Asbestos Refurbishment Survey

Mairangi Bay School, Galaxy Dr, Mairangi Bay, Auckland 0630

Field Work Date:	28/02/2019, 13/03/2019	Surveyor:	Lue Austin
Report Submitted:	08/03/2019	Assistant Surveyor:	Rochelle Austin
Release/Version date:			

Prepared for:	Mairangi Bay School
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Note: This report is released as a controlled document, and only the version with the most recent date is the correct report and replaces all reports issued with a previous date.

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Statement of Confidentiality

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Revision issued due to the client requesting Rooms 9, 10, 11, and 12 be surveyed, thus increasing the scope of the survey.

Contents

Executive Summary

The existence of Asbestos Materials in many buildings has created a need for management procedures to be developed. These procedures are designed to minimise health risks to building users and maintenance personnel, arising from the presence of asbestos and other 'built industry' contaminants.

The Asbestos Management Plan outlines various types of identified Asbestos Containing Materials (ACM) and its known locations on site. Management procedures and strategies are also presented throughout the document.

An officer designated as the "Nominated Officer" must be selected immediately to have authority and responsibility to control and enforce the HMP and all persons that may be entering or working in restricted areas. The Nominated Officer will also be responsible for updating the Register should any changes occur with regard to asbestos removal.

All proposed management strategies for identified asbestos materials complies with current National Codes of Practice and Workplace Health and Safety laws and legislation.

LADRA Ltd has been commissioned to undertake a Refurbishment Survey inspection to identify the presence of any asbestos in the nominated building(s) at Mairangi Bay School, Galaxy Dr, Mairangi Bay, Auckland 0630. This survey covered Rooms 1 to 12.

Note: Rooms 1 to 4 have had a totally separate building constructed over and on top of this block of classrooms. This new upper level building (Classrooms 16 to 19) was not subject to this survey.

The small shed on the Galaxy Road end of Room 12 was not included in the scope of the survey.

Site surveyed on 28 February 2019 and 13 March 2019.

Results & Findings

A more comprehensive report of this survey and the likely risk to health can be found in this report, and *Appendix 1: Asbestos Register* of this document. In summary, the following present a potential asbestos risk:

Asbestos Containing Materials (ACM)

- asbestos cement: flat sheet, downpipes, profiled (Coverline) sheeting, broken pieces underneath and beside Rooms 9 to 12.

Other materials and areas inspected which were found not to contain asbestos include the following:

- Vinyl sheeting
- Cement sheeting (Note: for Rooms 1 to 8 this material has been installed with a negative detail)

Site Specific Details

Description of Property

Site Details:	Primary School
Site Address:	Galaxy Dr, Mairangi Bay, Auckland 0630
Age Circa:	Opened 1967
Number of Buildings/Levels:	Multiple building, survey covered: • Rooms 1 to 8, these classrooms are arranged in two separate blocks consisting of Rooms 1 to 4 and Rooms 5 to 8. • Rooms 9 to 12, these relocatable classrooms are arranged as one block.
Construction Materials:	Concrete, Glass, Corrugated Iron, Cement Sheet, Plasterboard, Timber, Vinyl Sheeting and Carpet.

Understanding Asbestos Register information

Hazard groups include the following:
- Asbestos
- Lead based Paint
- Synthetic Mineral Fibres (SMF's)
- Polychlorinated biphenyls (PCB's)
- Mould

Note: Only Asbestos is covered by Ladra's IANZ accreditation

Area and volume are quantified with the following units:
- m^3 (volume calculation
- m^2 (area calculation))
- m (linear calculation)

Laboratory unique sample number. This coincides with the laboratory analysis report

Sample result
- NAD: No Asbestos Detected
- Presumed positive (All HAZMAT)
- Positive (as per analysis results)
- Unknown (area not accessed)
- N/A or -: HAZMAT not sighted / not applicable

Arrow indicating area of material in audit. Sticker shows sample number and is attached near sample location

Ladra unique sample identification number. This coincides with the sample number stick left on site

Identification	Location		Hazard Identification				Photograph
S2000xxxx	Building	Main	Hazard Group	Asbestos	Laboratory Sample number	ID902xxxx	
	Floor(s)	Ground Level	Area / Volume / Length (Estimate only)	24m	Sample result	Amosite (brown) and Chrysotile (white) asbestos	
			Product Type (or debris from product) [score]	3			
	Nature of site	Offices/ Workshop	Extent of damage / deterioration [score]	2	Labelled?	N/A	
	Int/Ext	Ext	Surface Treatment [score]	3	Re-inspection date	N/A- asbestos pipes are to be removed	
	Room	East corner main office	Potential to release fibres [total of scores]	- High			
Location	Behind pelmets running parallel to windows			Recommendation		Remove these pipes in accordance with the Approved Code of Practice - Management and Removal of Asbestos	
Description (type, damage and surface treatment)	Pipe lagging with some areas of damage and exposed areas						

SAMPLE

Building - Will specify the main building where entry was sighted.
Floor - The floor the entry was sighted on (B/G/1st/2nd).
Nature of site - What business activity occurs here?
Int/Ext - Where the entry was sighted, within the building (INT) or the outside of the building (EXT).
Room - Specific room where entry was sited from. Ideally identified as N/E/S or W, in relation

Material risk scoring assessment as per algorithm:
- **Product type** - what is it? (1, 2 or 3)
- **Extent of damage** - the more damaged the easier for fibres to be released (0, 1, 2 or 3)
- **Surface treatment** - some surface treatments will restrict fibre release (0, 1, 2 or 3)

Total Material risk score as per algorithm:

Score	Potential to release fibres
7 - 9	High
4 - 6	Medium
1 - 3	Low
0	None

Re-inspection date: When is it recommended that this area should be revisited by a competent person to re-assess material risk?

Recommendation of control measures etc. This can be based on the surveyors understanding of the client's immediate plans for the building

Labelling: Has the deposit / material been labelled for asbestos if present / assumed present?

Risk Assessment

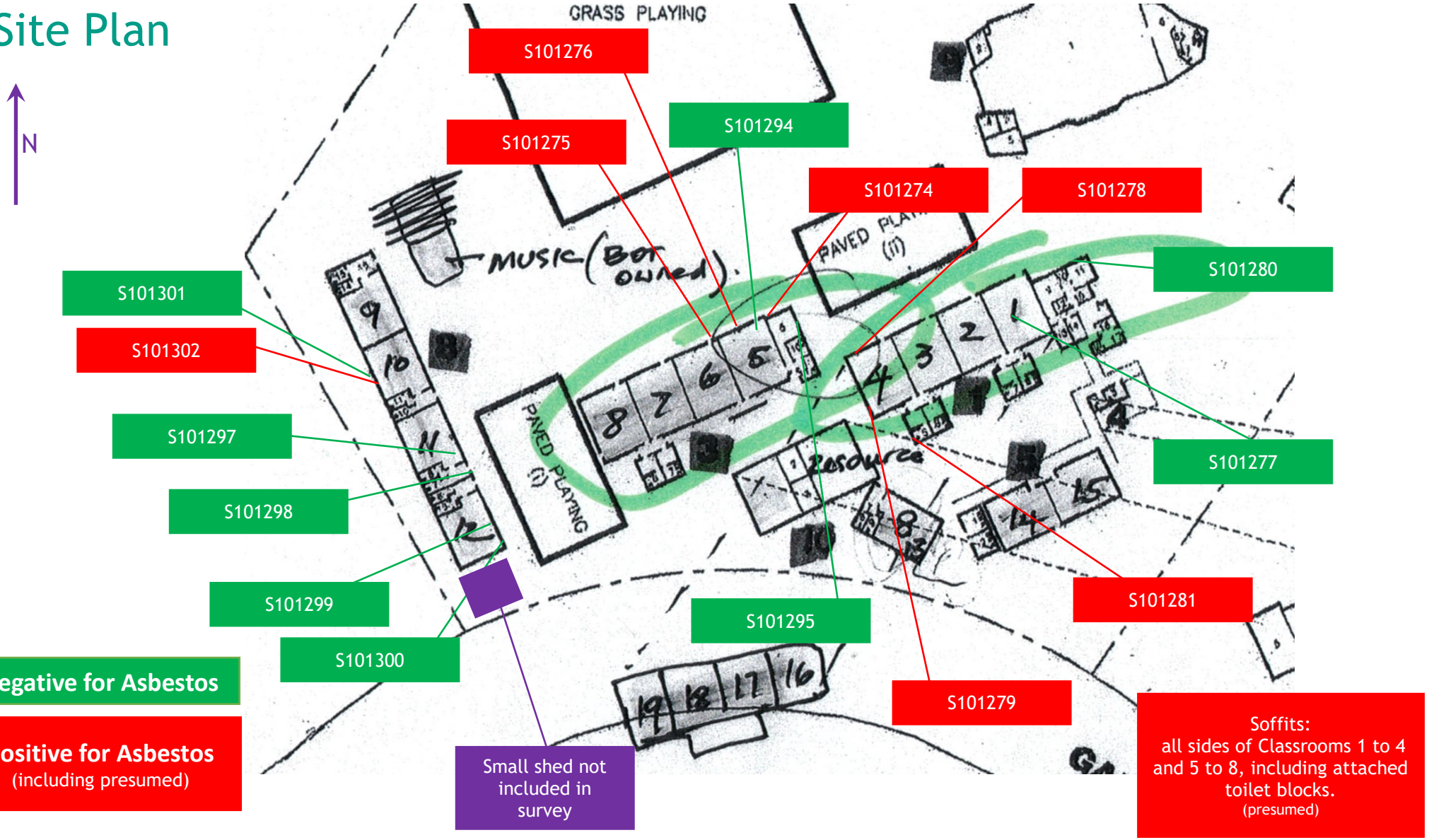
Asbestos assessment algorithm

Sample variable	Score	Examples of scores (see notes for more detail)
Product type (or debris from product)	1	Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi- rigid paints or decorative finishes, asbestos cement etc).
	2	AIB, millboards, other low-density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.
	3	Thermal insulation (eg pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.
Extent of damage/deterioration	0	Good condition: no visible damage.
	1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.
Surface treatment	0	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.
	1	Enclosed sprays and lagging, AIB (with exposed face painted or encapsulated) asbestos cement sheets etc.
	2	Unsealed AIB, or encapsulated lagging and sprays.
	3	Unsealed lagging and sprays.
Total		

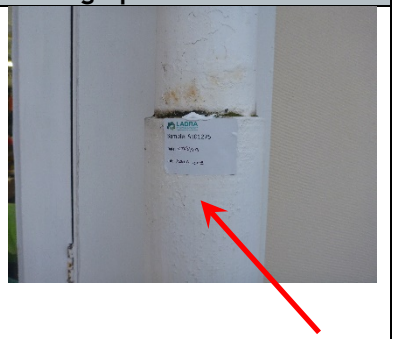
Score	Potential to release asbestos fibres
7 - 9	High
4 - 6	Medium
1 - 3	Low
N/A	Nil

Appendix 1: Site Plan and Asbestos Register

Site Plan


GRASS PLAYING
S101276
S101275
S101294
S101274
S101278
S101280
S101301
S101302
S101297
S101298
S101299
S101300
S101277
S101281
S101295
S101279
N
MUSIC (BOT owned).
PAVED PLAYING (i)
PAVED PLA (ii)
Resource
Negative for Asbestos
Positive for Asbestos
(including presumed)
Small shed not included in survey
Soffits:
all sides of Classrooms 1 to 4 and 5 to 8, including attached toilet blocks.
(presumed)

Identification	Location		Hazard Identification				Photograph
S101276	Building	5-8	Hazard Group	Asbestos	Laboratory Sample number	1 Cert No: B-19-0254	
	Floor(s)	Ground	Area	>50m2	Sample result	Chrysotile (White asbestos), Amosite (Brown/Grey asbestos), Crocidolite (Blue asbestos)	
			Product Type	1			
	Nature of site	Classroom	Extent of damage	1	Labelled?	No	
	Int/Ext	Exterior	Surface Treatment	1	Re-inspection date	TBA	
	Room	5-8	Potential to release fibres	3 - Low			
Location	North and south side of building - walls			Recommendation	Remove all cement sheeting and downpipes as Class B work in accordance with the Approved Code of Practice. All panels that remain are to be kept painted and their existence noted on the school's management plan.		
Description	Cement sheeting						

Identification	Location		Hazard Identification				Photograph
S101275	Building	5-8	Hazard Group	Asbestos	Laboratory Sample number	2 Cert No: B-19-0254	
	Floor(s)	Ground	Length	30m	Sample result	Chrysotile (White asbestos), Amosite (Brown/Grey asbestos), Crocidolite (Blue asbestos)	
			Product Type	1			
	Nature of site	School	Extent of damage	1	Labelled?	No	
	Int/Ext	Exterior	Surface Treatment	1	Re-inspection date	TBA	
	Room	5-8	Potential to release fibres	3 - Low			
Location	Around building			Recommendation	Remove all cement sheeting and downpipes as Class B work in accordance with the Approved Code of Practice. All panels that remain are to be kept painted and their existence noted on the school's management plan.		
Description	Cement downpipes. Note: the pipe extends into the ground, this detail will be replicated for all pipes on the site. Refer S101281.						

Identification	Location		Hazard Identification				Photograph
S101274	Building	5-8	Hazard Group	Asbestos	Laboratory Sample number	3 Cert No: B-19-0254	
	Floor(s)	Ground	Area	>50m^2	Sample result	Chrysotile (White asbestos), Amosite (Brown/Grey asbestos), Crocidolite (Blue asbestos)	
			Product Type	1			
	Nature of site	School	Extent of damage	1	Labelled?	No	
	Int/Ext	Exterior	Surface Treatment	1	Re-inspection date	TBA	
	Room	5-8	Potential to release fibres	3 - Low			
Location	Located on east, south and west sides of building - walls			Recommendation		Remove all cement sheeting and downpipes as Class B work in accordance with the Approved Code of Practice. All panels that remain are to be kept painted and their existence noted on the school's management plan.	
Description	'Coverline' profiled cement sheeting,						

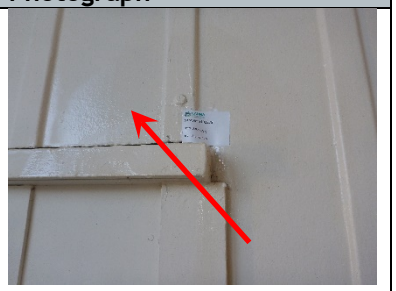
Identification	Location		Hazard Identification				Photograph
S101295	Building	5-8	Hazard Group	Asbestos	Laboratory Sample number	4 Cert No: B-19-0254	
	Floor(s)	Ground	Area	>50m^2	Sample result	No asbestos detected	
			Product Type	N/A			
	Nature of site	School	Extent of damage	N/A	Labelled?	N/A	
	Int/Ext	Exterior	Surface Treatment	N/A	Re-inspection date	N/A	
	Room	5	Potential to release fibres	Nil			
Location	Located on east, south and west sides of building - walls			Recommendation	As there is a mix of asbestos and non-asbestos sheets attached to the building definitive confirmation is needed to confirm that any sheets do not contain asbestos if they are to be treated as non-containing.		
Description	Flat Sheet.						

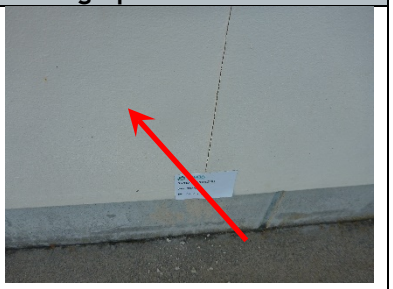
Identification	Location		Hazard Identification				Photograph
S101294	Building	5-8	Hazard Group	Asbestos	Laboratory Sample number	5 Cert No: B-19-0254	
	Floor(s)	Ground	Area	320m^2	Sample result	No asbestos detected	
			Product Type	N/A			
	Nature of site	School	Extent of damage	N/A	Labelled?	N/A	
	Int/Ext	Interior	Surface Treatment	N/A	Re-inspection date	N/A	
	Room	5-8	Potential to release fibres	Nil			
Location	Floor of all rooms			Recommendation	N/A		
Description	Vinyl tiles and adhesive in classrooms						

Identification	Location		Hazard Identification				Photograph
S101277	Building	1-4	Hazard Group	Asbestos	Laboratory Sample number	6 Cert No: B-19-0254	
	Floor(s)	Ground	Area	320m^2	Sample result	No asbestos detected	
			Product Type	N/A			
	Nature of site	School	Extent of damage	N/A	Labelled?	N/A	
	Int/Ext	Interior	Surface Treatment	N/A	Re-inspection date	N/A	
	Room	1-4	Potential to release fibres	Nil			
Location	Interior floors Rooms 1-4			Recommendation	N/A		
Description	Vinyl tiles and adhesive						

Identification	Location		Hazard Identification				Photograph
S101278	Building	1-4	Hazard Group	Asbestos	Laboratory Sample number	7 Cert No: B-19-0254	
	Floor(s)	Ground	Area	>50m^2	Sample result	Chrysotile (White asbestos), Amosite (Brown/Grey asbestos), Crocidolite (Blue asbestos)	
			Product Type	1			
	Nature of site	School	Extent of damage	1	Labelled?	No	
	Int/Ext	Exterior	Surface Treatment	1	Re-inspection date	TBA	
	Room	1-4	Potential to release fibres	3 - Low			
Location	North side of building - wall			Recommendation	Remove all cement sheeting and downpipes as Class B work in accordance with the Approved Code of Practice. All panels that remain are to be kept painted and their existence noted on the school's management plan.		
Description	Cement Sheet						

Identification	Location		Hazard Identification				Photograph
Presumed	Building	1-4	Hazard Group	Asbestos	Laboratory Sample number	Presumed	
	Floor(s)	Ground	Area	>20m^2	Sample result	Chrysotile (White asbestos), Amosite (Brown/Grey asbestos), Crocidolite (Blue asbestos)	
			Product Type	1			
	Nature of site	School	Extent of damage	1	Labelled?	No	
	Int/Ext	Exterior	Surface Treatment	1	Re-inspection date	TBA	
	Room	1-4	Potential to release fibres	3 - Low			
Location	Soffits. On both buildings and on all soffits, including attached toilet blocks.			Recommendation		Remove all cement sheeting and downpipes as Class B work in accordance with the Approved Code of Practice. All panels that remain are to be kept painted and their existence noted on the school's management plan.	
Description	Cement Sheet						

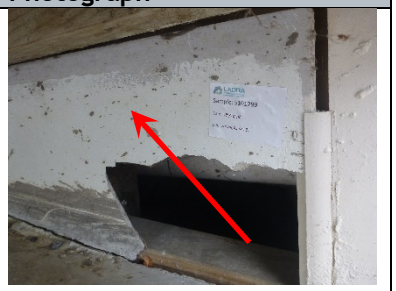
Identification	Location		Hazard Identification				Photograph
S101279	Building	1-4	Hazard Group	Asbestos	Laboratory Sample number	8 Cert No: B-19-0254	
	Floor(s)	Ground	Area	>50m^2	Sample result	Chrysotile (White asbestos), Amosite (Brown/Grey asbestos), Crocidolite (Blue asbestos)	
			Product Type	1			
	Nature of site	School	Extent of damage	1	Labelled?	No	
	Int/Ext	Exterior	Surface Treatment	1	Re-inspection date	TBA	
	Room	1-4	Potential to release fibres	3 - Low			
Location	Located on east, south and west sides of building - walls			Recommendation		Remove all cement sheeting and downpipes as Class B work in accordance with the Approved Code of Practice. All panels that remain are to be kept painted and their existence noted on the school's management plan.	
Description	'Coverline' profiled cement sheeting						

Identification	Location		Hazard Identification				Photograph
S101280	Building	1-4	Hazard Group	Asbestos	Laboratory Sample number	9 Cert No: B-19-0254	
	Floor(s)	Ground	Area	>50m^2	Sample result	No asbestos detected	
			Product Type	N/A			
	Nature of site	School	Extent of damage	N/A	Labelled?	N/A	
	Int/Ext	Exterior	Surface Treatment	N/A	Re-inspection date	N/A	
	Room		Potential to release fibres	Nil			
Location	Located on all sides of building - walls			Recommendation	As there is a mix of asbestos and non-asbestos sheets attached to the building definitive confirmation is needed to confirm that any sheets do not contain asbestos if they are to be treated as non-containing.		
Description	Flat sheet						

Identification	Location		Hazard Identification				Photograph
S101281	Building	1-4	Hazard Group	Asbestos	Laboratory Sample number	10 Cert No: B-19-0254	
	Floor(s)	Ground	Length	20m	Sample result	Chrysotile (White asbestos), Amosite (Brown/Grey asbestos), Crocidolite (Blue asbestos)	
			Product Type	1			
	Nature of site	School	Extent of damage	1	Labelled?	No	
	Int/Ext	Exterior	Surface Treatment	1	Re-inspection date	TBA	
	Room	1-4	Potential to release fibres	3 - Low			
Location	Around building				Recommendation	Remove all cement sheeting and downpipes as Class B work in accordance with the Approved Code of Practice. All panels that remain are to be kept painted and their existence noted on the school's management plan.	
Description	Cement downpipes. Note: • the pipe extends into the concrete, this detail will be replicated for all pipes on the site. Refer S101275. • this particular pipe has been sheared at the base, remedial work is required to seal all the edges, a temporary PVA seal was placed at the sample location.						

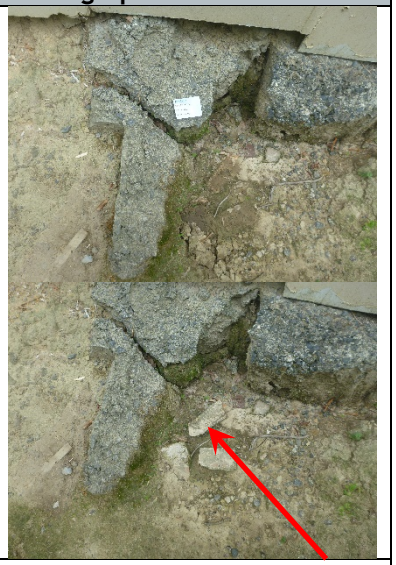
Identification	Location		Hazard Identification				Photograph
S101297	Building	9-12	Hazard Group	Asbestos	Laboratory Sample number	1 Cert No: B-19-0391	
	Floor(s)	Ground	Area	>100m^2	Sample result	No asbestos detected	
			Product Type	N/A			
	Nature of site	School	Extent of damage	N/A	Labelled?	N/A	
	Int/Ext	Exterior	Surface Treatment	N/A	Re-inspection date	N/A	
	Room		Potential to release fibres	Nil			
Location	Baseboard, room 11 entrance			Recommendation	N/A		
Description	Cement sheeting						

Identification	Location		Hazard Identification				Photograph
S101298	Building	9-12	Hazard Group	Asbestos	Laboratory Sample number	2 Cert No: B-19-0391	
	Floor(s)	Ground	Area	>100m^2	Sample result	No asbestos detected	
			Product Type	N/A			
	Nature of site	School	Extent of damage	N/A	Labelled?	N/A	
	Int/Ext	Exterior	Surface Treatment	N/A	Re-inspection date	N/A	
	Room		Potential to release fibres	Nil			
Location	Wall cladding, room 11 entrance			Recommendation			
Description	Cement sheeting						

Identification	Location		Hazard Identification				Photograph
S101299	Building	9-12	Hazard Group	Asbestos	Laboratory Sample number	3 Cert No: B-19-0391	
	Floor(s)	Ground	Area	>100m^2	Sample result	No asbestos detected	
			Product Type	N/A			
	Nature of site	School	Extent of damage	N/A	Labelled?	N/A	
	Int/Ext	Exterior	Surface Treatment	N/A	Re-inspection date	N/A	
	Room		Potential to release fibres	Nil			
Location	Baseboard room 12 entrance			Recommendation	N/A		
Description	Cement sheeting						

Identification	Location		Hazard Identification				Photograph
S101300	Building	9-12	Hazard Group	Asbestos	Laboratory Sample number	4 Cert No: B-19-0391	
	Floor(s)	Ground	Area	>100m^2	Sample result	No asbestos detected	
			Product Type	N/A			
	Nature of site	School	Extent of damage	N/A	Labelled?	N/A	
	Int/Ext	Exterior	Surface Treatment	N/A	Re-inspection date	N/A	
	Room	12	Potential to release fibres	Nil			
Location	Gable end, Galaxy Drive end of building			Recommendation	N/A		
Description	Cement sheeting						

Identification	Location		Hazard Identification				Photograph
S101301	Building	9-12	Hazard Group	Asbestos	Laboratory Sample number	5 Cert No: B-19-0391	
	Floor(s)	Ground	Area	>100m^2	Sample result	No asbestos detected	
			Product Type	N/A			
	Nature of site	School	Extent of damage	N/A	Labelled?	N/A	
	Int/Ext	Exterior	Surface Treatment	N/A	Re-inspection date	N/A	
	Room	10	Potential to release fibres	Nil			
Location	Underfloor wall cladding, back of room 10			Recommendation	N/A		
Description							

Identification	Location		Hazard Identification				Photograph
S101302	Building	9-12	Hazard Group	Asbestos	Laboratory Sample number	6 Cert No: B-19-0391	
	Floor(s)	Ground	Area	unknown	Sample result	Chrysotile (White asbestos)	
			Product Type	1			
	Nature of site	School	Extent of damage	2	Labelled?	No	
	Int/Ext	Exterior	Surface Treatment	1	Re-inspection date	TBA	
	Room		Potential to release fibres	4 - Low			

Location	Rear of room 10	Recommendation	Remove all broken pieces of asbestos cement sheeting as Class B work in accordance with the Approved Code of Practice. It is recommended that the soil is assessed to determine there are no buried remnants of this material. Note: Access to the underfloor area of Rooms 9 to 12 was not possible, it is highly likely that more of this material will be located under these Rooms.
Description	Broken cement sheet on ground		

Appendix 2: Site Photography

Description - Rooms 1 to 8	Photograph
View of Rooms 5 to 8	
View of Rooms 5 to 8 Note: • timber joinery • flat sheet asbestos cement soffits and wall cladding under windows	
View of Rooms 1 to 4 – ground floor Note: • Second level (Classrooms 16 to19) is a totally separate building, and supported by external steel (grey) columns. • Second level not subject to survey • Rooms 1 to 4 are identical to Rooms 5 to 8.	

Description - Rooms 1 to 8	Photograph
View of interface between the building located above Rooms 1 to 4. Note: • Original roof line of Rooms 1 to 4 remains, infill area covered with cement sheeting. This sheeting was not accessed.	
Typical view inside Classroom. Note: • All classrooms (1 – 8) are identical • Pinex ceilings • timber lined walls	
Typical view inside Classroom. Note: • All classrooms (1 – 8) are identical • unlagged hot water heating • timber lined walls	

Description - Rooms 1 to 8	Photograph
Typical view inside Classroom. Note: • All classrooms (1 – 8) are identical • Modern vinyl • Carpet tile flooring	
Typical classroom sink with modern plumbing	
Typical toilet in Classroom blocks. Note: • Modern vinyl • Modern partitions • Modern plumbing	

Description - Rooms 9 to 12	Photograph
View of Rooms 9 – 12 Note: • Steel roof • Aluminium window joinery • Cement sheet cladding	
View of Rooms 9 – 12 Note: • Steel roof • Aluminium window joinery • Cement sheet cladding • Small shed outside scope of survey	
Small shed that was outside the scope of the survey.	

Description - Rooms 9 to 12	Photograph
Typical stormwater plumbing and decking detail of Rooms 9 to 12. Note: • Steel roof • Clearlite roofing over decking • Cement sheet cladding • PVC pipes	
Rear of Rooms 9 – 12. Note: • Underfloor area was not accessed	

Description - Rooms 9 to 12	Photograph
Typical detail between rooms, each Room is its own separate building.	
Door to under floor area of Rooms 9 – 12, this was screwed shut.	
Typical toiletry detail. Note: • **modern vinyl** • **modern plumbing** • **modern partitions**	

Description - Rooms 9 to 12	Photograph
Modern carpet over timber floors	
Typical classroom detail. Note: • timber ceilings • timber lined walls	
Typical sink in classroom, note modern plumbing	

Description - Rooms 9 to 12	Photograph
Typical timber decking	
Typical aluminium joinery showing rubber gaskets holding window glass in place	
Modern switchboard	

Appendix 3: Analysis Reports

FocusAnalytics

ACCREDITED LABORATORY
ACCREDITATION Nº: 1308

Certificate of Analysis

Client: Ladra Ltd
Client Contact: Luke Austin
Tel: 021 882 533
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Auckland 1051

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Penrose
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Tel: +64 (0) 9 525 0568

Site: Mairangi Bay School, Galaxy Dr, Mairangi Bay, Auckland

Date sample(s) received: 28/02/2019

Date sample(s) analysed: 28/02/2019

Samples taken by: Luke Austin

Certificate / Job Number: B-19-0254

Lab ID	Sample ID	Sample Details	Sample type	Size/weight cm /g	Fibres Identified	Asbestos present
1	S101274	Room 5-8 , exterior walls cladding	Cement product	Small	CHR, AMO, CRO, ORF	YES
2	S101275	Room 5-8 downpipes	Cement product	Small	CHR, AMO, CRO, ORF	YES
3	S101276	Room 5-8 exterior walls cladding	Cement product	Small	CHR, AMO, CRO, ORF	YES
4	S101295	Room 5-8 exterior walls cladding	Cement product	Small	ORF, NAD	NO
5	S101294	Room 5 floor covering	Vinyl	Small	ORF, NAD	NO
6	S101277	Room 1 floor covering	Vinyl	Small	ORF, NAD	NO
7	S101278	Room 1-4 wall cladding	Cement product	Medium	CHR, AMO, CRO, ORF	YES
8	S101279	Room 1-4 wall cladding	Cement product	Medium	CHR, AMO, CRO, ORF	YES
9	S101280	Room 1-4 wall cladding	Cement product	Small	ORF, NAD	NO
10	S101281	Room 1-4 downpipe	Cement product	Medium	CHR, AMO, CRO, ORF	YES

Fibre Identification Key:

CHR – Chrysotile (White Asbestos)
AMO – Amosite (Brown / Grey Asbestos)
CRO – Crocidolite – (Blue Asbestos)
UMF – Unknown Mineral Fibre
ORF – Organic Fibre
SMF – Synthetic Mineral Fibre
NFD – No Fibres Detected
NAD – No Asbestos Detected

Analysis Methods:

1. Samples submitted have been analysed to determine the presence of asbestos using low powered stereo microscopy followed by polarised light microscopy including dispersion staining techniques as documented in AS 4964-2004 and in company procedures TP04 Technical Procedure for Qualitative identification of asbestos in bulk samples
2. Any opinions and interpretation of test results fall outside the scope of accreditation.
3. The laboratory is not responsible for sampling errors when we have not taken the sample.
4. This certificate should be read in its entirety and shall not be reproduced except in full, without written approval of the laboratory.

Analyst Name: Ricky Singh

Analyst Signature:

Reviewed By KTP: Ian Greaves

Reviewer Signature:

Author: M Anthony	MD 17	Issue (5)	January 2019	Page 1 of 1

FocusAnalytics

ilac-MRA IANZ
ACCREDITED LABORATORY
ACCREDITATION Nº: 1308

Certificate of Analysis

Client: Ladra Ltd
Client Contact: Luke Austin
Tel: 021 882 533
Email: l.austin@ladra.co.nz
Address: 8b Wapiti Avenue, Epsom
Auckland 1051

Focus Analytics Ltd
Unit 3
57 Walls Road
Penrose
Auckland 1061
Tel: +64 (0) 9 525 0568

Site: Mairangi Bay School, Galaxy Dr, Mairangi Bay

Date sample(s) received: 14/03/2019

Date sample(s) analysed: 14/03/2019

Samples taken by: Luke Austin

Certificate / Job Number: B-19-0391/ J2019013

Lab ID	Sample ID	Sample Details	Sample type	Size/weight cm /g	Fibres Identified	Asbestos present
1	S101297	Room11, baseboard	Cement	Small	ORF, NAD	NO
2	S101298	Room 11, wall cladding	Cement	Medium	ORF, NAD	NO
3	S101299	Room 12, baseboard	Cement	Medium	ORF, NAD	NO
4	S101300	Room 12, gable cladding	Cement	Large	ORF, NAD	NO
5	S101301	Room 10, wall cladding	Cement	Medium	ORF, NAD	NO
6	S101302	Room 10, broken pieces	Cement	Very Large	CHR, ORF	YES

Fibre Identification Key:

CHR – Chrysotile (White Asbestos)
AMO – Amosite (Brown / Grey Asbestos)
CRO – Crocidolite – (Blue Asbestos)
UMF – Unknown Mineral Fibre
ORF – Organic Fibre
SMF – Synthetic Mineral Fibre
NFD – No Fibres Detected
NAD – No Asbestos Detected

Analysis Methods:

1. Samples submitted have been analysed to determine the presence of asbestos using low powered stereo microscopy followed by polarised light microscopy including dispersion staining techniques as documented in AS 4964-2004 and in company procedures TP04 Technical Procedure for Qualitative identification of asbestos in bulk samples
2. Any opinions and interpretation of test results fall outside the scope of accreditation.
3. The laboratory is not responsible for sampling errors when we have not taken the sample.
4. This certificate should be read in its entirety and shall not be reproduced except in full, without written approval of the laboratory.

Analyst Name: Ian Greaves

Analyst Signature:

Reviewed By KTP: Ricky Singh

Reviewer Signature:

Appendix 4: Disclaimer & Limitations

The management and staff of LADRA Ltd have taken every feasible action to ensure that the quality and integrity of this report is true to type. However due to the scientific basis of analytical results, LADRA Ltd does not guarantee the completeness or accuracy of information gathered and presented in this report. The information and knowledge in this report should not be relied on in its entirety. Any commercial decisions made should be done in consultation with other documentation, and advice not purely from this document.

LADRA Ltd will provide written and verbal recommendation pursuant to engaged services, however at all times prior, during and following this is in good faith, as such LADRA Ltd's servants, employees and agents are not subject to any liability whatsoever (whether by reason of lack of due care and attention or otherwise) and the client releases and discharges LADRA Ltd and its servants, agents or employees from all actions, suits claims, demands, causes of actions, costs and expenses, legal equitable under statute and otherwise and all other liabilities of any nature (whether or not the parties were or could have been aware of them) which the client may have; or but for this disclaimer, could or might have had against LADRA Ltd and its servants, agents or employees in any way related to the information provided, or the circumstances recited in this disclaimer or allegations arising out of or in any way related to the information provided to the LADRA Ltd's client.

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

The following should also be noted:

1. Ladra has IANZ accreditation covering the following work:
   Identification of potential Asbestos Containing Materials (ACMs)
      Management Surveys
      Domestic
      Commercial
      Industrial
   Refurbishment and Demolition Surveys
      Domestic
      Commercial
      Industrial
   Soil
   Sampling for Verification of Asbestos
   Evaluation of survey results (including the provision of advice about the management of risks and priority assessment)
   Re-inspection of identified or suspected Asbestos Containing Materials (ACMs) in surveyed premises
   Air Monitoring and Clearance

Issuing Clearance Certificates following removal of Asbestos Containing Materials (ACMs).

2. All other work, while being executed in accordance with the appropriate Regulations, standards and guidelines and undertaken in a competent and professional manner is not covered by this accreditation.
3. While the survey has attempted has attempted to locate the asbestos containing materials within the site, it should be noted that the review was a visual inspection and a limited sampling programme was conducted. Representative samples of suspect asbestos materials collected for analysis. Other asbestos materials, of similar appearance are assumed to have a similar content.
4. Not all suspected asbestos materials were sampled. Only those asbestos materials, that were physically accessible could be located and identified. Therefore, it is possible that asbestos materials, which may be concealed within inaccessible areas/voids, may not have been located during the audit. Such inaccessible areas fall into a number of categories, including but not restricted to:
    - In set ceilings or wall cavities.
    - Those areas accessible only by dismantling equipment or performing minor localised demolition works.
    - Service shafts, ducts etc., concealed within the property structure.
    - Energised services, gas, electrical, pressurised vessel and chemical lines.
    - Voids or internal areas of machinery, plant, equipment, air-conditioning ducts etc.
    - Totally inaccessible areas such as voids and cavities created and intimately concealed within the property structure. These voids are only accessible during major demolition works.
    - Height restricted areas.
    - Areas deemed unsafe or hazardous at time of audit.
5. This report relates only to the identification of hazardous materials used in the construction of the property and does not include the identification of dangerous goods, or hazardous substances in the form of chemicals used, stored or manufactured with the property or plant.
6. Only minor destructive auditing and sampling techniques were employed to gain access to those areas documented in *Appendix 1: Asbestos Register*. Consequently, without substantial demolition of the property, it is not possible to guarantee that every source of asbestos has been detected. During normal site works care should be exercised when entering any previously inaccessible areas or areas mentioned above and it is imperative that work cease pending further sampling if materials suspected of containing asbestos or unknown materials are encountered. Therefore, during any refurbishment or demolition works, further investigations and assessment may be required should any suspect material be observed in previously inaccessible or areas not fully inspected previously i.e. carpeted floors.
7. This report is not intended to be used for the purposes of tendering, programming of works, refurbishment works or demolition works unless used in conjunction with a specification detailing the extent of the works. To ensure its contextual integrity, the report must be read in its entirety and should not be copied, distributed or referred to in part only.

Appendix 5: Audit Methodology

The survey was conducted to identify the presence and condition of Asbestos. Minor destructive sampling techniques were undertaken where practicable.

Asbestos - Auditing was conducted in accordance with the WorkSafe Good Practice Guideline '*Conducting Asbestos Surveys, October 2016*'. This document specifies the types of surveys that can be undertaken as quoted below:

> ***"5.1 TYPES OF SURVEY***
> *These guidelines describe three different surveys:*
>
> - *management surveys*
> - *refurbishment surveys*
> - *demolition surveys.*
>
> *The type of survey required will vary during the premises' lifespan, and several may be needed over time.*
>
> *A management survey is recommended during normal occupation and use of the building to make sure the existing asbestos and ACM is being managed.*
>
> *A refurbishment or demolition survey may be necessary when the building (or part of it) is going to be refurbished or demolished.*
>
> *At larger premises, a mixture of survey types may be appropriate. For example, a boiler house due for demolition will require a demolition survey, while offices at the same site may have a management survey. In later years, refurbishment surveys may be required in rooms or floors which are being upgraded.*
>
> *In situations where there are large numbers of internal units (eg hotel rooms) only particular rooms may be upgraded, such as kitchens, bathrooms and bedrooms. Refurbishment surveys will only be necessary in these locations.*
>
> *It is important that the client PCBU and the asbestos surveyor know exactly what type of survey will be carried out and where. Therefore, there should be a clear statement and record of the type of survey to be carried out, including the reasons for selecting that type of survey, and where it will be carried out."* http://construction.worksafe.govt.nz/assets/guides/conducting-asbestos-surveys/conducting-asbestos-surveys.pdf

This audit report was developed by conducting a comprehensive audit of this site in order to identify the existence of any asbestos materials. It is to be read in conjunction with the Asbestos Register to gain a representative perspective of asbestos maintenance requirements. Analysis was undertaken in accordance with the guidelines and standards as prescribed by International Accreditation New Zealand (IANZ) and Australian Standard AS 4964:2004.

Areas not accessed

We refer you to the following areas of the asbestos register as they were not accessed and therefore we cannot rule out the possibility of the presence of asbestos.

- In set ceilings or wall cavities.
- Those areas accessible only by dismantling equipment or performing minor localised demolition works.
- Service shafts, ducts etc., concealed within the property structure.
- Energised services, gas, electrical, pressurised vessel and chemical lines.
- Voids or internal areas of machinery, plant, equipment, air-conditioning ducts etc.
- Totally inaccessible areas such as voids and cavities created and intimately concealed within the property structure. These voids are only accessible during major demolition works.
- Height restricted areas, including the roof of Classrooms 5 to 8 and Classrooms 9 to 12
- The ceiling space between Classrooms 1 to 4, and the new upper level building (Classrooms 16 to 19).
- The underfloor space of Classrooms 9 to 12.

Appendix 6: Register of Asbestos Materials Identified

The results of the survey inspection are listed in the **Asbestos Register** (See **Appendix 1**). Selected samples of suspected asbestos materials were scientifically tested for Asbestos by an IANZ Accredited Laboratory. Refer to **Appendix 8** regarding acronyms used in the Asbestos Register.

1. **The Asbestos Register provides the following information on Asbestos materials identified or presumed in the workplace:**
   a. Date of identification/inspection and risk assessment and details on person performing inspection and risk assessment
   b. Location and building reference code, material types, condition, type of asbestos material identified.
   c. Asbestos means the asbestiform varieties of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals, including the following:
      (i) actinolite asbestos
      (ii) grunerite (or amosite) asbestos (brown)
      (iii) anthophyllite asbestos
      (iv) chrysotile asbestos (white)
      (v) crocidolite asbestos (blue)
      (vi) tremolite asbestos
      (vii) a mixture that contains 1 or more of the minerals referred to in paragraphs (i) to (vi)
   d. Areas not accessed. Photos identifying the location
   e. Photos corresponding to inspected areas
2. **The Asbestos Register must be made available to the following people:**
   a. Employees, contract workers and their representatives
   b. Any person removing asbestos.
   c. Any person engaged to perform work that may disturb the asbestos.
   d. Any person/s that may be exposed whilst visiting the premises.

Appendix 7: Glossary of Terminology

Accredited Laboratory Defines a testing laboratory accredited by IANZ (International Accreditation New Zealand).

ACD ACD is dust or debris that has settled within a workplace and it is, or assumed to be, contaminated with asbestos.

ACM Asbestos Containing Material (ACM) means any material, object, product or debris containing asbestos.

Air Monitoring Refers to airborne asbestos air sampling to assist in assessing exposure and the effectiveness of control measures. This includes exposure monitoring, clearance monitoring and control monitoring

Asbestos Defined as the fibrous form of mineral silicates belonging to the serpentine and amphibole groups of rock-forming minerals, including actinolite, amosite (brown or grey asbestos), crocidolite (blue asbestos), chrysotile (white asbestos), tremolite, or any mixture containing one or more of these.

Asbestos Assessor An Asbestos Assessor is an individual who provides, has provided or proposes to provide an asbestos assessment service following the clearance of asbestos from an area.

An asbestos assessment service is the doing the following work:

a) confirming the asbestos has been removed, both visually and if required via surface samples.
b) air monitoring for asbestos (if required);
c) issuing a Clearance Certificate confirming the area is safe to reoccupy in accordance with the Health and Safety at Work (Asbestos) Regulations 2016.

Asbestos Removalist An employee whose business or undertaking includes asbestos removal work or a self-employed person whose work includes asbestos removal work.

Asbestos Work Area. The immediate area in which work on ACM is taking place. The boundaries off the work area must be determined by a risk assessment.

Clearance Inspection Refers to an inspection carried out by an asbestos assessor, to verify that an asbestos work area is safe to be returned to normal use after work involving the disturbance of ACM has taken place. A clearance inspection must include a visual inspection, and may also include clearance monitoring and/or settled dust sampling.

Clearance Monitoring Air monitoring using static or positional samples to measure the level of airborne asbestos in an area following work on ACM. An area is cleared when the level of airborne asbestos fibres is measured as being below 0.01 fibres/mL.

Condition The physical state of the material in question

Control Monitoring	Air monitoring using static or positional to measure the level of airborne asbestos fibres in an area during work on ACM. Control monitoring is designed to assist in assessing the effectiveness of control measures. Its results are not representative of actual occupational exposures and should not be used for that purpose.
Friable	Refers to non-bonded asbestos fabric or material that is easily crumbled, pulverized or reduced to powder by hand pressure.
Friable Asbestos	Refers to non-bonded asbestos containing material that, Containing Material when dry, is or may become crumbled, pulverised or reduced to powder by hand pressure.
Hazard	Refers to any matter, thing, process, or practice that may cause death, injury, illness or disease.
HAZMAT	Solids, liquids, or gases that can harm people, other living organisms, property, or the environment. Asbestos, Lead-based paint, synthetic mineral fibres and polychlorinated biphenyls are all considered to be HAZMAT.
Masonry.	Concrete work, brickwork or stone work.
NAD	No asbestos detected
Non-friable	Material, not in its natural state, that is bonded by a cement matrix, vinyl, resin or other binding material.
Ozone Depleting Substances	Substances which deplete the ozone layer and are widely used in refrigerators, air conditioners, fire extinguishers, in dry cleaning, as solvents for cleaning, electronic equipment and as agricultural fumigants.
Polychlorinated Biphenyl's	Environmental toxicity and classification as a persistent organic pollutant used as dielectric and coolant fluids, for example in transformers, capacitors, and electric motors.
Qualified Person	Experience necessary to find HAZMAT in a building.
Risk	The likelihood of a hazard causing harm to a person.
Synthetic Mineral Fibre	Fibrous materials made from glass, rock, alumina and silica. Some of these products are composed of a mixture of fibres in a multitude of sizes. Generally referred to as SMF, they are also known as Man Made Mineral Fibres (MMMFs).

Appendix 8: Acronyms

A	Amosite
AC	Asbestos cement sheeting
C	Crocidolite
CA	Castable asbestos material
CF	Compressed fibre
CH	Chrysotile
FD	Fire Door
GB	Galbestos galvanized sheet / asbestos compound fixed to one side
GS	Gasket
LDB	Low Density Board
LBP	Lead Based Paint
M	Machinery brake lining
MB	Compressed millboard sheeting
NAD	No Asbestos Detected
ODS	Ozone Depleting Substances
PB	Polymer bound i.e. vinyl tiles, electrical switchboards
PCB	Polychlorinated Biphenyls
SB	Switchboard Backing
SMF	Synthetic Mineral Fibre
TX	Textile – woven sheet & rope
V	Vermiculite
Z	Zelemite