be taken on a continuing basis to achieve the lowest workable exposure levels of SMF. The provision of engineering controls, close attention to plant cleanliness, in particular within plant rooms and air handling units, and the containment of waste material may achieve this. Additionally, the use of binders or work practices which reduce the liberation of fibres and the provision of appropriate personal protective equipment can help reduce SMF levels to personnel and the environment.

Caution is required when handling SMF products in order to minimise airborne SMF fibre levels. It is recommended that the code of practice “Code of Practice for the Safe Use of Synthetic Mineral Fibres NOHSC:2006 (1990)]” be closely adhered to when handling such materials.

Essentially, SMF materials should be handled in such a way as to minimise dust and disturbance of the materials. Where SMF materials are installed or removed, then suitable controls and appropriate personal protection are to be provided. Consultation should be sought with regard to appropriate procedures prior to the handling of such materials

- If SMF insulation is to be disturbed or removed, control monitoring for airborne SMF in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne SMF [NOHSC:3006(1989)] should be carried out by qualified occupational hygienist during the removal operations and sample analysis should be undertaken by a NATA accredited laboratory to ensure the method of control is effective;
- Use hand tools, not power tools, and wet or dampen the material before cutting. If power tools are used, local exhaust ventilation should be installed;
- Protective equipment must be used whenever other means cannot keep the exposure level below the exposure standard. It should include the appropriate type of mask and clothing. The code of practice has a detailed guide to selecting respiratory protection; and
- At the end of removal operations, a clearance inspection and sampling program should be carried out and a Clearance Certificate issued.

Note that SMF’s are currently not on the schedule of substances requiring health surveillance.

5.4 Polychlorinated Biphenyls

The management of PCBs is outlined in the policy document issued by ANZECC Polychlorinated Biphenyls Management Plan, November 1996. This plan sets out timelines for the eventual phase out and replacement of PCBs within workplaces in Australia.

The Environmental Protection Authority has deemed PCBs to be a prescribed waste. Proper procedures must be undertaken when disposing of items containing PCBs. Registered waste disposal companies are licensed to dispose of PCBs.

Not all materials containing PCBs are required to be removed. The management strategy depends on the priority of the area in which the material is located and the classification of the PCB containing material. The PCB concentration classifies a material as one of the following:

- PCB Free – materials and wastes are defined for the purposes of the PCB Management Plan as those materials or wastes containing PCBs at concentrations of 2 mg/kg or less;
- Scheduled PCB materials and wastes containing PCBs at levels greater than or equal to either 50 mg/kg or 50 g; and
- Non-Scheduled PCB materials or waste containing PCBs at concentration levels between those defined above.

Prior to any removal of PCBs, workers involved should be suitably trained in the health and safety procedures and the use of Personal Protective Equipment (PPE)

- The following PPE should be worn when handling items containing PCBs:
  - Nitrile Gloves;
  - Eye Protection; and
  - Disposable Overalls.
- The PPE should be worn when removing capacitors from light fittings in case of PCB material leaking from the capacitor housing;
- A registered electrical contractor should conduct all electrical works;
- Generally, metal-cased capacitors contain PCBs while plastic-cased capacitors usually do not, however all leaking capacitors should be treated as if they contain PCBs unless proven otherwise.
- Remove diffuser and light tubes;
- Remove cover panels carefully and inspect the internals of the light fitting for signs of leakage from the capacitor;
- Disposable overalls and gloves should be disposed of as contaminated material on completion of work;
- Wash hands in warm soapy water before eating, drinking, smoking, handling food or drink or using toilet facilities (even if gloves were worn);
- If skin contact with PCB material occurs, the liquid shall be removed immediately with soap and water and waste contained and disposed of as PCB containing waste (depending on quantity of spillage); and
- If PCB material has leaked from the capacitor onto the cover plate or diffuser, the spillage must be wiped with an absorbent cloth soaked with some white spirit or kerosene, and the cloth then disposed of as PCB waste. Leaking capacitors should first be placed in a plastic bag with loose vermiculite placed at the bottom to absorb any spillage/leakage.

5.5 Ozone Depleting Substances

Containers holding ODSs should be labelled to provide ready identification by emergency teams. Appropriate signage may also be required under the relevant dangerous goods storage legislation.

Service personnel should refer to the relevant Material Safety Data Sheets when handling ODSs.

Containers and valves should be handled with care to avoid any damage that could lead to a discharge.

Disposal of an ODSs should be completed in a way that prevents their emissions into atmosphere.

6 CONCLUSIONS AND RECOMMENDATIONS

Based on SE's assessment of the desktop review information, fieldwork data and laboratory analytical data, SE make the following conclusions:

- A copy of the hazardous building materials register should be made readily available to all contractors conducting works on the site;
- All hazardous building materials identified and recorded in the register were assessed to be safe and low-risk. These items are suitable to remain in-situ without further remedial works;
- Any hazardous building materials identified and recorded in the register that are likely to be impacted by refurbishment works are to be removed prior to refurbishment works;
- Remove all hazardous building materials identified and recorded in the register prior to any major demolition works of the structures identified within the site; and
- Should any previously unidentified suspected hazardous building materials be identified during demolition, works should cease, and the materials should be inspected by an experienced occupational hygienist prior to the recommencement of works. Sydney Environmental Group can be contacted on 1300 884 164.

Based on these conclusions and the information gathered during the assessment, SE make the following recommendations:

- Asbestos containing materials were identified in the eaves and in vinyl tiles beneath the carpeted flooring of the chapel. All identified materials were in good condition and must be removed by a licensed asbestos removalist prior to refurbishment or demolition works;
- No LCD, or LCP was identified, presumed, or suspected to be present within the site. However, given the age of the building, ACM may be encountered in areas not fully accessible during the survey (i.e. void spaces behind walls, lift shafts, internal componentry of equipment). Care is to be taken during all refurbishment works, and an occupational hygienist engaged should any unexpected hazardous building materials finds be uncovered;
- All fluorescent light fittings are presumed to contain PCB capacitors. Further visual assessment of capacitors may be undertaken once assets are de-energised and made-safe. Reference can be made by contractors removing fluorescent light fittings to ANZECC. (1997). 'Identification of PCB-containing Capacitors: An Information Booklet for Electricians and Electrical Contractors' to determine if capacitors contain PCBs. Disposal of PCB containing capacitors is to be made to a licensed receiving facility;
- All air conditioning, ducting, and insulation material is presumed to contain SMF. Caution is required when handling SMF products in order to minimise airborne SMF fibre levels. It is recommended that the code of practice "Code of Practice for the Safe Use of Synthetic Mineral Fibres NOHSC:2006 (1990)]" be closely adhered to when handling such materials; and
- As a conservative measure to eliminate the risk of unintended ODS release to the environment, removal of refrigerant gases for all HVAC equipment is to be undertaken by a qualified HVAC technician prior to removal of HVAC equipment.

7 STATEMENT OF LIMITATIONS

No survey can be guaranteed to locate all hazardous building materials. The demolition or refurbishment of site structures may uncover hazardous building materials which were concealed or otherwise impractical to access during this assessment.

The findings presented in this report are based on specific searches of relevant, government historical databases and anecdotal information that were made available during the course of this investigation. To the best of our knowledge, these observations represent a reasonable interpretation of the general condition of the site at the time of report completion.

This report has been prepared solely for the use of the client to whom it is addressed and no other party is entitled to rely on its findings.

No warranties are made as to the information provided in this report. All conclusions and recommendations made in this report are of the professional opinions of personnel involved with the project and while normal checking of the accuracy of data has been conducted, any circumstances outside the scope of this report or which are not made known to personnel and which may impact on those opinions is not the responsibility of Sydney Environmental Group Pty Ltd. Should information become available regarding conditions at the site including previously unknown sources of contamination, SE reserves the right to review the report in the context of the additional information.

This report must be reviewed in its entirety and in conjunction with the objectives, scope and terms applicable to SE's engagement. The report must not be used for any purpose other than the purpose specified at the time SE was engaged to prepare the report.

Logs, figures, and drawings are generated for this report based on individual SE consultant interpretations of nominated data, as well as observations made at the time site walkover/s were completed.

Data and/or information presented in this report must not be redrawn for its inclusion in other reports, plans or documents, nor should that data and/or information be separated from this report in any way.

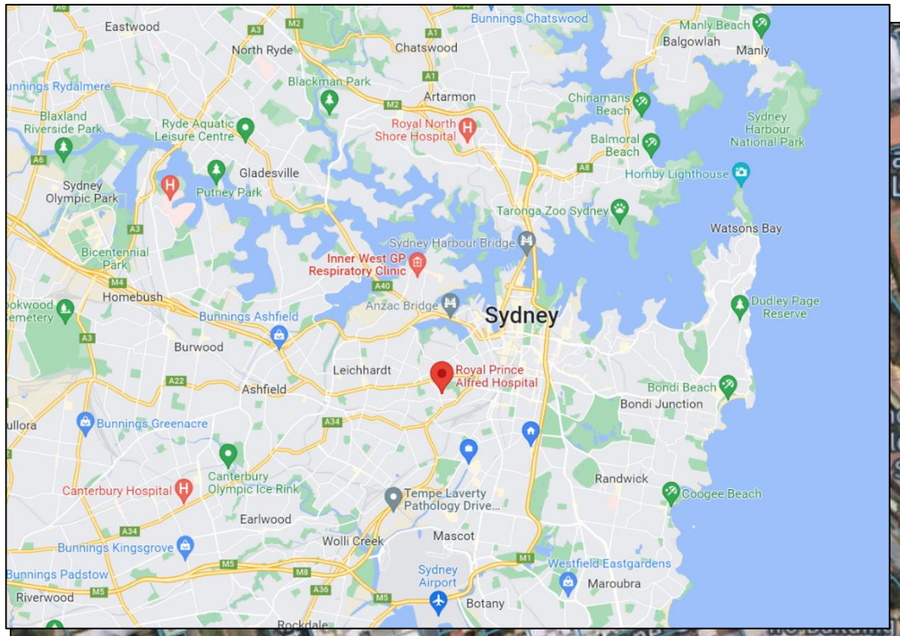
Should additional information that may impact on the findings of this report be encountered or site conditions change, SE reserves the right to review and amend this report.

8 REFERENCES

- Environmental Monitoring Systems (2017). 'Hazardous building materials register and Asbestos Management Plan';
- Health Infrastructure. (2021). Design Guidance Note 15. *Asbestos and Other Hazardous Materials Management*;
- Health Infrastructure. (2021). Design Guidance Note 30. *Asbestos and Other Hazardous Materials Management*;
- NSW Government. (2011). Workplace Health and Safety Act 2011;
- NSW Government. (2017). Workplace Health and Safety Regulation;
- SafeWork NSW. (2016). Code of Practice: Demolition Work;
- Standards Australia. (2001). Australian Standard 2601: The Demolition of Structures;
- SafeWork NSW (2019). Code of Practice: How to Safely Remove Asbestos;
- SafeWork NSW (2019). Code of Practice: How to Manage and Control Asbestos the Workplace;
- Standards Australia. (2017). Australia Standard 4361.1 Guide to Lead Paint Management. Part 1: Industrial Applications;
- Standards Australia. (2017). Australian Standard 4361.2: Guide to Hazardous Paint Management, Part 2: Lead Paint in Residential, Public and Commercial Buildings;
- Standards Australia. (2000). Australian Standard 4874: Guide to the Investigation of Potentially Contaminated Soil and Deposited Dust as a Source of Lead Available to Humans;
- ANZECC. (1997). Identification of PCB-containing Capacitors: An Information Booklet for Electricians and Electrical Contractors;
- National Environment Protection Council. (2013). National Environment Protection (Assessment of Site Contamination) Measure, 1999, 2013 Amendment;
- Queensland Department of Environmental and Heritage Protection. (2016). Guideline Waste Management - Managing Polychlorinated biphenyl;
- National Occupational Health and Safety Commission. (1990). National Standard for Synthetic Mineral Fibres [NOHSC:1004(1990)];
- SafeWork NSW. (2013). Guide to Handling Refractory Ceramic Fibres;
- Electrical Contractors' Association of Australia. (1993). Code of Practice for the Safe Handling of Equipment Containing Polychlorinated Biphenyls;
- NSW EPA. (1997). Polychlorinated Biphenyl (PCB) Chemical Control Order 1997; and
- NSW EPA. (2014). Waste Classification Guidelines – Part 1: Classifying Waste.

ATTACHMENT 1

FIGURES



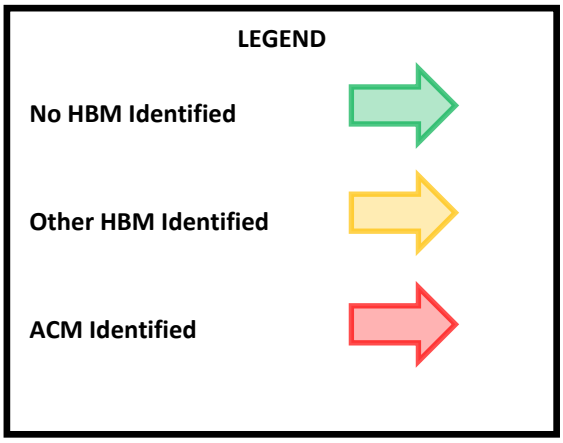
Site Locality and Subject Area			
Client Name:	Sydney Local Health District (c/- Cardno (NSW) Pty Ltd)	Figure Number:	1
Project Name:	Hazardous Building Materials Survey	Figure Date:	24 May 2022
Project Location:	Portion of Building 89 and Building 95, RPA Hospital, Camperdown NSW	Report Number:	1284-HBMS-04-250522.v1f

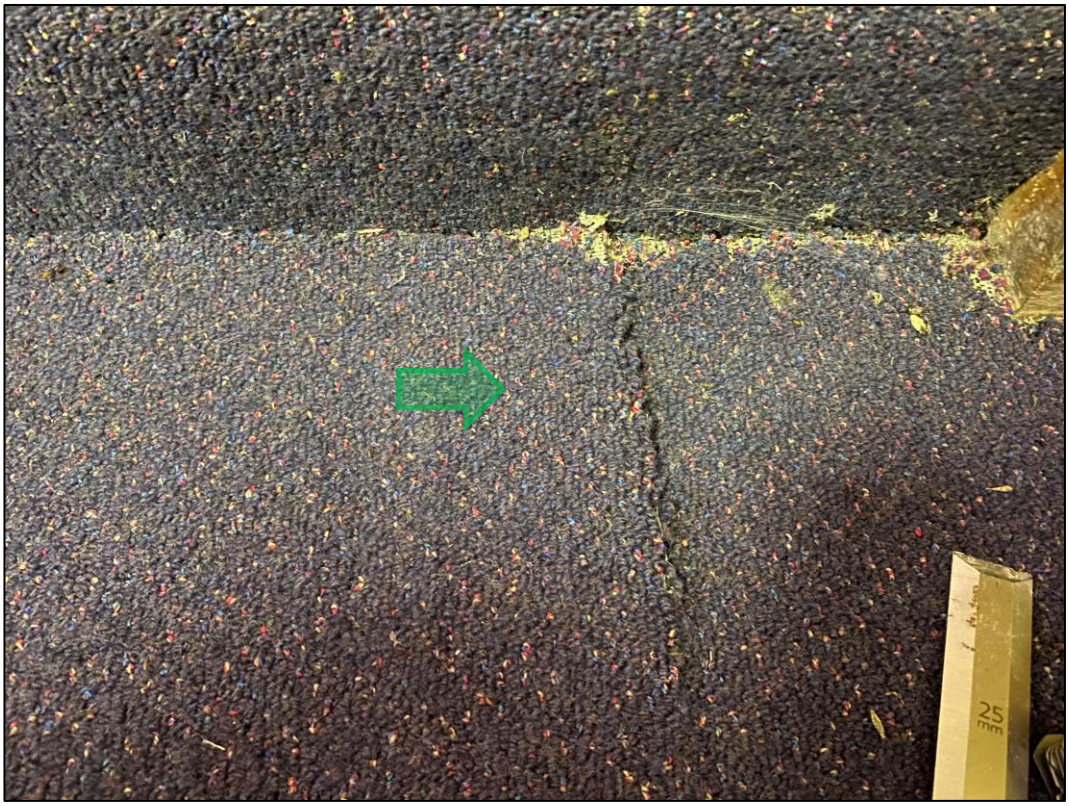
Sydney Environmental Group

N

ATTACHMENT 2

SITE PHOTOGRAPHS





Photograph 1 Building 95: Interior carpet flooring within chapel, as observed on 07/05/22. Location of sample 'B95-CARPET-01'. No asbestos detected.

Photograph 2 Building 95: Interior timber flooring within the chapel foyer, as observed 07/05/22. Location of sample 'B95-MST-01'. No asbestos detected.

Photograph 3 Building 95: Exterior asbestos fibre cement eaves, as observed 07/05/22. Location of sample 'B95-EAVE-01'. **Asbestos detected**.

ATTACHMENT 3

HAZARDOUS BUILDING MATERIALS REGISTER

Hazardous Building Materials Register

Inspected By: Isabelle Figatowski
LAA ID: LAA001585
Inspection Dates: 17/05/2022

Address: Royal Prince Alfred Hospital - B95 (Chapel)
Subject Areas: B95 Chapel

Inaccessible Areas: All live electrical equipment
Areas above three metres
Areas behind locked doors
'Crypt' beneath B95 (Chapel)

Date	LOCATION			MATERIAL DESCRIPTION								RISK MANAGEMENT			CORRECTIVE ACTIONS			
	Building	Room	Surface	Material Application	Quantity	Units	Sample Type	Sample ID No.	Photo No.	Analytical Result	Material Condition as Surveyed	Risk Status	Control Recommendations/ Comments	Review date	Consultant/ Hygienist Name	Control Action Taken	Date Actioned	Contractor Details
Building 95 - Interior																		
7/05/2022	B95	Chapel	Carpet	Carpet	125	sq. m	Carpet	B95-CARPET-01	1	No asbestos detected	Good	-	Nil	-				
7/05/2022	B95	Chapel	Flooring	Vinyl tile	125	sq. m	Nil	-	-	Asbestos detected by EMS	Good	Low	Non-Friable Asbestos. Maintain in current condition. Remove prior to demolition or refurbishment works.	24 months				
7/05/2022	B95	Foyer	Flooring	Mastic	0.5	sq. m	Mastic	B95-MST-01	2	No asbestos detected	Good	-	Nil	-				
Building 95 - Exterior																		
7/05/2022	B95	Exterior	Eaves	Fibre cement	35	sq. m	FC	B95-FC-01	3	Asbestos detected	Good	Low	Non-Friable Asbestos. Maintain in current condition. Remove prior to demolition or refurbishment works.	24 months				

ATTACHMENT 4

LABORATORY DOCUMENTATION

Certificate of Analysis

Environment Testing

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Sydney Environmental Group Pty Ltd
Unit 63/45 Huntley St
Alexandria
NSW 2015

Attention:	Patrick Brown
Report	890175-AID
Project Name	RPA HOSPITAL B89+B95
Project ID	1284
Received Date	May 17, 2022
Date Reported	May 25, 2022

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name RPA HOSPITAL B89+B95
Project ID 1284
Date Sampled May 17, 2022
Report 890175-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
B89-VT-01	22-My0048107	May 17, 2022	Approximate Sample 1g / 40x15x2mm Sample consisted of: Grey/ Brown flexible linoleum with clear glue	No asbestos detected. Synthetic mineral fibre detected. No trace asbestos detected.
B89-FC-01	22-My0048108	May 17, 2022	Approximate Sample 1g / 12x10x2mm Sample consisted of: Grey/ Yellow plaster cement material with white coating	No asbestos detected. No trace asbestos detected.
B89-FC-02	22-My0048109	May 17, 2022	Approximate Sample 41g / 100x70x7mm Sample consisted of: Grey fibre plaster cement material	No asbestos detected. Organic fibre detected. No trace asbestos detected.
B95-CARPET-01	22-My0048110	May 17, 2022	Approximate Sample 7g / 50x45x7mm Sample consisted of: Piece of carpet material with woven backing	No asbestos detected. Organic fibre detected. No trace asbestos detected.
B95-MST-01	22-My0048111	May 17, 2022	Approximate Sample 2g / 45x22x2mm Sample consisted of: Black rubber sheet with amber glue	No asbestos detected. No trace asbestos detected.
B95-EAVE-01	22-My0048112	May 17, 2022	Approximate Sample 738g / 300x140x5mm Sample consisted of: Grey compressed fibre cement	Chrysotile asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	May 20, 2022	Indefinite

eurofins | Environment Testing

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ABN: 50 005 085 521

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NATA # 1261 Site # 1254

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

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IANZ # 1290

Company Name: Sydney Environmental Group Pty Ltd
Address: Unit 63/45 Huntley St
Alexandria
NSW 2015

Project Name: RPA HOSPITAL B89+B95
Project ID: 1284

Order No.:
Report #: 890175
Phone: 1300 884 164
Fax:

Received: May 17, 2022 5:35 PM
Due: May 25, 2022
Priority: 5 Day
Contact Name: Patrick Brown

Eurofins Analytical Services Manager : Asim Khan

Sample Detail						Asbestos Absence /Presence
Melbourne Laboratory - NATA # 1261 Site # 1254						
Sydney Laboratory - NATA # 1261 Site # 18217						X
Brisbane Laboratory - NATA # 1261 Site # 20794						
Mayfield Laboratory - NATA # 1261 Site # 25079						
Perth Laboratory - NATA # 2377 Site # 2370						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	B89-VT-01	May 17, 2022		Building Materials	S22-My0048107	X
2	B89-FC-01	May 17, 2022		Building Materials	S22-My0048108	X
3	B89-FC-02	May 17, 2022		Building Materials	S22-My0048109	X
4	B95-CARPET-01	May 17, 2022		Building Materials	S22-My0048110	X
5	B95-MST-01	May 17, 2022		Building Materials	S22-My0048111	X
6	B95-EAVE-01	May 17, 2022		Building	S22-	X

eurofins | Environment Testing

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

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ABN: 50 005 085 521

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Brisbane Laboratory - NATA # 1261 Site # 20794						
Mayfield Laboratory - NATA # 1261 Site # 25079						
Perth Laboratory - NATA # 2377 Site # 2370						
External Laboratory						
				Materials	My0048112	
Test Counts						6

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. Information identified on this report with the colour **orange** indicates sections of the report not covered by the laboratory's scope of NATA accreditation.
6. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (**% w/w**)
F/fld	Airborne fibre filter loading as Fibres (**N**) per Fields counted (**n**)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (**C**)
g, kg	Mass, e.g. of whole sample (**M**) or asbestos-containing find within the sample (**m**)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (**V** = **r** x **t**)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (**r**)
min	Time (**t**), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration: $C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$

Asbestos Content (as asbestos): $\%\, w/w = \frac{(m \times P_A)}{M}$

Weighted Average (of asbestos): $\%_{WA} = \sum \frac{(m \times P_A)_x}{x}$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix. May be derived from knowledge or experience of the material, informed by HSG264 *Appendix 2*, else assumed to be 15% in accordance with WA DOH *Appendix 2* (**P_A**).
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to "non-bonded / friable".
AFM	Airborne Fibre Monitoring, e.g. by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total % w/w asbestos content in asbestos-containing finds in a soil sample (**% w/w**).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory's remit to assess degree of friability.
HSG248	UK HSE HSG248, *Asbestos: The Analysts Guide*, 2nd Edition (2021).
HSG264	UK HSE HSG264, *Asbestos: The Survey Guide* (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (**K**) as derived from the effective filter area of the given AFM membrane used for collecting the sample (**A**) and the projected eyepiece graticule area of the specific microscope used for the analysis (**a**).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (updated 2021), including Appendix Four: *Laboratory analysis*
Weighted Average	Combined average % w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (**$\%_{WA}$**).

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	N/A
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Asbestos Counter/Identifier:

Chamath JHM Annakkage	Senior Analyst-Asbestos (NSW)

Authorised by:

Laxman Dias	Senior Analyst-Asbestos (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

■ **Sydney Laboratory** Unit F3 Bld.F, 16 Mars Rd, Lane Cove West, NSW 2066 02 9900 8400 EnviroSampleNSW@eurofins.com

□ **Brisbane Laboratory** Unit 1, 21 Smallwood Pl., Murarrie, QLD 4172 07 3902 4600 EnviroSampleQLD@eurofins.com

□

□ **Melbourne Laboratory** 2 Kingston Town Close, Oakleigh, VIC 3166 03 8564 5000 EnviroSampleVic@eurofins.com

Company	Sydney Environmental Group	Project №	[redacted] 1284	Project Manager	PB
Address	U63, 45 Huntley Street Alexandria NSW	Project Name	RPA HOSPITAL B89 + B95.	EDD Format (ESdat, EQuIS, Custom)	
Contact Name	ISABELLE FIGATOWSKI			Sampler(s)	IF
Phone №	1300 884 164			Handed over by	IF
Special Directions				Email for Invoice	enviro@sydneyenvironmental.com.au isabelle@[illegible]
Purchase Order				Email for Results	enviro@sydneyenvironmental.com.au [illegible]
Quote ID №					

Analyses (Note: Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing)

- General Waste Classification Suite (B7, B13 Suite, Asbestos ID)
- Excavated Natural Materials Order Suite (B7 Suite, Asbestos ID, pH, EC)
- Virgin Excavated Natural Materials Suite (B7 Suite, Asbestos ID)
- Salinity Assessment Suite (L2 Aggresivity Suite, ESP %)
- Asbestos ID AS4964 (0.01%)
- Asbestos ID NEPM & WA (0.001%)
- ASBESTOS BULK ID.

Containers: 1L Plastic; 250mL Plastic; 125mL Plastic; 200mL Amber Glass; 40mL VOA vial; 500mL PFAS Bottle; Jar (Glass or HDPE); Other (Asbestos AS4964, WA Guidelines)

Turnaround Time (TAT) Requirements (Default will be 5 days if not ticked)

□ Overnight □ Same Day □ 1 Day □ 2 Day □ 3 Day ☑ 5 Day □ Other (

№	Client Sample ID	Sampled Date (dd/mm/yy)	Matrix (Solid (S) Water (W))	ASBESTOS BULK ID.	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	B89-VT-01	17.5.22	BM	X	1	
2	B89-FC-01	↓	↓	X	1	
3	B89-FC-02	↓	↓	X	1	
4	B95-CARPET-01	↓	↓	X	1	
5	B95-MST-01	↓	↓	X	1	
6	B95-EAVE-01	↓	↓	X		
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
	Total Counts			6	5	

Method of Shipment	☑ Courier (#) □ Hand Delivered □ Postal	Name	I. FIGATOWSKI	Signature	[signature]	Date	17.5.22	Time	16:00
Eurofins | mgt Laboratory Use Only	Received By	SYD | BNE | MEL | PER | ADL |	Signature		Date	Time	:	Temperature	
	Received By	SYD | BNE | MEL | PER | ADL |	Signature		Date	Time	:	Report №	

Submission of samples to the laboratory will be deemed as acceptance of Eurofins | mgt Standard Terms and Conditions unless agreed otherwise. A copy of Eurofins | mgt Standard Terms and Conditions is available on request.

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