Banksia EOHS
Occupational, Environmental and Community Health Risk

Hazardous Materials Refurbishment & Demolition Survey, Buildings A, B, C, D, E And J, Moriah War Memorial College, Queens Park.

9th August, 2019

Prepared for:
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Moriah War Memorial College,
3 Queens Park Road,
Queens Park. NSW. 2022.

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Ref: Moriah Report

DISTRIBUTION

Hazardous Materials Report: Buildings A, B, C, D, E And J, Moriah War Memorial College.
9th August, 2019

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Moriah College Location.

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1.0 INTRODUCTION

Past construction practices have led to the use of hazardous materials in some buildings. The use of asbestos, lead based paints, ozone depleting substances and PCB's has been discontinued, however, residual material from past construction practices remain in some older buildings.

Where present, hazardous materials must be managed to ensure there is no potential for adverse health effects on building occupiers, or during demolition. Management of these hazards requires a three step approach of recognition of the existence and potential hazardous materials, evaluation of the extent of those hazards (by hazardous materials surveys), and, control (by management procedures including removal before demolition of structures occurs).

This report has been prepared to summarise the results of a hazardous materials Refurbishment and Demolition Survey of buildings A, B, C, D, E and J, of Moriah War Memorial College Queens Park.

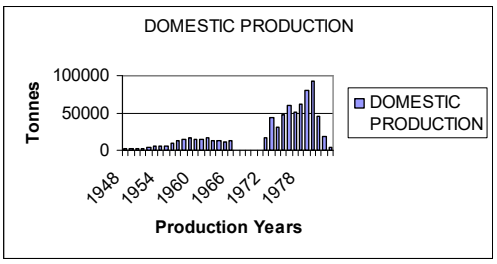
MORIAH WAR MEMORIAL COLLEGE QUEENS PARK.

2.0 HAZARDOUS MATERIALS, THEIR USE AND HEALTH RISK

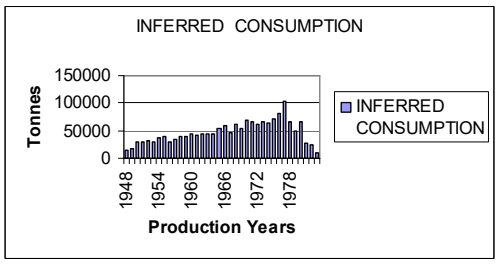
2.1 Asbestos-Containing Materials

Asbestos has unique properties, and because of this was used up until the mid/late 1980's in a large number of applications (over 3000 have been identified). Asbestos was mined within Australia up until 1987, and commonly used in manufacturing until the mid to late 1980's. The final asbestos containing product sold in Australia was car brake pads. The sale of these was discontinued at the end of 2003.

Statistics on Australian production and consumption of asbestos are shown in the tables below:



Australian Domestic Production Of Asbestos.



Australian Consumption Of Asbestos.

The first recorded production of asbestos in Australia was at Gundagai in 1880, where small amounts of Amphibole asbestos were mined until 1921. In Australia, production peaked in 1980 when 92,418 tonnes were produced, mainly from the Woodsreef mine located near Barraba in northern New South Wales, but by 1987, only 3909 tonnes was produced, and production ceased entirely shortly after.

The primary use of asbestos was in asbestos cement sheeting, and production of this peaked in 1974 when about 44,000,000m^2 (44km^2) was produced.

The year 1987 is generally regarded as the cutoff year for asbestos use. Asbestos containing materials are widespread in the community, and it can be expected that any building constructed prior to 1987may contain asbestos products. This includes a significant percentage of the existing Australian housing stock.

The types of asbestos fibre used in asbestos products varied over time with crocidolite and amosite typically found in products manufactured in the earlier years of the 20th century, and chrysotile used exclusively in later years.
Asbestos is a naturally occurring fibrous silicate mineral, one of the Serpentine group. It was mined extensively in Australia until the early 1980's.

These minerals were commonly used in the past because of their fibrous nature (providing structural strength in products such as asbestos cement sheeting), low heat conductivity (providing insulation on steel building structures, steam pipes etc), high electrical resistance (used in power boards, electrical fittings, etc) and chemical inertness.

The primary types of asbestos used were chrysotile (white asbestos), crocidolite (blue asbestos) and amosite (brown asbestos).

The risk to human health from asbestos arises primarily from the inhalation of asbestos fibre derived from the disturbance of asbestos-containing products.

Because of its small fibre size, asbestos may penetrate deep into the lung, and because of its inert nature, body processes have difficulty expelling the material.

Exposure to asbestos fibre may result in an outcome of chronic adverse health effects. These may include asbestosis leading to the onset of mesothelioma, a painful, fatal cancer of the lining of the lung. The health effects of asbestos may take 20 – 40 years to manifest themselves. In Australia at the present time there is a high prevalence of asbestos related disease resulting from the widespread use of the material in the construction and shipping industries during the 1960's and 1970's.

Asbestos fibre may be held strongly in a matrix, for example cement (asbestos cement) and in this form is known as bonded. If the matrix does not hold the asbestos fibre strongly, and the fibre can be liberated easily, for example by crushing between the

fingers, the form is known as friable. Friable asbestos is more of a health risk than bonded because exposure to fibres happens more easily.

Asbestos cement is a bonded asbestos product with the asbestos fibre contained within a stable matrix. Because asbestos cement is bonded, asbestos fibre is only liberated if the materials are degraded in some way, such as by sawing, drilling or grinding. Broken asbestos cement pieces are regarded as bonded by Safe Work NSW.

Issues related to occupational exposure to asbestos are administered in NSW by Safe Work NSW under the Work, Health and Safety Act and Regulations. Safe Work also licence asbestos removal contractors.

The Safe Work Australia has issued two guidelines for the management, control and removal asbestos in the workplace. These have been revised and are:

- "Model Code of Practice – How to Safely Remove Asbestos", and,
- "Model Code of Practice – How to Manage and Control Asbestos in the Workplace".

These Codes are also used as guidelines for industry practice in the area of asbestos management.

2.2 Synthetic Mineral Fibre Materials

SMF was and is used extensively as an insulating material. It may irritate unprotected skin and the eyes and upper respiratory system of individuals who are exposed to it. Although fibrous, long term health effects similar to those of asbestos have not been identified, primarily because of the way fibres fracture when degraded.

Synthetic mineral fibres (SMF), described in international literature as man-made mineral fibres (MMMF), is a collective term used for fibres such as fibreglass, rockwool and ceramic fibres. The biological effects of these fibres are determined by the fibre diameter and length and chemical nature.

Because they are generally regarded as an irritant, the obligation of the employer under the Occupational Health and Safety Act is to provide a safe and healthy work environment, and this is best achieved by protection of skin and the wearing of respiratory protection.

Synthetic mineral fibre is not listed as a Prescribed Waste under the Environmental Protection (Prescribed Waste) Regulations.

2.3 Lead

Lead was used commonly in the building industry for applications such as waterproofing, where it was used in a sheet form. It was also commonly used as a paint additive, and is typically found in paints used in older buildings or in protective steel coating. Lead based paints are no longer used in the building industry.

Lead accumulates in the blood stream primarily following inhalation and ingestion as a result of repeated exposure. Children are most at risk from lead, and it has been found that learning deficiencies are experienced by children who develop high blood lead concentrations.

Lead should not be removed from surfaces by grinding or heat methods unless specific personal protective measures are employed. The National Occupational Health and Safety Commission (Worksafe) publish exposure standards for lead which require that

worker exposures be kept below what is known as the Threshold Limit Value (TLV). The TLV is only likely to be approached where grinding or heat removal of lead based paint is planned, but unlikely to be approached in a demolition situation where building fabric is being dismantled.

The occupational health hazard from lead in a situation where demolition is being carried out is small since it is unlikely that significant quantities of lead-containing dust will be generated. No grinding or heat removal of lead based paints would be contemplated during any proposed refurbishment project, and the only potential exposure would arise from high lead dusts contained in, for example, the ceiling cavity. The wearing of a disposable respirator would provide protection against this type of exposure.

In NSW, demolition waste containing lead-based paints may be regarded as “Solid Waste” and disposed of to a tip licensed to take general demolition waste. This method of disposal is accepted because the lead found in paint is generally in an insoluble form and unavailable for leaching into the environment.

2.4 PCB’s

PCB’s were used in the past in the capacitors of electrical fittings, typically fluorescent light fittings, and in application such as transformers. Their use is now banned.

PCB’s are primarily an environmental hazard. They are accumulated in the fatty body tissue of animals, and are also bioaccumulated up the food chain, that is, the animal at the top of the food chain is most likely to have the highest concentration of PCB in body fat.

PCB’s were banned in 1976, and buildings constructed after that time are unlikely to have them within their electrical fittings. PCB’s are a prescribed waste, and as such, they must be disposed of appropriately. Disposal would include the removal from light fittings of the PCB-containing capacitors, their placement in a suitable container such as a plastic drum and transport under controlled conditions to a licensed disposal or storage site.

Removal would be required prior to the commencement of demolition activities, and the appropriate personal protective equipment would include disposable overalls, impervious apron, impervious gloves (Nitrile), eye protection and appropriate respiratory protection.

2.5 Biological Hazards

Biological hazards are agents which are biological in nature, capable of self-replication and have a capacity to produce a deleterious effect on humans. They may include a range of materials such as Legionella from cooling towers, bacterial and fungal materials from air conditioning systems, fungal hazards from animal faeces found in ceiling spaces, bacterial, fungal, microbiological and viral hazards from hospitals and research facilities, and bacterial viral and fungal hazards from abattoirs and buildings where animals are Housed.

Biological agents can cause infection to exposed persons through oral, respiratory or skin penetration.

3.0 RELEVANT OH&S LEGISLATION

3.1 NSW Work, Health & Safety Act & Regulations 2017

The Work, Health & Safety Act (2011) as amended 2017, prescribes general duties and legal obligations on occupational health and safety matters. It covers employer, supplier and employee responsibilities in relation to hazardous substances. The Act and Regulations require employers to ensure the health, safety and welfare of employees at their place of work.

3.2 Work Safe Australia Model Codes of Practice 2018

Work Safe Australia revised its existing Codes of Practice for asbestos in October 2018, and issued two updated Model Codes Of Practice:

- "Model Code of Practice – How to Safely Remove Asbestos", and,
- "Model Code of Practice – How to Manage and Control Asbestos in the Workplace".

The State asbestos-related Acts and Regulations defer to these where asbestos management or removal issues are identified.

3.3 Australian Standard AS2601-2001 – The Demolition of Structures

AS 2601-2001 requires an employer to determine the presence of hazardous substances or conditions in a structure prior to its demolition. The nature and location of each hazard is to be recorded and the proposed control method included in the control documentation.

3.4 Codes of Practice

- Guidance note for ceiling dusts containing lead: Safe Work NSW.
- Code of practice for the safe use of synthetic mineral fibre: Safe Work Australia.
- Workplace Exposure Standards For Airborne Contaminants as amended. Safe Work Australia December, 2018.

4.0 METHODS USED TO IDENTIFY HAZARDS AT THE SITE

The site was visited on Tuesday the 6th of August, 2019. All accessible areas of the buildings were inspected and an assessment of the presence of hazardous materials was made.

Samples of suspected asbestos containing materials were collected and analysed where deemed appropriate. Where suspected asbestos-containing materials could not be accessed, the presence of asbestos was deemed in accordance with Part 9.2 of the NOHSC Code of Practice [NOHSC:2019(2005)]. Other hazardous materials were similarly assessed.

Some photographs were collected to facilitate easy identification of the areas where hazardous materials were located, and these photographs are included in the report.

While every effort was made to access all areas of the site, some locations such as eaves at height, could not be inspected.

5.0 RISK ASSESSMENT AND MANAGEMENT RECOMMENDATIONS

The basis of the risk assessment methodology is a three step process of;

- *Recognition of the presence of the hazardous material,*
- Evaluation of the degree of health risk that the hazardous material,
- Control of the risk of the hazardous material by engineering or management controls.

5.1 Asbestos Risk Assessment

Two methods are used – the Ferris Index and that of Worksafe New Zealand.

5.1.1 Ferris Index Asbestos Risk Assessment

For asbestos, a score system was used based on the Ferris Index (Ferris, Benjamin Dr., Harvard School Of Public Health in Am. Ind. Hyg. J. April, 1098, pp 270-276.) Five factors were identified as being significant in fibres of asbestos becoming airborne:

- **Accessibility (A)** (scored 1 – 4)
  Totally enclosed: Score 1
  Inaccessible – beyond reach: Score 2
  Accessible in a low activity area: Score 3
  Accessible in a high activity area: Score 4
- **Condition (C)** (scored 1 – 4)
  No damage at all: Score 1
  Mild damage: Score 2
  Moderate damage: 3
  Severe damage: 4
- **Friability (F)** (Scored 1 – 4)
  Non friable, firmly bound: Score 1
  Slightly friable: Score 2
  Moderately friable: Score 3
  Very friable: Score 4
- **Presence in an Air Plenum (L)** (Score 1 – 2)
  Not present: Score 1
  Present: Score 2.
- **Percentage Asbestos (P)** (Score 1 – 4)
  Less than 1%: Score 0
  Less than 10%: Score 1
  11% to 25%: Score 2
  26% to 50%: Score 3
  51% or more: Score 4

A score is then calculated using the equation:

Ferris Index + (A+C+F+L) x P

Where: A = Accessibility Score
C = Condition Score
F = Friability
L = Presence in the air plenum
P = Percentage of asbestos.

The above scoring system is summarised in Figure 1. Each risk assessment is scored then a consultation is held with site management to finalise management response. Figure 2 suggests some management responses.

Figure 1: Ferris Index Score Matrix

A = Accessibility Ratings range from 0-4	C = Condition Ratings range from 0-4	F = Friability Ratings range from 0-4	L = Location Ratings range from 0-4	P = Percentage Asbestos Ratings range from 0-4
1 Totally enclosed behind a false ceiling or wall	1 No sign of surface damage	1 Non friable by hand, firmly bound	1 Material not present in return air plenum	0 Less than 1% asbestos present
2 Inaccessible due to height from floor	2 Only mild or occasional damage to surface	2 Slightly friable some comes off in fingers	2 Material present in return air plenum	1 1 to 10% asbestos present
3 Accessible but low activity area	3 Moderate damage in several areas	3 Moderately friable, breaks apart with little force		2 11 to 25% Asbestos present
4 Accessible in high activity area	4 Severe damage, friable, water damage	4 Very friable, breaks apart easily		3 26 to 50% asbestos present
				4 +51% asbestos present

Figure 2: Suggested Management Responses

Ferris Index Score	Risk Status Priority Rating	Actions Required
0-4	D	No Action Necessary.
5-9	C	Review in 3 years (or as per state specific requirements) and adopt appropriate control measures as advised in Hazardous Materials Register.
10-15	B	Review in 1 year (or as per state specific requirements) and adopt appropriate control measures as advised in Hazardous Materials Register.
16+	A	Remove immediately.

5.1.2 BOHS Good Practice Guideline Health Risk Algorithm

This scoring system is used to assess health risk is drawn from the Worksafe Good Practice Guideline – Conducting Asbestos Surveys, and is shown below:

Sample Variable	Score	Examples
Product Type (or debris from product)	1 (Low)	Composites (plastic, resins, mastics, roofing felts, vinyl floor tiles, paints, decorative finishes
	2 (Medium)	AIB, millboards, other low density insulation boards, asbestos textiles, gaskets, ropes, woven textiles, asbestos paper and felt
	3 (High)	Thermal insulation such as pipe and boiler lagging, sprayed asbestos, loose asbestos, asbestos mattresses and packing
Surface Treatment	0 (None)	Composite materials containing asbestos, reinforced plastics, resins, vinyl tiles
	1 (Low)	Enclosed sprays and lagging, AIB (with exposed face painted or encapsulated),
	2 (Medium)	Unsealed AIB or encapsulated lagging and sprays
	3 (High)	Unsealed lagging,/unsealed lagging and sprays
Extent Of Damage	0 (None)	No visible damage
	1 (Low)	A few scratches/marks, broken edges
	2 (Medium)	Significant breakage of non-friable materials or several areas of damage to friable material
	3 (High)	High damage/visible debris
Asbestos Type	0	No Asbestos Detected
	1	Chrysotile
	2	Amphibole Asbestos Excluding Crocidolite
	3	Crocidolite

Score	Potential To Release Asbestos Fibres
10-12	High
7-9	Medium
5-6	Low
1-4	Very Low

5.1.3 Fire Damage And Friability.

The classification of asbestos containing materials into “bonded” or “friable” depends on their softness or ability to be crushed between the fingers. Asbestos containing material which is soft and easily crushed (and the asbestos fibre released) is classified as friable, material which is hard and not easily crushed, and in which the asbestos fibre is firmly held, is classified as bonded.

Friable asbestos materials are potentially more hazardous since asbestos fibres are more easily released, increasing the health risk.

Fire damaged asbestos cement may be classified as bonded or friable depending the degree of damage.

The issue of the classification of fire damaged bonded asbestos cement was examined extensively in the NSW Land & Environment Court case Cessnock City Council v Quintaz Pty Limited; Cessnock City Council v McCudden [2010] NSW Lec 3, in January 2010.

Part of the argument in the case centred around whether fire damaged asbestos cement should be classified as bonded or friable.

The judgement found that fire damaged asbestos cement remained “bonded” in the strict definition, provided it retained its bonded character, and had not “exploded” or could be easily crushed between the fingers.

5.2 SMF Risk Assessment

With SMF the hazard is primarily one of skin, eye or upper respiratory tract irritation. Fibres are released when the material is handled or otherwise disturbed.
A risk status of C (Figure 2) is assigned to all SMF.

5.3 Lead

The health risk from lead depends on:

- If the lead compound is soluble,
- If it is accessible,
- The percentage of lead,
- Type of work proposed for the lead material (grinding etc). Lead will be assessed us in the score table (Figure 3) below:

Figure 3: Lead Score Table

A = Accessibility	S = Solubility	C = Concentration
0 Inaccessible – no disturbance such as grinding proposed	0 Insoluble (such as metalling leading)	0 If less than 1%
1 Accessible – disturbance by methods such as grinding proposed	1 Soluble (such as some paints)	1 If greater than 1%

The risk score is then calculated by:
Lead Risk (LR) = Accessibility (A) x Solubility(S) x Concentration (C).
The recommended management options for lead are summarised in Figure 4.

Figure 4: Suggested Management Response

Lead Risk (LR) Score	Risk Status Priority Rating	Actions Required
0	D	No Action Necessary
1	A	Remove immediately using methods advised by Hazardous Materials Consultant or seal by re-painting.

5.4 Polychlorinated Biphenyls (PCB’s)

A risk status of B (see Figure 2) assigned to all PCB’s.

6.0 RESULTS OF THE SURVEY

6.1 Asbestos

Our assessment of the presence of asbestos materials in these buildings is as follows:

6.1.1 Building A

Building A houses the school library and is constructed from concrete, concrete panels, metal and brick, and has a complex roofline (Photographs 1 and 7).

Internally, the floors are covered with carpet tiles (Photograph 2), and these are on a tongue and groove wooden floor (Photograph 3).

Plaster and fibre cement have been used to line the ceiling of the building. The fibre cement contains no asbestos (Sample 1). The eaves (Photograph 6) are constructed from similar fibre cement which also contains no asbestos (Sample 2).

In the basement of Building A is the main electrical room (Photograph 8). This has a meter/fuse board which was deemed to be asbestos free. There is also other electrical equipment which contains no asbestos.

An awning over an entry at the rear of the building (Photograph 10) is lined with fibre cement. This material contains no asbestos (Sample 4).

No asbestos materials were detected in this building.

6.1.2 Building B.

This building lies adjacent to, and to the south of Building A, and is a small, two storey concrete and brick structure (Photographs 11, 12). There are no eaves on the building, but fibre cement has been used to line the small awning on the upper level (Photograph 13). This material was deemed to contain no asbestos. It was inaccessible and should be tested for asbestos before demolition commences.

Internally (Photographs 14 and 15), the ceilings are lined with plaster or are concrete slab and no suspected asbestos materials were detected.

No asbestos materials were detected in this building.

6.1.3 Building C.

Building C (Photograph 16) is a larger, two-storey building constructed from concrete, precast concrete panels, brick and metal (Photograph 20). At the front of the building (Photograph 17), on the ground floor, which fronts onto a courtyard, there are student lockers (Photograph 18). No suspected asbestos-containing materials were detected in this area.

The roof is metal.

The building houses several trades training rooms (Photographs 19, 21) including woodwork and kitchen areas. There are plaster ceiling tiles (Photograph 22) located on the false ceiling, or the ceilings are concrete slab. No suspected asbestos materials were detected in this area.

The lift in this building (Photograph 23) is hydraulic and does not require brake shoes. No suspected asbestos materials were detected in this area.

The rear of the building (Photograph 24) also contains no suspected asbestos materials.

No asbestos containing materials were detected in this building.

6.1.4 Building D.

This is a two-storey brick, concrete and metal building located within the central courtyard of the school (Photograph 25).

The central area of the building is covered with an awning constructed from compressed fibre cement and wood panel (Photograph 26).

On the eastern end of the ground floor there is a student canteen (Photographs 27 and 28). There are ceiling tiles in this area (Photograph 27), and these are manufactured from composite material which contains no asbestos.

There is an outdoor area for the canteen (Photograph 37). This is covered by a fabric sail and no suspected asbestos materials were detected.

The concrete panels used to construct the building (Photograph 29) are fixed by spandrel brackets (Photograph 31). These are insulated with concrete.

The gaps between the concrete panels have not been filled with potentially asbestos-containing mastic material (Photograph 30).

The awning spanning the classroom section of the building and the staff room building is lined with wood panel (Photograph 36) and thick compressed fibre cement (Photograph 32). The fibre cement contains no asbestos (Sample 5).

The classrooms (Photographs 33 and 34) have fibre cement-lined ceilings. This material contains no asbestos.

No asbestos-containing materials were detected in this building.

6.1.5 Building E.

This is a small building (Photograph 38), built on a sloping site, with a workshop on the ground level and classrooms and a senior student resource room on the upper level. The building has no eaves (Photograph 39) which could be constructed from potentially asbestos-containing fibre cement.

On the lower level of the building (Photograph 40), there are workshops (Photograph 41). A panel of the fibre cement wall (Photograph 42) has been broken. This material contains no asbestos (Sample 3).

The classrooms on the upper level have brick walls and plasterboard ceilings (Photographs 43 and 44). The plaster contains no asbestos.

The senior's resource room on the upper level (Photographs 45 and 46) also has a plasterboard ceiling. This material contains no asbestos.

No asbestos-containing materials were detected in this building.

6.1.6 Building J.

This building is also two storey and constructed from concrete, brick and metal (Photograph 47). Internally, the classrooms on both levels have plaster ceiling linings (Photographs 48, 51 and 52). The plaster was deemed to contain no asbestos.

A mastic waterproofing material has been used during the construction (Photograph 49). This material contains no asbestos (Sample 6).

On the upper level there is a metal-covered walkway (Photograph 50). No suspected asbestos-containing materials have been used in its construction.

No asbestos-containing materials were detected in this building.

6.2 Lead

No Lead based paints were detected in any of the buildings, and they also had no lead flashing.

6.3 Synthetic Mineral Fibre

Synthetic mineral fibre was detected in ceiling cavities in all buildings (Photograph 9) and has been used as insulation on water heaters.

6.4 Polychlorinated Biphenyls

No PCB containing capacitors were detected in any of the buildings.

6.5 Biological Hazards

Biological hazards were deemed to be present in the sewer lines in all buildings at the school.

7.0 CONCLUSIONS & RECOMMENDATIONS

No asbestos-containing materials were detected in building at the Moriah War Memorial College.

Should suspected asbestos materials be uncovered during any site works, the procedure shown in Appendix 1 should be followed.

Synthetic mineral fibre was detected in all buildings either in water heaters, on air conditioning ducting or in insulation in the ceiling cavities.

Lead containing paints were not identified at the College and Lead flashing was not observed on any buildings inspected, and there were no PCB containing capacitors.

Biological hazards were deemed to be present in the sewer lines of all buildings.

APPENDIX 1: PHOTOGRAPHS

Photo 1: Main Entry To Building A – The School Library.

Photo 2: Interior Of Building A - Library Building. No Asbestos Detected.

Photo 3: Building A. Wooden Floorboards Under Carpet Squares. No Asbestos Present.

Photo 4: Building A. Building Ceiling. No Asbestos Detected.

Photo 5: Building A. Reading Room. No Asbestos Detected.

Photo 6: Building A. External Eaves Lined With Fibre Cement. No Asbestos Detected.

Photo 7: Building A. Roofline Of Building. No Asbestos Detected.

Photo 8: Building A. Meter/Fuse Board. Deemed No Asbestos Present.

Photo 9: Building A. SMF Detected In The Ceiling Cavity A. No Asbestos Detected.

Photo 10: Building A. Awning Over Rear Entry To Library Lined With Fibre Cement. No Asbestos Detected.

Photo 11: Building B. No Asbestos Detected.

Photo 12: Building B. No Eaves. No Asbestos Detected.

Photo 13: Building B Fibre Cement Awning, Upper Level. No Asbestos Detected.

Photo 14: Building B Interior, Ceilings Concrete & Plaster. No Asbestos Detected.

Photo 15: Building B Interior, Ceilings Concrete & Plaster. No Asbestos Detected.

Photo 16: Building C. No Asbestos Detected.

Photo 17: Building C. Concrete and Brick Construction With Metal Roof. No Asbestos Detected.

Photo 18: Building C Locker Area, Ground Floor. No Asbestos Detected.

Photo 19: Building C Trades Area. No Asbestos Detected.

Photo 20: Building C. Concrete & Brick Construction. No Asbestos Detected.

Photo 21: Building C Trades Area. No Asbestos Detected.

Photo 22: Building C Trades Area Ceiling Tiles. No Asbestos Detected.

Photo 23: Building C Hydraulic Lift. No Asbestos Detected.

Photo 24: Building C Rear. No Asbestos Detected.

Photo 25: Building D. No Asbestos Detected.

Photo 26: Building D. Fibre Cement & Wood Panel Ceiling. No Asbestos Detected.

Photo 27: Building D. Canteen Area. Composite Ceiling Tiles. No Asbestos Detected.

Photo 28: Building D. Canteen. No Asbestos Detected.

Photo 29: Building D. Concrete Panel Construction. No Asbestos Detected.

Photo 30: Building D. Concrete Panels. No Mastic Sealant. No Asbestos Detected.

Photo 31: Building D. Spandrel Bracket. No Asbestos Detected.

Photo 32: Building D. Upper Level. Awning Fibre Cement & Wood Panel. No Asbestos Detected.

Photo 33: Building D. Classroom. Ceiling Plaster. No Asbestos Detected.

Photo 34: Building D. Classroom. Ceiling Plaster. No Asbestos Detected.

Photo 35: Building D. Wood Panel Awning. No Asbestos Detected.

Photo 36: Building D. Wood Panel Awning. No Asbestos Detected.

Photo 37: Building D. Canteen Outdoor Area. No Asbestos Detected.

Photo 38: Building E. No Asbestos Detected.

Photo 39: Building E. No Eaves. No Asbestos Detected.

Photo 40: Building E. Lower Level Cleaners Room. No Asbestos Detected.

Photo 41: Building E. Lower Level Fibre Cement Wall. No Asbestos Detected.

Photo 42: Building E Damaged Fibre Cement Wall Lower Level. No Asbestos Detected.

	
Photo 43: Building E Classroom. No Asbestos Detected.	***Photo 44: Building E Classroom. Plasterboard Ceiling. No Asbestos Detected.***
	
Photo 45: Building E. Seniors Room. No Asbestos Detected.	***Photo 46: Building E. Seniors Room. No Asbestos Detected.***
	
Photo 47: Building J. Concrete & Brick Construction. No Asbestos Detected.	***Photo 48: Building J Classroom. Plaster Ceiling. No Asbestos Detected.***

	
Photo 49: Building J. Mastic Waterproofing. No Asbestos Detected.	***Photo 50: Building J. Metal Covered Walkway. No Asbestos Detected.***
	
Photo 51: Building J Classroom. Plaster Ceiling. No Asbestos Detected.	***Photo 52: Building J Classroom. Plaster Ceiling. No Asbestos Detected.***

APPENDIX 2: HEALTH RISK ASSESSMENTS

Moriah College Health Risk Assessment	Location: Building A Ceiling,	No Asbestos Detected
	Item: Flat Fibre Cement Extent (Approx. m^2): 750m^2 Lab. Sample Number: E68279 Banksia Sample Number: 1 Friability: Non Friable	**Health Risk Assessment** Product Type: 1 Surface Treatment: 0 Extent Of Damage: 0 Asbestos Type: 0 Score: 1 Algorithm Guideline: 10-12 High 7-9 Medium 5-6 Low 1-4 Very Low
Recommendation: No Action Necessary. Notes: No Reinspection Required.	Potential To Release Fibres: No Potential For Fibre Release	

Moriah College Health Risk Assessment	Location: Building A Eaves	No Asbestos Detected
	Item: Flat Fibre Cement Extent (Approx. m^2): 170m^2 Lab. Sample Number: E68280 Banksia Sample Number: 2 Friability: Non Friable	**Health Risk Assessment** Product Type: 1 Surface Treatment: 0 Extent Of Damage: 0 Asbestos Type: 0 Score: 1 Algorithm Guideline: 10-12 High 7-9 Medium 5-6 Low 1-4 Very Low
Recommendation: No Action Necessary. Notes: No Reinspection Required.	Potential To Release Fibres: No Potential For Fibre Release	

Moriah College Health Risk Assessment	Location: Building E Basement,	No Asbestos Detected
	Item: Flat Fibre Cement Extent (Approx. m^2): $45m^2$ Lab. Sample Number: E68281 Banksia Sample Number: 3 Friability: Non Friable	**Health Risk Assessment** Product Type: 1 Surface Treatment: 0 Extent Of Damage: 0 Asbestos Type: 0 Score: 1 Algorithm Guideline: 10-12 High 7-9 Medium 5-6 Low 1-4 Very Low
Recommendation: No Action Necessary. Notes: No Reinspection Required.	Potential To Release Fibres:	No Potential For Fibre Release

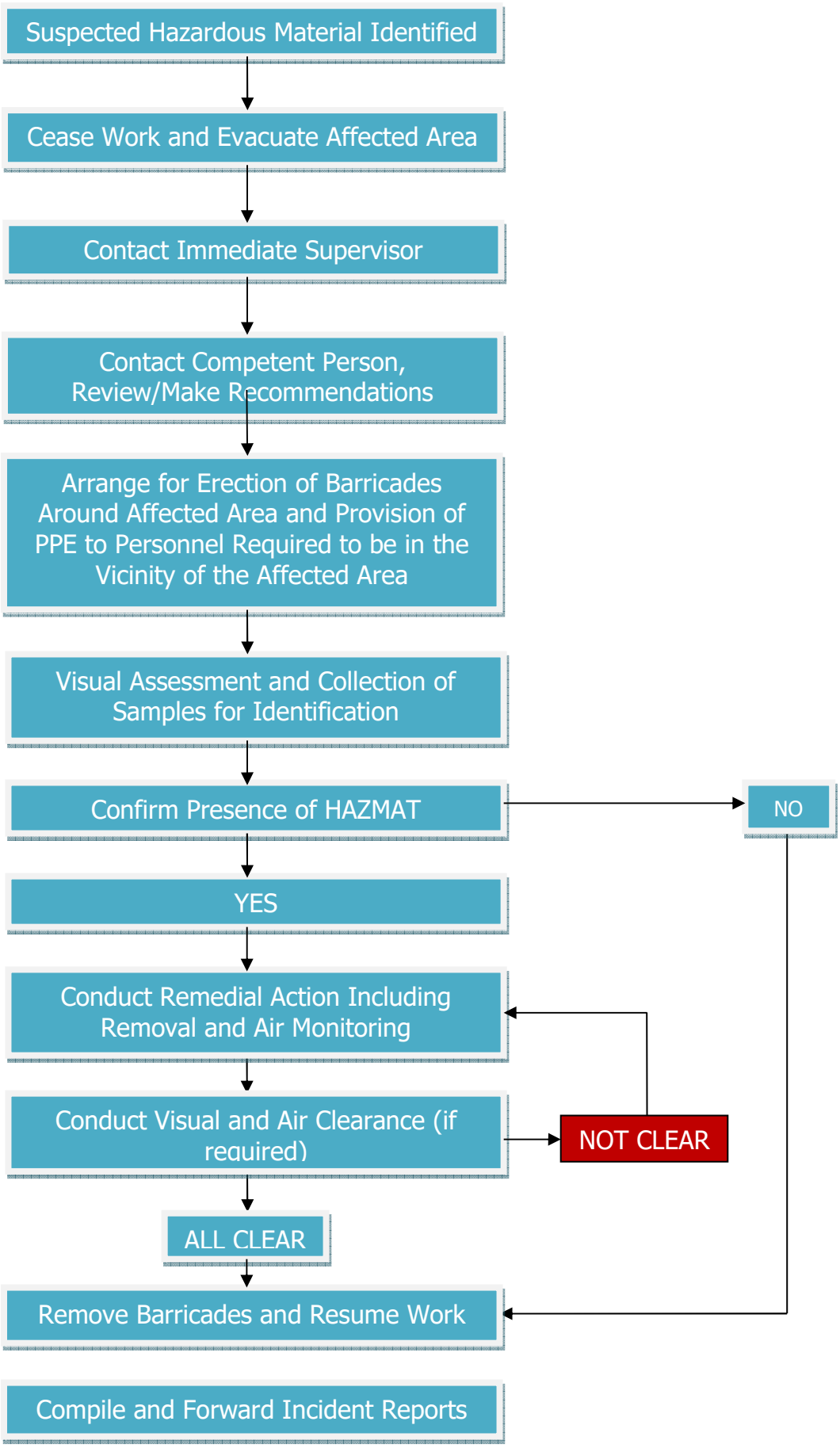
Moriah College Health Risk Assessment	Location: Rear Entry To Building A	No Asbestos Detected
	Item: Flat Fibre Cement Extent (Approx. m^2): $10m^2$ Lab. Sample Number: E68282 Banksia Sample Number: 4 Friability: Non Friable	**Health Risk Assessment** Product Type: 1 Surface Treatment: 0 Extent Of Damage: 0 Asbestos Type: 0 Score: 1 Algorithm Guideline: 10-12 High 7-9 Medium 5-6 Low 1-4 Very Low
Recommendation: No Action Necessary. Notes: No Reinspection Required.	Potential To Release Fibres:	No Potential For Fibre Release

Moriah College Health Risk Assessment	Location: Building D Awning,	No Asbestos Detected
	Item: Flat Fibre Cement Extent (Approx. m^2): 450m^2 Lab. Sample Number: E68283 Banksia Sample Number: 5 Friability: Non Friable	**Health Risk Assessment** Product Type: 1 Surface Treatment: 0 Extent Of Damage: 0 Asbestos Type: 0 Score: 1 Algorithm Guideline: 10-12 High 7-9 Medium 5-6 Low 1-4 Very Low
Recommendation: No Action Necessary. Notes: No Reinspection Required.	Potential To Release Fibres: No Potential For Fibre Release	

Moriah College Health Risk Assessment	Location: Building J Mastic	No Asbestos Detected
	Item: Mastic Extent (Approx. m^2): 10m^2 Lab. Sample Number: E68284 Banksia Sample Number: 6 Friability: Non Friable	**Health Risk Assessment** Product Type: 1 Surface Treatment: 0 Extent Of Damage: 0 Asbestos Type: 0 Score: 1 Algorithm Guideline: 10-12 High 7-9 Medium 5-6 Low 1-4 Very Low
Recommendation: No Action Necessary. Notes: No Reinspection Required.	Potential To Release Fibres: No Potential For Fibre Release	

APPENDIX 3: ASBESTOS MATERIALS FLOW CHART

FLOWCHART FOR THE MANAGEMENT OF SUSPECTED HAZARDOUS MATERIAL UNCOVERED BY SITE MANAGEMENT



APPENDIX 4: LABORATORY REPORT

esp
Environmental & Safety Professionals

ASBESTOS IDENTIFICATION REPORT

Date:	9 August 2019
ESP Job Number:	141347
Customer:	Barkcia EOHS Pty Ltd
Address:	34 Richmond Vale Road, Mulbring, NSW
Attention:	Jim Orr
Sampled From:	As received (Your ref: Moriah College)
Sampled By:	As received
Date Received:	9 August 2019
Date Analysed:	9 August 2019
Test Method:	Qualitative identification of asbestos types in bulk samples by polarised light microscopy, including dispersion staining and trace analysis, with a calculated practical detection limit of 0.01 %, using methodology in accordance with AS 4964 and ESP In-house Method No. 2.

ESP Lab No.	Sample location (if provided) and sample description	Result	Notes
168279	1: 1 – Powder (10 x 8 x 1 mm)	No asbestos detected	-
168280	2: 2 – Fibre cement material (30 x 15 x 5 mm)	No asbestos detected	-
168281	3: 3 – Fibre cement material (30 x 15 x 5 mm)	No asbestos detected Organic fibre detected	-
168282	4: 4 – Fibre cement material (30 x 20 x 5 mm)	No asbestos detected Organic fibre detected	-
168283	5: 5 – Fibre cement material (30 x 15 x 5 mm)	No asbestos detected Organic fibre detected	-
168284	6: 6 – Non-fibrous material (10 x 6 x 3 mm)	No asbestos detected	-

The results contained in this report relate only to the sample(s) submitted for testing. ESP Environmental & Safety Professionals accepts no responsibility for the representivity of the sample(s) submitted.

ilac-MRA NATA

R_180809_141347_Barkcia EOHS Pty Ltd_01_r1
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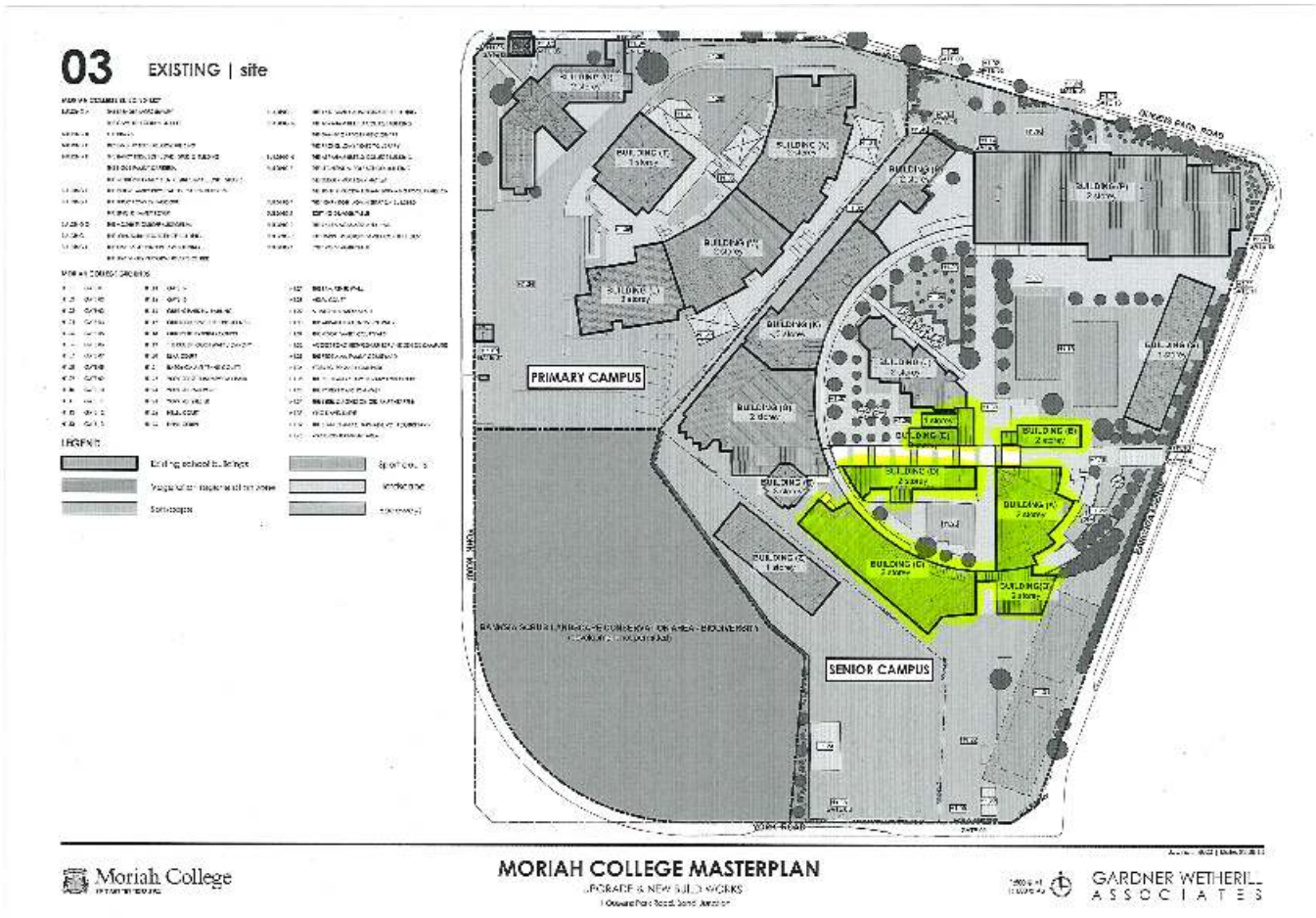
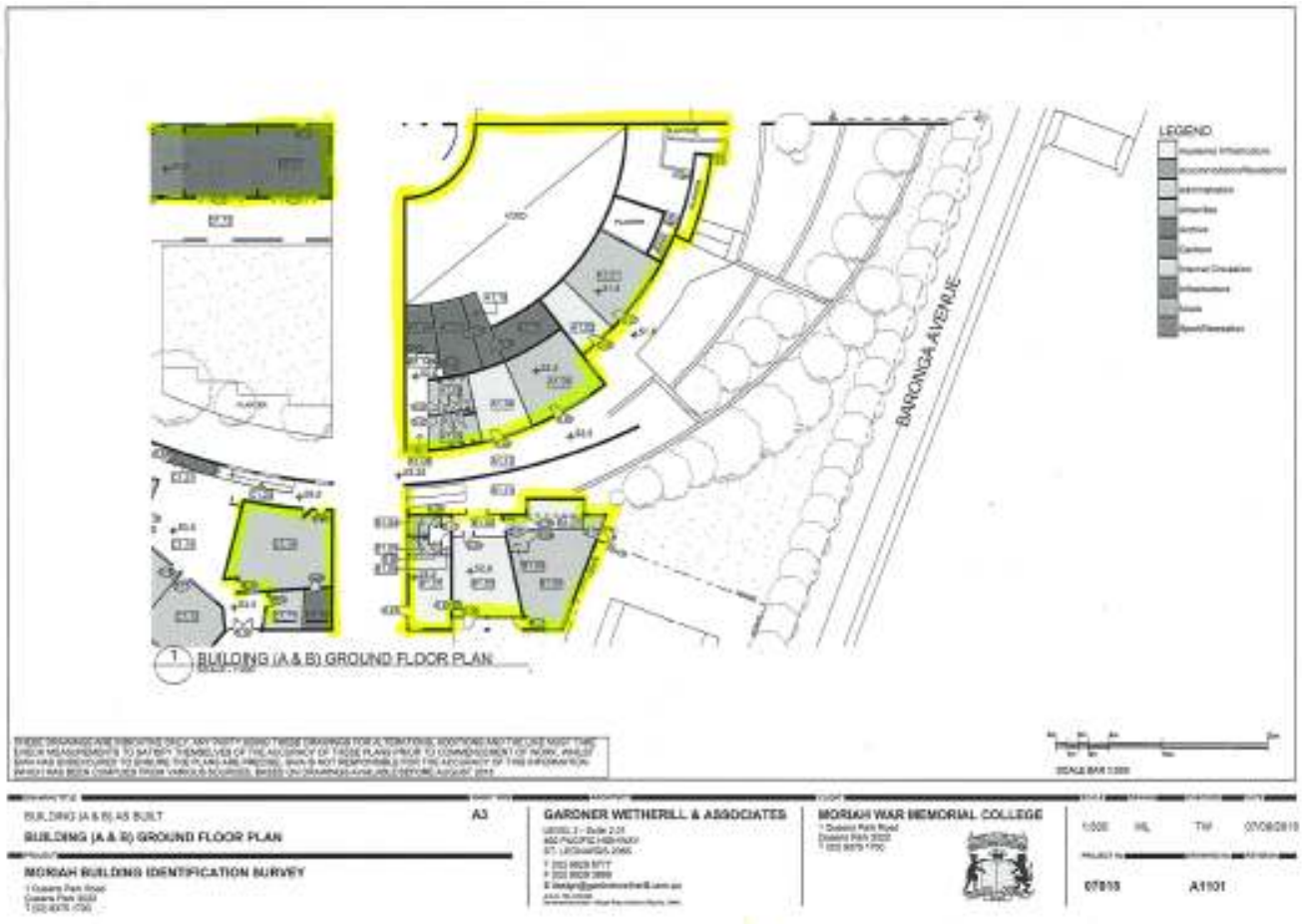
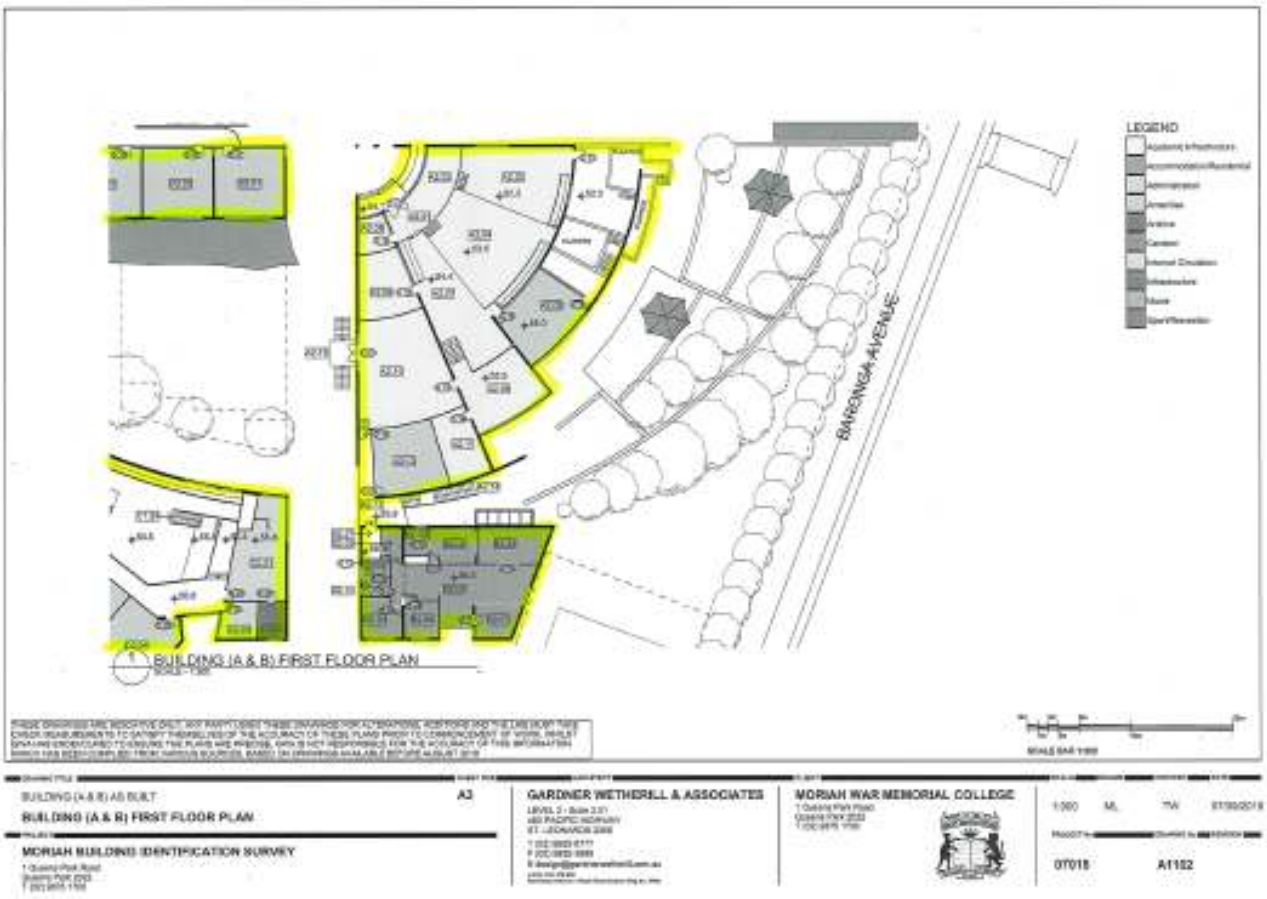
APPENDIX 5: SITE DRAWINGS


03
EXISTING | site
PRIMARY CAMPUS
SENIOR CAMPUS
Moriah College
MORIAH COLLEGE MASTERPLAN
GARDNER WETHERILL ASSOCIATES

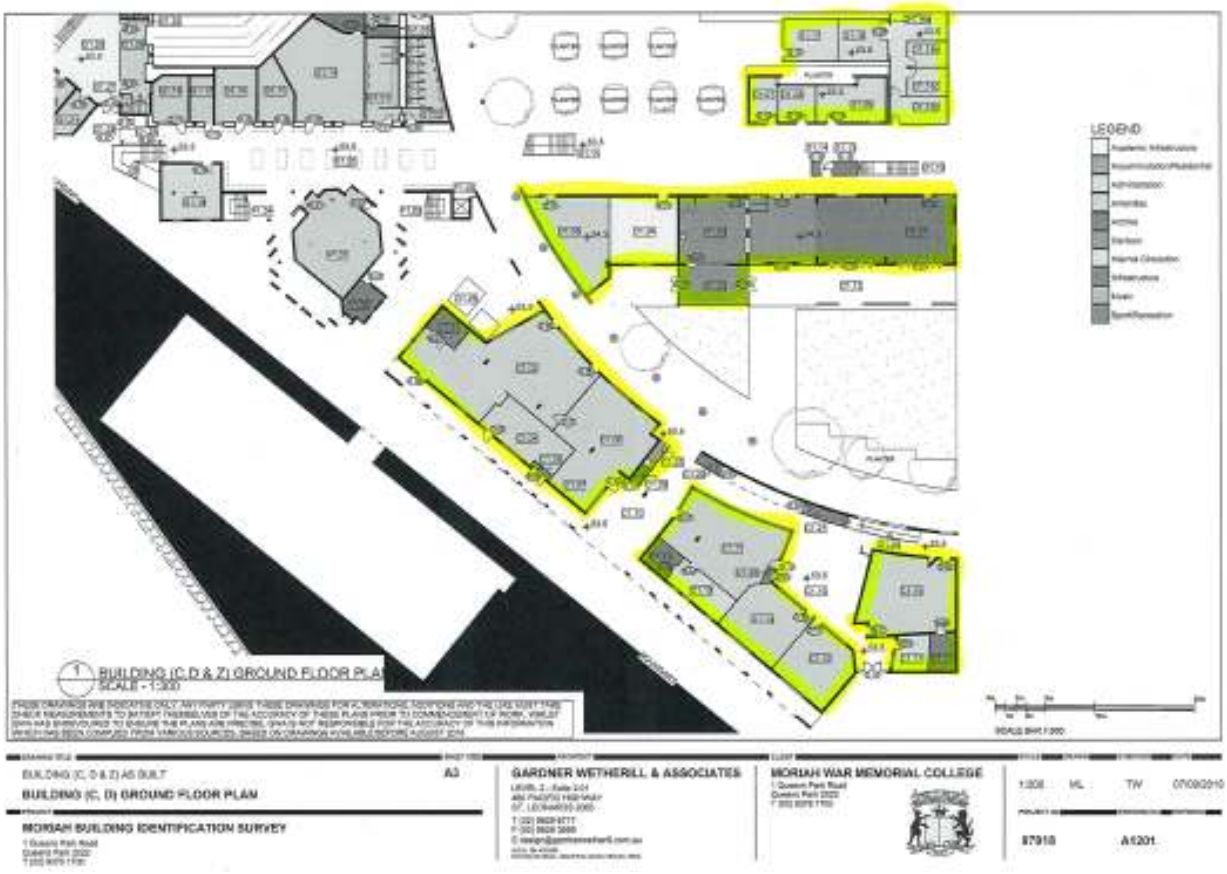
Site Plan.



Blocks A, B Ground Floor Plan.

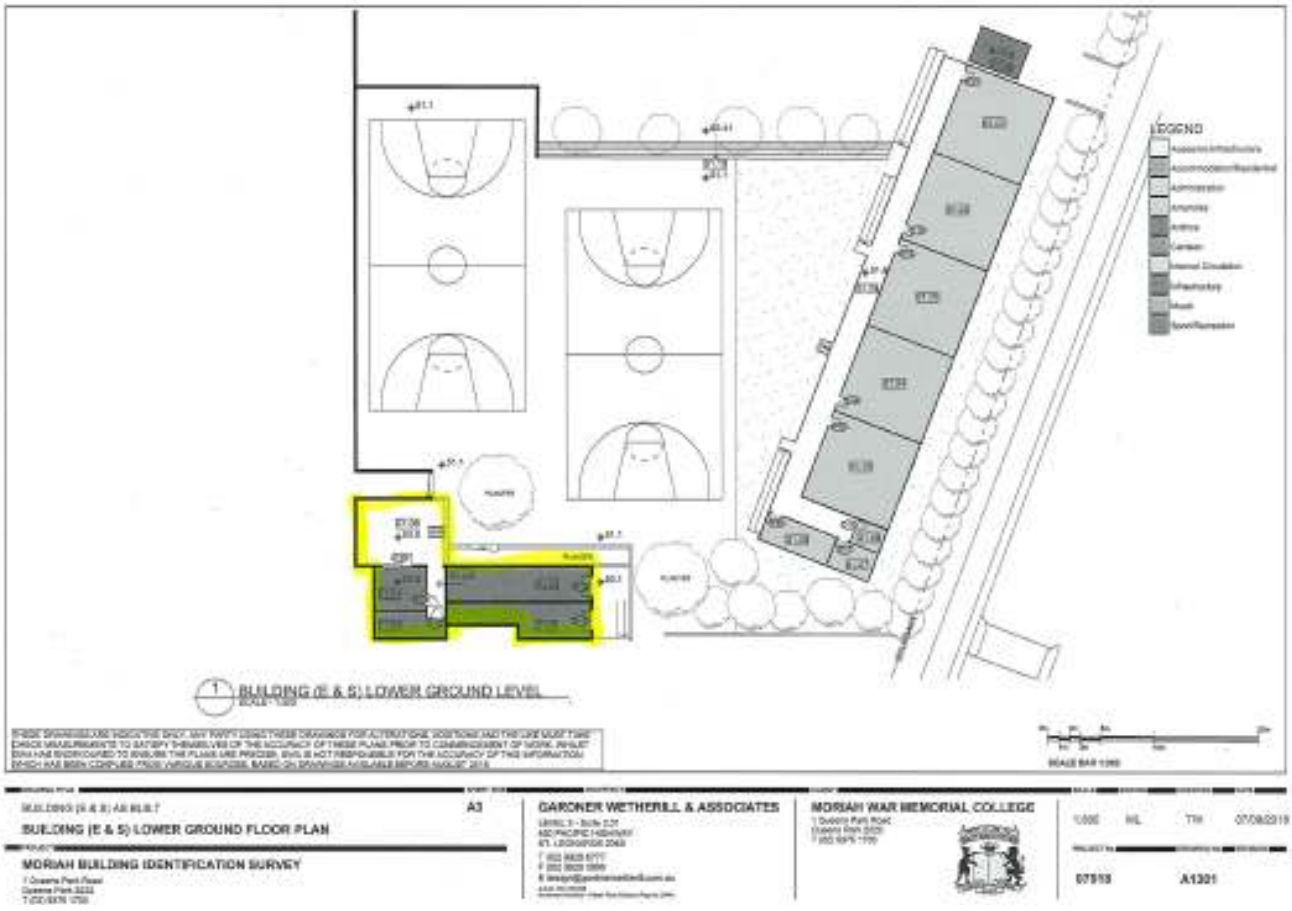


Blocks A, B First Floor Plan.

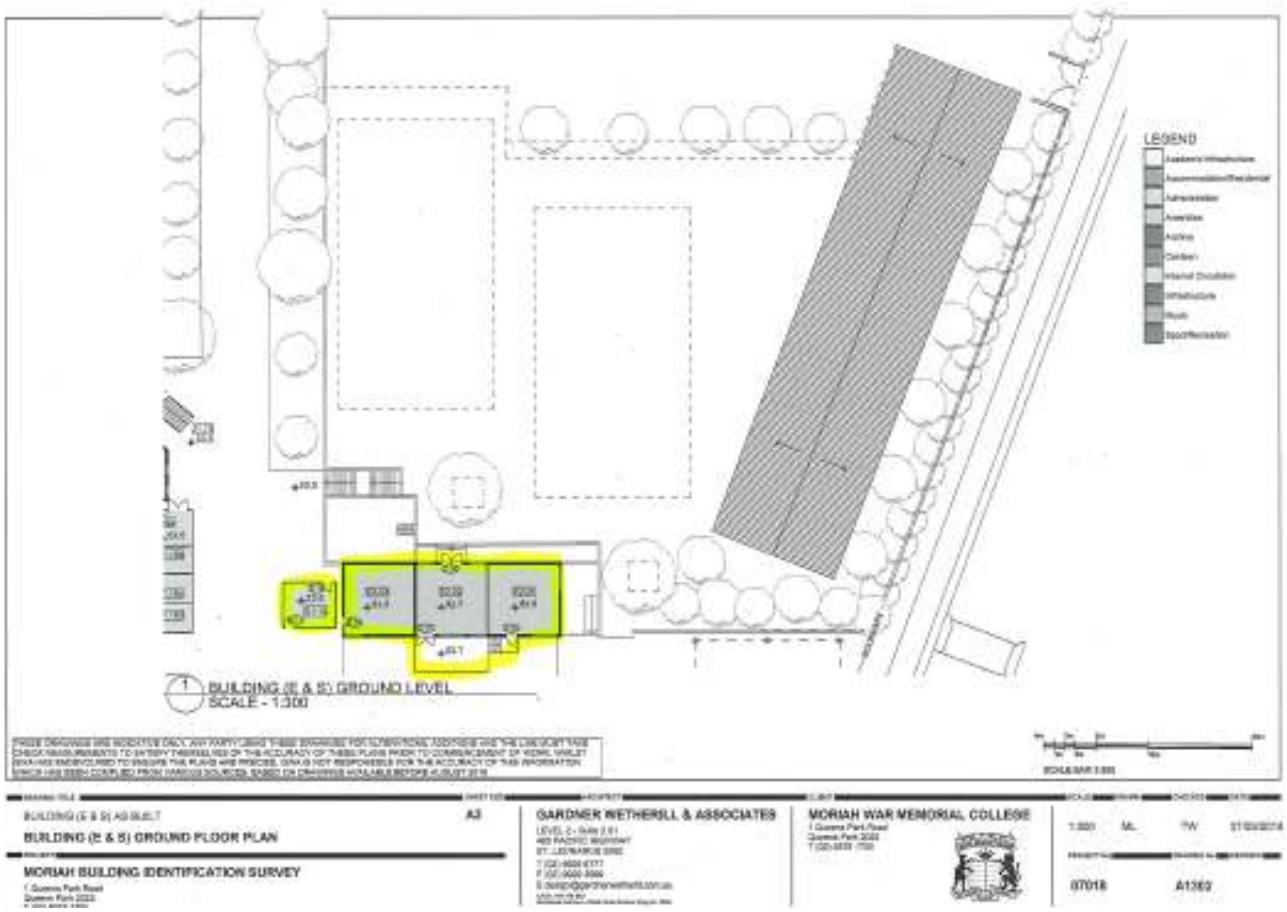


Block C, D Ground Floor Plan.

Block C, D First Floor Plan.



Block E Lower Ground Floor Plan.



Block E Ground Floor Plan.