



Asbestos in Soils – Sampling Report

Shelly Bay - South
On behalf, of

Wellington City Council

Reference: WS-00112

Version 1





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1.0 INTRODUCTION AND SITE INFORMATION

Site Address: Shelly Bay – South
Miramar
Wellington

Client Name and Address: Wellington City Council
113 The Terrace
Wellington, 6011

Client Contact: David Cook

Survey Date(s): 29/10/2021

Report Issue Date: 10/11/2021

Authorised Signatory: 
James Lord

1.1 Scope of the Assessment

The scope of this assessment was to undertake soil sampling at the site as described by the client, in order to investigate potential contamination by Asbestos or Asbestos Containing Materials (ACMs) including Asbestos Containing Debris (ACD). This report is designed to be kept as a record of this investigation and is based on information made available on 29/10/2021.

The investigation was undertaken in accordance with the Ministry for the Environment *Contaminated Land Management Guidelines 1 – Reporting on Contaminated Sites in New Zealand*; and 5 – *Site Investigation and Analysis of Soils, New Zealand Guidelines for Assessing and Managing Asbestos in Soil* (BRANZ, 2017) & WorkSafe New Zealand *Best Practice Guidelines for Conducting Asbestos Surveys*.

The scope of this assessment did not include the investigation or assessment of any contaminants other than asbestos.

The purpose of this Assessment is to:

Enable the client to Comply with the Health and Safety at Work (Asbestos) Regulations 2016, Section 13 (2) (3) (4) (a) (b) (c) (d).

In particular, PCBU's who manage, control or who ought reasonably to know there is a risk of asbestos respirable fibres are obligated to have an Asbestos Management Plan (AMP) in place and made available to any contractor, employee or their representative who has or will carry out work on Asbestos Containing Materials (ACMs) or at asbestos contaminated sites. This is to ensure that appropriate precautions are taken to ensure employees are not exposed to asbestos-related health risks.

The management plan also provides information to assist the client in developing and implementing an action plan for the further working with, or removing of, Asbestos or Asbestos Containing Materials (ACM). The asbestos register is the first stage in developing an Asbestos Management Plan.

In addition, it provides assistance and guidance for the client seeking compliance with the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011, which requires that land affected by contaminants in soil is appropriately identified and assessed before it is developed – and, if necessary, the land is remediated or the contaminants contained to make the land safe for human use.

Asbestos Register

In accordance with the Health and Safety at Work (Asbestos) Regulations 2016 sections 10 through 14, it is recommended that this report should form the basis of an Asbestos Register and the strategic element of your Asbestos Management Plan and Policy. An Asbestos Register is a living document used to identify where asbestos-containing materials are and to assist in managing them safely.

Testing by laboratories

Testing by laboratories of asbestos bulk sample materials will only be carried out by approved IANZ accredited laboratories, accredited to AS 4964-2004, and NZS ISO/IEC 17025:2005.

Labels and Warning Signs

It is recommended that durable labels and or warning signs should be placed on all areas where ACDs have been identified.

Insurance cover

Fibresafe NZ Ltd provides indemnity insurance of up to \$10,000,000.00. This includes legacy coverage.

2.0 EXECUTIVE SUMMARY

On the 29/10/2021, sampling was carried out at Shelly Bay – South. At the request of the client, sampling of surface soils was undertaken to investigate for the presence of asbestos. The sampling was conducted in the vicinity of dilapidated buildings known to contain asbestos containing materials (ACMs). The purpose of the sampling was support assessment of risk to current site users.

Twelve surface soil samples were taken from the sampling area. Sample locations were selected judgementally in consultation with the client, and included drip lines of buildings, surrounding areas, and an area currently being used to grow produce. Samples were analysed in accordance with the New Zealand Guidelines for Assessing and Managing Asbestos in Soil (BRANZ, 2017).

Five of the twelve samples have returned a positive result for asbestos. Of the five positive samples, three have returned results above the threshold of contamination / soil guideline values as defined by BRANZ, 2017.

All three of the samples returning results that exceed guideline values were taken in the vicinity of the 'H' block building at the site. The positive results for asbestos are likely the result of the ineffective drainage systems of the building, with rain water run-off from the deteriorating asbestos cement roof discharging directly to blocked ground level perimeter gutters and the surrounding ground.

No assessment has been made of site surface drainage patterns, and although surface soil samples taken from the wider site have returned either negative or low-level results for asbestos, a precautionary approach should be taken with access restricted to all areas that may be affected by run-off from the H building until the remediation can be undertaken to address the contaminated soil and deteriorating building systems.

3.0 SITE HISTORY AND CONDITION

The wider site has been home to a New Zealand Defence Force base for over 100 years, with the site decommissioned in 2009. The site buildings have since been repurposed for a variety of uses such as storage, workshops, galleries, and various other recreational facilities.

An Asbestos Management Survey was conducted at the site by Fibresafe NZ in 2019. Refer to site Asbestos Management Survey report reference W-01625 for full details of the known ACMs present. In summary, external asbestos fibre cement products in fair to poor condition are widespread throughout the site. Friable asbestos insulation materials in fair to poor condition are also present internally to some buildings. Access to the interiors of site buildings is currently largely restricted, partly due to the findings of the asbestos assessment in 2019.

The sampling exercise focused on the area enclosed by the main road and the internal road facilitating access to inland buildings in the south bay. Following a site walkover of the sampling area, no obvious visual indication of significant widespread asbestos contamination of the surface by ACM debris was observed at the site, although some damaged fibre cement building products were noted, as previously recorded in the site Asbestos Management Survey report. The deteriorating fibre cement roof of the large H building, and the ineffective drainage of this building, were again noted as being of concern as a significant potential cause of ground contamination.

Although access to the building interiors is restricted, the site is currently subject to dispute regarding future development plans, and protest groups are occupying the land, with tents and makeshift accommodation facilities present.

4.0 SAMPLING AND ANALYSIS

Sampling locations were selected in consultation with the client, with the aim being to assess risk to site occupants based on current site activity. Twelve surface soil samples (0-100mm depth) of 500ml were obtained in at each sampling location using a clean trowel. Samples were analysed in accordance with the New Zealand Guidelines for Assessing and Managing Asbestos in Soil (BRANZ, 2017).

5.0 MAPS AND DRAWINGS

Fig 1. Sample locations



6.0 CERTIFICATES

R J Hill Laboratories Limited
101C Waterloo Road
Hornby
Christchurch 8042 New Zealand

T 0508 HILL LAB (44 555 22)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Certificate of Analysis

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Client: Fibresafe NZ Limited	Lab No: 2749904	A2Pv1
Contact: Donald Napier	Date Received: 29-Oct-2021	
C/- Fibresafe NZ Limited	Date Reported: 05-Nov-2021	
Callaghan Innovation Campus, C Block	Quote No: 85696	
69 Gracefield Road	Order No:	
Lower Hutt 5010	Client Reference: W-02048	
	Submitted By: James Lord	

Sample Type: Soil

Sample Name:	S001 29-Oct-2021	S002 29-Oct-2021	S003 29-Oct-2021	S004 29-Oct-2021	S005 29-Oct-2021
Lab Number:	2749904.1	2749904.2	2749904.3	2749904.4	2749904.5
Asbestos Presence / Absence	Chrysotile (White Asbestos) detected.	Chrysotile (White Asbestos) detected.	Chrysotile (White Asbestos) detected.	Asbestos NOT detected.	Chrysotile (White Asbestos) detected.
Description of Asbestos Form	Loose fibres	Loose fibres	ACM debris and Loose fibres	-	Loose fibres
Asbestos in ACM as % of Total Sample*	% ww < 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% ww 0.002	0.002	0.004	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% ww < 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% ww 0.002	0.002	0.004	< 0.001	< 0.001
As Received Weight	g 727.6	626.3	726.2	572.8	634.4
Dry Weight	g 494.7	425.7	352.8	372.3	465.9
Moisture	% 32	32	51	35	27
Sample Fraction >10mm	g dry wt 21.1	< 0.1	3.5	< 0.1	10.8
Sample Fraction <10mm to >2mm	g dry wt 28.9	17.3	60.1	17.8	48.5
Sample Fraction <2mm	g dry wt 443.3	406.8	286.4	352.8	406.4
<2mm Subsample Weight	g dry wt 56.5	50.9	54.8	54.4	55.7
Weight of Asbestos in ACM (Non-Friable)	g dry wt < 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt < 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt 0.00795	0.01030	0.01303	< 0.00001	0.00025

Sample Name:	S006 29-Oct-2021	S007 29-Oct-2021	S008 29-Oct-2021	S009 29-Oct-2021	S010 29-Oct-2021
Lab Number:	2749904.6	2749904.7	2749904.8	2749904.9	2749904.10
Asbestos Presence / Absence	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Chrysotile (White Asbestos) detected.	Asbestos NOT detected.
Description of Asbestos Form	-	-	-	Loose fibres	-
Asbestos in ACM as % of Total Sample*	% ww < 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% ww < 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% ww < 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% ww < 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g 624.8	668.4	585.8	683.7	879.4
Dry Weight	g 412.5	455.7	341.1	457.3	750.9



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.



Sample Type: Soil						
Sample Name:	S006	S007	S008 29-Oct-2021	S009	S010	
Lab Number:	2749904.6	2749904.7	2749904.8	2749904.9	2749904.10	
Moisture	%	34	32	42	33	15
Sample Fraction >10mm	g dry wt	32.3	2.9	17.8	10.1	164.1
Sample Fraction <10mm to >2mm	g dry wt	50.8	53.0	83.0	82.6	258.1
Sample Fraction <2mm	g dry wt	327.6	397.8	238.3	363.3	327.8
<2mm Subsample Weight	g dry wt	56.7	52.9	52.8	57.3	53.9
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	0.00003	< 0.00001
Sample Name:	S011	S012				
Lab Number:	2749904.11	2749904.12				
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	-	-	-
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% ww	< 0.001	< 0.001	-	-	-
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% ww	< 0.001	< 0.001	-	-	-
Asbestos as Fibrous Asbestos as % of Total Sample*	% ww	< 0.001	< 0.001	-	-	-
Asbestos as Asbestos Fines as % of Total Sample*	% ww	< 0.001	< 0.001	-	-	-
As Received Weight	g	553.2	591.7	-	-	-
Dry Weight	g	328.4	423.9	-	-	-
Moisture	%	41	28	-	-	-
Sample Fraction >10mm	g dry wt	< 0.1	18.4	-	-	-
Sample Fraction <10mm to >2mm	g dry wt	38.7	50.3	-	-	-
Sample Fraction <2mm	g dry wt	287.6	353.7	-	-	-
<2mm Subsample Weight	g dry wt	54.0	51.1	-	-	-
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	-	-	-
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	-	-	-
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	-	-	-

Glossary of Terms

- Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
 - Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
 - ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
 - ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
 - Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
 - Trace - Trace levels of asbestos, as defined by AS4984-2004.
- For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. <https://www.branz.co.nz/asbestos>

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analyses. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Wgt of Asbestos as Asbestos Fines in <10mm >2mm Fraction*	Measurement on analytical balance, from the <10mm >2mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-12
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-12
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-12
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-12
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-12
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-12
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-12
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-12
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-12
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-12
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % ww	1-12
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-12
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % ww	1-12
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-12
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % ww	1-12
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % ww	1-12



These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 04-Nov-2021 and 05-Nov-2021. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

A handwritten signature in black ink, appearing to be 'Dexter Paguirigan'.

Dexter Paguirigan Dip Chem Engineering Tech
Laboratory Technician - Asbestos

7.0 RESULTS AND SITE CHARACTERISATION

Five of the twelve samples have returned a positive result for asbestos. Of the five positive samples, three have returned results above the threshold of contamination / soil guideline values as defined by BRANZ, 2017.

All three of these samples were taken in the vicinity of the H block building. The positive results for asbestos are likely the result of the ineffective drainage systems of the building, with rain water run-off from the deteriorating asbestos cement roof discharging directly to blocked ground level perimeter gutters and the surrounding ground. The sample showing the highest asbestos content (sample S003) was taken from the floor level gutter itself, where soil and organic matter has accumulated.

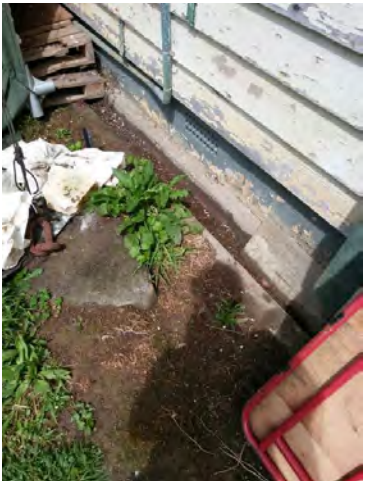
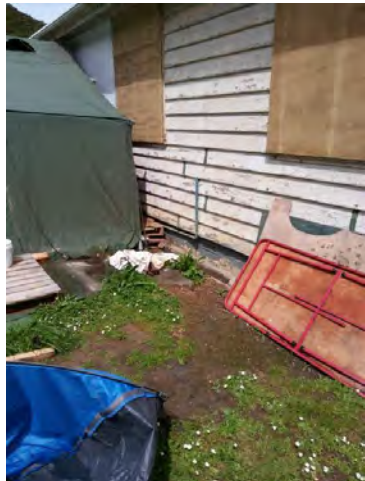
Of the remaining two positive samples, one was taken several meters south of the H block building in a garden area being used for the growth of produce. Although other sources cannot be ruled out, this positive result may also be due to ground run-off patterns from the H-block building. However, three negative samples also taken in the garden area provide good evidence that contamination in this area is unlikely to be widespread.



The final remaining positive sample was taken at the northern perimeter of the southern 'laundry' building, with the low-level detection of asbestos likely associated with products present in this building, and unrelated to the other positive results seen to the north.



Table 1 – Summary of sample analysis results



Sample	Location	Presence/Absence	ACM % w/w	FA + AF % w/w	FA % w/w	AF % w/w
S001	H building east wall drip line	Chrysotile (Loose fibres)	< 0.001	0.002	< 0.001	0.002
S002	H Block East Drip Line +2m	Chrysotile (Loose fibres)	< 0.001	0.002	< 0.001	0.002
S003	H Block Drip Line South Gutter	Chrysotile (ACM Debris & Loose fibres)	< 0.001	0.004	< 0.001	0.004
S004	H Block South Path	No Asbestos Detected	< 0.001	< 0.001	< 0.001	< 0.001
S005	Central Garden North	Chrysotile (Loose fibres)	< 0.001	< 0.001	< 0.001	< 0.001
S006	Central Garden	No Asbestos Detected	< 0.001	< 0.001	< 0.001	< 0.001
S007	Central Garden	No Asbestos Detected	< 0.001	< 0.001	< 0.001	< 0.001
S008	Central Garden South	No Asbestos Detected	< 0.001	< 0.001	< 0.001	< 0.001
S009	Laundry North	Chrysotile (Loose fibres)	< 0.001	< 0.001	< 0.001	< 0.001
S010	Laundry South	No Asbestos Detected	< 0.001	< 0.001	< 0.001	< 0.001
S011	Laundry South	No Asbestos Detected	< 0.001	< 0.001	< 0.001	< 0.001
S012	Laundry South	No Asbestos Detected	< 0.001	< 0.001	< 0.001	< 0.001



ACM - Asbestos Containing Material, FA – Friable Asbestos, AF – Asbestos Fines as defined by BRANZ 2017. Values in **bold** indicate value exceeds soil guideline values for asbestos (w/w) as defined by BRANZ 2017.



Location	Shelly Bay Complex, External, 001, H Block East Drip Line		Sample Number	1 (S)
		Item / Position	Soil – H building east wall drip line	
		Asbestos Type	Chrysotile (Loose fibres)	
		ACM (% w/w)	< 0.001	
		FA + AF (% w/w)	0.002	
		FA (% w/w)	< 0.001	
		AF (% w/w)	0.002	
		Comments:		


Location	Shelly Bay Complex, External, 002, H Block East Drip Line +2m		Sample Number	2 (S)
		Item / Position	Soil – 2m step out from drip line	
		Asbestos Type	Chrysotile (Loose fibres)	
		ACM (% w/w)	< 0.001	
		FA + AF (% w/w)	0.002	
		FA (% w/w)	< 0.001	
		AF (% w/w)	0.002	
		Comments:		



Location	Shelly Bay Complex, External, 002, H Block Drip Line South Gutter		Sample Number	3 (S)
		Item / Position	Soil – H building drip line South Gutter	
		Asbestos Type	Chrysotile (ACM Debris & Loose fibres)	
		ACM (% w/w)	< 0.001	
		FA + AF (% w/w)	0.004	
		FA (% w/w)	< 0.001	
		AF (% w/w)	0.004	
		Comments:		


Location	Shelly Bay Complex, External, 002, H Block South Path		Sample Number	4 (S)
		Item / Position	Soil - H Block South Path	
		Asbestos Type	No Asbestos Detected	
		ACM (% w/w)	< 0.001	
		FA + AF (% w/w)	< 0.001	
		FA (% w/w)	< 0.001	
		AF (% w/w)	< 0.001	
		Comments:		


Location	Shelly Bay Complex, External, 005, Central Garden North		Sample Number	5 (S)
		Item / Position	Soil – Central Garden North	
		Asbestos Type	Chrysotile (Loose fibres)	
		ACM (% w/w)	< 0.001	
		FA + AF (% w/w)	< 0.001	
		FA (% w/w)	< 0.001	
		AF (% w/w)	< 0.001	
		Comments:		



Location	Shelly Bay Complex, External, 005, Central Garden		Sample Number	6 (S)
		vvvvvvvvvv	Soil – Central Garden	
		Asbestos Type	No Asbestos Detected	
		ACM (% w/w)	< 0.001	
		FA + AF (% w/w)	< 0.001	
		FA (% w/w)	< 0.001	
		AF (% w/w)	< 0.001	
		Comments:		



Location	Shelly Bay Complex, External, 005, Central Garden		Sample Number	7 (S)
		vvvvvv	Soil – Central Garden	
		Asbestos Type	No Asbestos Detected	
		ACM (% w/w)	< 0.001	
		FA + AF (% w/w)	< 0.001	
		FA (% w/w)	< 0.001	
		AF (% w/w)	< 0.001	
		Comments:		

Location	Shelly Bay Complex, External, 005, Central Garden South		Sample Number	8 (S)
		Item / Position	Soil – Central Garden South	
		Asbestos Type	No Asbestos Detected	
		ACM (% w/w)	< 0.001	
		FA + AF (% w/w)	< 0.001	
		FA (% w/w)	< 0.001	
		AF (% w/w)	< 0.001	
		Comments:		

Location	Shelly Bay Complex, External, 005, Laundry North	Sample Number	9 (S)
		Item / Position	Soil – Laundry North
		Asbestos Type	Chrysotile (Loose fibres)
		ACM (% w/w)	< 0.001
		FA + AF (% w/w)	< 0.001
		FA (% w/w)	< 0.001
		AF (% w/w)	< 0.001
		Comments:	Composite of soil along drip line

Location	Shelly Bay Complex, External, 006, Laundry South	Sample Number	10 (S)
		Item / Position	Soil – Laundry South
		Asbestos Type	No Asbestos Detected
		ACM (% w/w)	< 0.001
		FA + AF (% w/w)	< 0.001
		FA (% w/w)	< 0.001
		AF (% w/w)	< 0.001
		Comments:	

Location		Shelly Bay Complex, External, 006, Laundry South		Sample Number	11 (S)
		Item / Position	Soil – Laundry South		
		Asbestos Type	No Asbestos Detected		
		ACM (% w/w)	< 0.001		
		FA + AF (% w/w)	< 0.001		
		FA (% w/w)	< 0.001		
		AF (% w/w)	< 0.001		
		Comments:	Stepped back 3m		

Location		Shelly Bay Complex, External, 006, Laundry South		Sample Number	12 (S)
		Item / Position	Soil – Laundry South		
		Asbestos Type	No Asbestos Detected		
		ACM (% w/w)	< 0.001		
		FA + AF (% w/w)	< 0.001		
		FA (% w/w)	< 0.001		
		AF (% w/w)	< 0.001		
		Comments:			

8.0 CONCLUSIONS AND RECOMMENDATIONS

The recommendations provided in this section identify the main elements of the Action Plans that need to be developed and implemented by the contractual PCBU / Duty Holder in order to address the asbestos management issues that affect the site.

The results and site observations indicate that run-off from the asbestos cement roof of the H building is likely to be the primary cause of asbestos contamination of site soil. No assessment has been made of site surface drainage patterns, and although surface soil samples taken from the wider site have returned either negative or low-level results for asbestos, a precautionary approach should be taken with access restricted to the immediate perimeter of the H building at a distance of at least two meters, and to all surrounding areas that may be affected by surface run-off from the H building during rain.

Access should remain restricted until remediation can be undertaken to address the contaminated soil and deteriorating building systems.

9.0 TRAINING AND COMMUNICATION

The Asbestos Regulations section 17 details obligations of PCBUs. In short, a PCBU must ensure that workers who are engaged by the PCBU and who the PCBU reasonably believes may be involved in asbestos removal work must be trained in the identification and safe handling of, and suitable control measures for, asbestos and ACM. It is recommended that all employees who are directly or indirectly liable to be exposed to asbestos should receive adequate information, instruction and asbestos awareness training and should have access to the Asbestos Register, or information contained within it.

9.1 Management Responsibility

Responsibility should be allocated to a specific individual to provide a source of information, advice and authority for situations where decisions relating to asbestos are needed. The nominated individual should also be responsible for:

- Communicating information about asbestos;
- Outlining decisions and reasons for the decisions, about the management of the risk arising from asbestos at the workplace;
- Detailing incidents or emergencies involving asbestos or ACMs in the workplace;
- Controlling the Asbestos Register and keeping the management plan up to date;
- Liaising with specialist Asbestos Consultants and Contractors;
- Monitoring the action plan.

10.0 APPENDICES

10.1 Sampling Extent and Limitations

The sampling has been undertaken with all due care and diligence using staff with suitable and sufficient experience. There remains, however, the possibility that there may be concealed asbestos containing materials at the site which were not located and identified. These concealed areas of asbestos may only become apparent during further investigation (intrusive investigation or invasive works). Fibresafe NZ Ltd, therefore cannot fully guarantee that all ACMs have been located and identified.

10.2 Guideline Values

Guideline values for ACM, fibrous asbestos and asbestos fines are provided in New Zealand Guidelines for Assessing and Managing Asbestos in Soil (BRANZ, 2017). This document also outlines the Approved Code of Practice for Asbestos in Soil investigations in New Zealand.

10.3 Glossary of Terms & Abbreviations

The following is a list of the different asbestos types:

Name	Description
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Tremolite	Fibrous forms of these minerals may be found very occasionally during sample analysis and should be considered as hazardous as Amosite and Crocidolite
Anthophyllite	
Actinolite	

The following terms, abbreviations and acronyms may appear in the text of this report:

Abbreviation	Meaning
ACD	Asbestos Containing Debris
ACM	Asbestos Containing Material
NAD	No Asbestos Detected

10.4 Disclaimer

- The management and staff of Fibresafe NZ Ltd have taken every feasible action to ensure that the quality and integrity of this report is accurate. However, the information and knowledge in this report should not be relied upon in its entirety. Any commercial decisions made should be considered in consultation with other documentation.
- Fibresafe NZ Ltd will provide written and verbal recommendations pursuant to engaged services. These recommendations will be based on supplied information either by verbal instruction and or supplied documentation. Fibresafe NZ Ltd will not be held liable for any acts or omissions which apportion blame, due to poor verbal or written instructions including lack of or poorly presented plans. Our liability is limited to our indemnity insurance cover mentioned previously. Fibresafe NZ Ltd will not be held liable for any hidden ACMs that could not reasonably be identified at the time of sampling / testing.
- This report relates only to the identification of asbestos containing materials (ACM) at the site and does not include the identification of other contaminants, dangerous goods, or hazardous substances in the form of chemicals used, stored or manufactured currently or historically at the site.
- This report is not to be used for contractual purposes unless the front signatory sheet is signed where indicated by both the person conducting the survey and the report approver.
- All measurements detailing the extent of materials are estimates only. It is the responsibility of contractors quoting for any refurbishment or removal works to take their own measurements to establish the precise extent of the works prior to tendering.