Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 18 March 2020

Watts Peninsula - Farm Buildings

Executive Summary

The asbestos survey inspection was conducted by Tonkin + Taylor on 18 March 2020. The subject structures (shown in Figure 1.1) were surveyed by Tonkin + Taylor for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials Requiring Removal Prior to Demolition

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
No friable ACMs observed during this survey			

Table E1: Friable ACM requiring removal prior to demolition/refurbishment.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B02	Cement sheet cladding on exterior wall Small Barn	4.50	Chrysotile and amosite asbestos present
A01	Flashing Small Barn	9.60	Assumed Asbestos

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B01	Big Barn exterior paint	144	3.53 % lead
B03	Small Barn exterior paint	80	17.6 % lead
B04	Small Barn internal paint	85	7.46 % lead

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin + Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of the Farm Buildings, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structures (shown in Figure 1.1 and cover photograph) were surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of these buildings as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, Farm Buildings

The assessment was based on the following information known about the property and/or observed during the survey conducted on 18 March 2020:

- Single story structures.
- Foundation: Concrete slab.
- Roof: Steel sheet or timber.
- Ceiling: Hardboard.
- Walls: Plasterboard or corrugated sheet steel.
- Flooring: Concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** – electrical fixtures and fittings were not observed within these structures.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, second edition 2012) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the buildings to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a Visually assessed each area individually.
   b Worked in the same pattern in each area (e.g. clockwise from entry).
   c Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey (refer to Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis by polarised light microscopy (PLM) was utilised to test for the presence of asbestos and by ICP-MS for lead. Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that hazardous building materials may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energised services etc. (list not exhaustive).

During this survey conducted on the 18 March 2020, the following areas/features of the Farm Buildings could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Beneath concrete floor slab of the Big Barn.
- Heights above 3 m in Big Barn.

5 Results and conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM** and **lead paint** within the accessible areas of the buildings surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at the Farm Buildings (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

- Prior to refurbishment, demolition or relocation non-friable ACM of over 10 m² must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (executive Summary).
- This hazardous materials survey report should be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works.
- On completion of the asbestos removal works, an asbestos assessor/competent person will conduct the required clearance(s) for this building (competent person – see Regulation 3(a) - Health and Safety at Work (Asbestos) Regulations 2016). A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on the Farm Buildings, the contractor will familiarise themselves with the areas/features of these structures excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and limitations

This report has been prepared for the exclusive use of Land Information New Zealand, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:

.....
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

.....
Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:

.....
Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula Farm Buildings - Samples, Assumptions and Observation Locations

Site Plan (sample locations) (source Google Maps – north to top of page).

General Photos of External Parts to Buildings

Left side Big Barn (looking north)

Rear side Big Barn, Small Barn at far end of image

Front sides, Big Barn left of frame, Small Barn right of frame

Right side of farm buildings looking south

External Building Samples and Observation Details

Sample/Observation Reference: **B02**
Cement sheet cladding on exterior wall Small Barn
Chrysotile and amosite asbestos (laboratory result)

Sample/Observation Reference: **B01**
Big Barn exterior paints
External paint – 3.53 % lead (laboratory result)

Sample/Observation Reference: **B03**
Exterior paint Small Barn
External paint – 17.6 % lead (laboratory result)

Sample/Observation Reference: **A01**
Assumed ACM
Flashing Small Barn

Internal Building Samples and Observation Details

Sample/Observation Reference: **N01**
No ACM Assumed (wood fibre)
Small Barn interior ceiling and lining paper

Sample/Observation Reference: **B04**
Small Barn Interior paints – 7.46 % lead (laboratory result)

Beneath Building Samples and Observation Details

Concrete floor slab, Big Barn

Above Ceiling Space Samples and Observation Details

View Above Ceiling Space, Big Barn

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12370 – 25/03/2020
- 20-12473 – 23/03/2020

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12370
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated:
Date Completed: 25/03/2020
Order Number: ASB3001216
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Farm Buildings

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Lead by ICP-MS (Bulk Materials)

Client Sample ID			B01	B03	B04
Date Sampled			18/03/2020	18/03/2020	18/03/2020
Analyte	Unit	*Reporting Limit*	20-12370-1	20-12370-2	20-12370-3
Lead	mg/kg	*2.5*	35,300	176,000	74,600
Lead	%	*0.0025*	3.53	17.6	7.46

Method Summary

Elements in Bulk Materials Samples analysed as received by ICP-MS following an acid digestion.

Sharelle Frank, B.Sc. (Tech)
Technologist

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Unit 4, 91 Byron Street
Sydenham
Christchurch 8023, New Zealand
Ph. +64 (03) 662 9357
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12473
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 23/03/2020
Order Number: ASB3001216
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Farm Buildings
Description of Work: Bulk - Te Moto Kairangi Farm Buildings

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12473-1	B02		Bulk Materials (30 x 10 x 5 mm)	18/03/2020	23/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12473-1	B02	L1 - Paint L2 - Fibrous material L3 - Fibre cement sheet L4 - Surface debris	Chrysotile (White Asbestos) Amosite (Brown Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Tonkin+Taylor

Job No: 1013126
15 July 2020

Land Information New Zealand
112 Tuam Street
Christchurch 8140

Attention: Kim Wepansnick

Dear Kim

Hazardous Building Materials Survey

Watts Peninsula - Gun emplacements & intelligence centre

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of the gun emplacements and intelligence centre, Watts Peninsula, Wellington. These have been completed in accordance with our offer of service dated 4 February 2020.

1 Site conditions

The gun emplacements and intelligence centre were surveyed on 17 March 2020 (see Figure 1).

Figure 1: Gun emplacements and intelligence centre (source: LINZ database).

Tonkin & Taylor Ltd | Level 3, PwC Centre, 60 Cashel Street, West End, Christchurch, 8013, New Zealand | PO Box 13-055, Christchurch 8141
P +64-3-363 2440 F +64-9-307 0265 E chc@tonkintaylor.co.nz

The construction details of these structures (4 gun emplacements and the intelligence centre) were observed to be:

- Concrete walls, floors and ceilings.
- Unpainted (other than where tagged).
- No electric or other service (e.g. fire fighting water) equipment/fixtures were observed.
- All parts of these structures were observed.

The following photographs illustrate these buildings and the type of building materials observed.

The Intelligence Centre.

Example of a gun emplacement.

2 Survey

Our survey methodology is detailed in Appendix A. No hazardous building materials were noted in the structures surveyed on 17 March 2020 (e.g. asbestos containing materials (ACM), lead paint etc.).

It was noted that there were a number of ACM cement sheets used to make a small retaining wall at the entrance to the intelligence centre (blue star, see Figure 1) and following photograph.

Disturbing these non-friable asbestos containing materials should be appropriately planned by the contractor; if the quantity of these materials is ≥10 m^2 this work must be undertaken by a Class B or Class A licensed asbestos removalist. The removalist must prepare an asbestos removal control plan before starting the works and notify WorkSafe New Zealand. Clearance works after the removal of the materials (when undertaken as licensed removal works) must be completed by a competent person (as defined in regulation 3 (1) – Health and Safety at Work (Asbestos) Regulations 2016).

ACM sheet retaining feature in front of the Intelligence Centre.

Before undertaking any works at the gun emplacements and intelligence centre, Watts Peninsula, the contractor will familiarise themselves with this report.

3 Applicability

This report has been prepared for the exclusive use of our Land Information New Zealand, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Because it is possible that hazardous building materials may be concealed within areas/voids which were not accessible during the survey, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if suspect hazardous building materials are encountered.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

.....

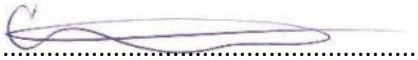
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin & Taylor Ltd by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:



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Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

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Appendix A: Survey methodology

The survey was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, 2nd edition) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM and other hazardous building materials in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:

   a. Visually assessed each area individually.

   b. Worked in the same pattern in each area (e.g. clockwise from entry).

   c. Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey.

Tonkin+Taylor

Job No: 1013126
15 July 2020

Land Information New Zealand
112 Tuam Street
Christchurch 8140

Attention: Kim Wepansnick

Dear Kim

Hazardous Building Materials Survey
Watts Peninsula - Radio Mast

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of the Radio Mast, Watts Peninsula, Wellington. This has been completed in accordance with our offer of service dated 4 February 2020.

1 Site conditions

On 18 March 2020 and during the survey of other buildings at Watts Peninsula, the Radio Mast was visited. Photographs of the mast are presented below. In summary the construction of this structure was observed to comprise:

- A steel mast with four steel cable guys secured with steel poles.
- Concrete footings for the mast and four steel poles.
- A number of timber poles and railings for fencing and (assumed) former poles used to secure guy cables.

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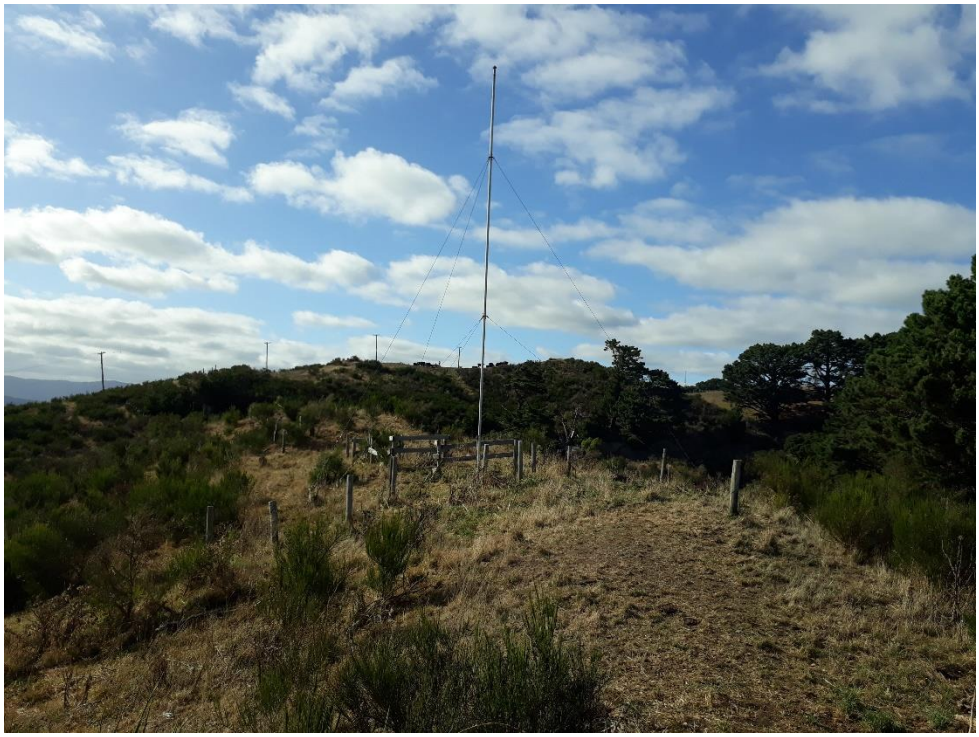


Radio mast.

Concrete footing.

2 Survey

No hazardous building materials (e.g. asbestos containing materials (ACM), lead paint, etc.) were noted in this structure surveyed on 18 March 2020.

Before undertaking any works at the Radio Mast, the contractor will familiarise themselves with this report.

3 Applicability

This report has been prepared for the exclusive use of our Land Information New Zealand, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

.....

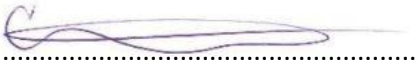
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin & Taylor Ltd by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:



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Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 17 March 2020

Watts Peninsula - Small Arms Store

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 17 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licensed asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licensed asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
No friable ACMs observed during this survey			

Table E1: Friable ACM requiring removal prior to demolition/refurbishment etc.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B03	Ceiling cement sheet and debris on floor (internal)	20	Chrysotile asbestos present

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment etc.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B02	External paint	54	0.02 % lead
B04	Internal paint	54	0.24 % lead

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of the Small Arms Store, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, Small Arms Store

The assessment was based on the following information known about the property and/or observed during the survey conducted on 17 March 2020:

- Single story structure.
- Foundation: Concrete slab.
- Roof: Steel sheet.
- Ceiling: Cement sheet.
- Walls: Brick.
- Flooring: Concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** – no electrical fixtures or fittings observed at this structure.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by T+T based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide guidance document (UK HSE HSG 264 Standard, second edition 2012) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected hazardous building materials in accessible areas was undertaken by a trained, competent surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:

   a Visually assessed each area individually.

   b Worked in the same pattern in each area (e.g. clockwise from entry).

   c Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of the structure where these were reasonably accessible at the time of the survey (refer below and Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis by polarized light microscopy (PLM) was utilised to test for the presence of asbestos and by ICP-MS for lead. Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that hazardous building materials may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energized services etc. (list not exhaustive).

During the survey conducted on the 17 March 2020, the following areas/features of the Small Arms Store could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Small concrete box, exterior of building, steel door could not be forced open (see photograph, Appendix A).

5 Results and Conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM** and **lead paint** within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at the Small Arms Store (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

- Prior to refurbishment, demolition or relocation of the Small Arms Store non-friable ACM of over 10 m² must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (Executive Summary).
- This hazardous materials survey report shall be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works.
- On completion of the asbestos removal works, an asbestos assessor/competent person will conduct the required clearance(s) for this building (competent person – see Regulation 3(a) - Health and Safety at Work (Asbestos) Regulations 2016). A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on the Small Arms Store, the contractor will familiarise themselves with the areas/features of this structure excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and Limitations

This report has been prepared for the exclusive use of Land Information New Zealand, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that hazardous building materials may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all hazardous building materials that may be located in the structure described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain hazardous building materials or unknown materials are encountered in those areas.

Report prepared by:

.....

Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

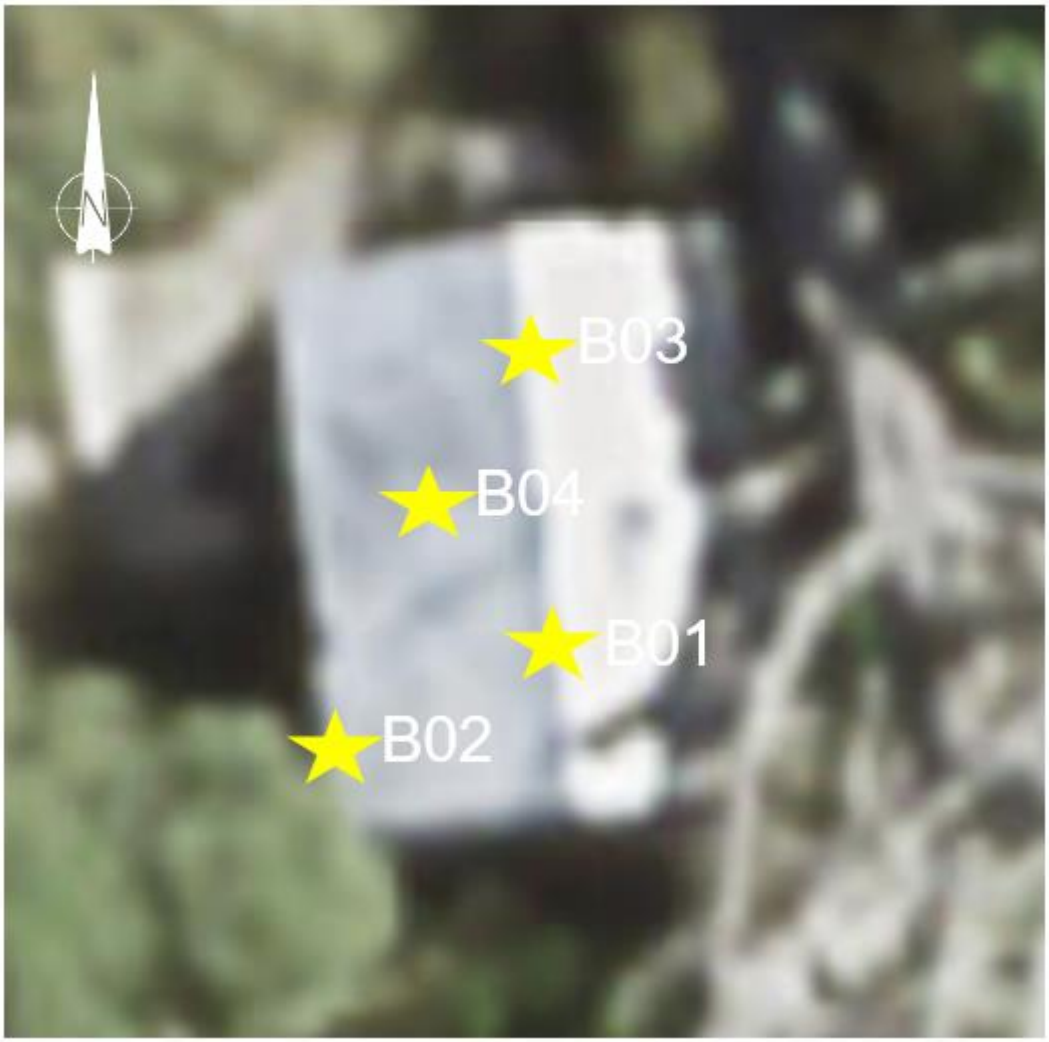
Technical Review by:

.....

Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula Small Arms Store - Samples, Assumptions and Observation Locations



Site Plan (sample locations B01 to B04) (source Google Maps).

General Photos of External Parts to Building

Front side

Rear side

Left side (note concrete box at base of wall)

Right side

External to Building Samples and Observation Details

Sample/Observation Reference: **B01**
Black bitumen fabric on roof
No asbestos detected (laboratory result)

Sample/Observation Reference: **B02**
External paints
0.02% lead (laboratory result)

Internal to Building Samples and Observation Details

Sample/Observation Reference: **B03**
Ceiling cement sheet and debris on floor
Chrysotile asbestos (laboratory result)

Sample/Observation Reference: **B04**
Internal paint – 0.24% lead (laboratory result)

Beneath Building Samples and Observation Details

View Beneath Dwelling
Concrete slab

Above Ceiling Space Samples and Observation Details

View Above Ceiling Space
Above ceiling

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12376 – 25/03/2020
- 20-12468 – 23/03/2020

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12376
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated:
Date Completed: 25/03/2020
Order Number: ASB3001225
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Small Arms Store

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Lead by ICP-MS (Bulk Materials)

			Client Sample ID	B02	B04
			Date Sampled	17/03/2020	17/03/2020
Analyte	Unit	*Reporting Limit*		20-12376-1	20-12376-2
Lead	mg/kg	*2.5*		183	2,380
Lead	%	*0.0025*		0.02	0.24

Method Summary

Elements in Bulk Materials Samples analysed as received by ICP-MS following an acid digestion.

Sharelle Frank, B.Sc. (Tech)
Technologist

Analytica Laboratories Limited
Unit 4, 91 Byron Street
Sydenham
Christchurch 8023, New Zealand
Ph. +64 (03) 662 9357
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12468
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 23/03/2020
Order Number: ASB3001225
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Small Arms Store
Description of Work: Bulk - Te Moto Kairangi Small Arms Store

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12468-1	B01		Bulk Materials (100 x 20 x 3 mm)	17/03/2020	23/03/2020
20-12468-2	B03		Bulk Materials (60 x 40 x 4 mm)	17/03/2020	23/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12468-1	B01	L1 - Rubber material L2 - Bitumastic material L3 - Surface debris	Asbestos NOT Detected. Organic Fibres	Absent
20-12468-2	B03	L1 - Paint L2 - Fibre cement	Chrysotile (White Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 16 March 2020

Watts Peninsula - Magazine No.01

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 16 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials Requiring Removal Prior to Demolition

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
No friable ACMs observed during this survey			

Table E1: Friable ACM requiring removal prior to demolition/refurbishment etc.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B01	Black bitumen material on top of wall	0.25	Chrysotile asbestos present
B02	Black bitumen flooring material	64	Chrysotile asbestos present
A01	Internal wall (blast cavity)	96	Assumed Asbestos

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment etc.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B03	Internal paint	96	0.15 % lead
B04	Internal doors paint	6	9.45 % lead
B05	Exterior paint	96	0.06 % lead
A02	Black bitumen flooring material	64	Assumed PAHs

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.01, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, Magazine No.01

The assessment was based on the following information known about the property and/or observed during the survey conducted on 16 March 2020:

- Single story structure.
- Foundation: Concrete slab.
- Roof: Removed.
- Ceiling: n/a, roof removed.
- Walls: (internal) plaster over brick, (external) brick.
- Flooring: Black bitumen coating over concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** – no electrical fixtures or fittings present.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, second edition 2012) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a Visually assessed each area individually.
   b Worked in the same pattern in each area (e.g. clockwise from entry).
   c Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey (refer to Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis by polarized light microscopy (PLM) was utilised to test for the presence of asbestos and by ICP-MS for lead. Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that asbestos may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energised services etc. (list not exhaustive).

During the survey conducted on the 16 March 2020, the following areas/features of Magazine No. 01 could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Cavity between inner and outer walls (i.e. blast wall cavity); confined space and not entered.

5 Results and conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM**, **lead paint and assumed presence of PAHs** within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at Magazine No.01 (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

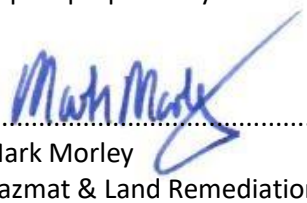
- Prior to refurbishment, demolition or relocation of the Small Arms Store non-friable ACM of over 10 m² must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (Executive Summary).
- This hazardous materials survey report shall be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works.
- On completion of the asbestos removal works, an asbestos assessor/competent person will conduct the required clearance(s) for this building (competent person – see Regulation 3(a) - Health and Safety at Work (Asbestos) Regulations 2016). A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on Magazine No.01, the contractor will familiarise themselves with the areas/features of this structure excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and Limitations

This report has been prepared for the exclusive use of Land Information New Zealand, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:



.....
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

.....
Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:

.....
Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula Magazine No.01 - Samples, Assumptions and Observation Locations

Site Plan (source Google Maps).

General Photos of External Parts to Building

Front side

Right side

Left side

(Note – rear not accessible, fallen trees)

External to Building Samples and Observation Details

Sample/Observation Reference: **B05**
Exterior paint to door and walls
Lead 0.05% (laboratory result)

Internal Dwelling/Building Samples and Observation Details

Sample/Observation Reference: **A01**
Assumed ACM
Internal wall/External wall (blast cavity)

Sample/Observation Reference: **B02 + A02**
Black bitumen flooring material
Chrysotile asbestos (laboratory result)
Assumed PAHs

Sample/Observation Reference: **B03**
Internal paint
Lead 0.15% (laboratory result)

Sample/Observation Reference: **B04**
Blue grey paint internal doors
Lead 9.45% (laboratory result)

Beneath Building Samples and Observation Details

View Beneath Structure
Concrete slab – n/a

Above Ceiling Space Samples and Observation Details

View Above Ceiling Space
Roof removed – n/a

Sample/Observation Reference: **B01**
Black bitumen material on top of wall
Chrysotile asbestos (laboratory result)

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12369 – 25 March 2020
- 20-12451 – 24 March 2020

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12369
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated:
Date Completed: 25/03/2020
Order Number: ASB3001220
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No. 01

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Lead by ICP-MS (Bulk Materials)

Client Sample ID			B03	B04	B05
Date Sampled			17/03/2020	17/03/2020	17/03/2020
Analyte	Unit	*Reporting Limit*	20-12369-1	20-12369-2	20-12369-3
Lead	mg/kg	*2.5*	1,480	94,500	533
Lead	%	*0.0025*	0.15	9.45	0.05

Method Summary

Elements in Bulk Materials Samples analysed as received by ICP-MS following an acid digestion.

Sharelle Frank, B.Sc. (Tech)
Technologist

Analytica Laboratories Limited
Unit 4, 91 Byron Street
Sydenham
Christchurch 8023, New Zealand
Ph. +64 (03) 662 9357
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12451
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 24/03/2020
Order Number: ASB3001220
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No.01
Description of Work: Bulk - Te Moto Kairangi Magazine No.01

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12451-1	B01		Bulk Materials (80 x 30 x 15 mm)	17/03/2020	23/03/2020
20-12451-2	B02		Bulk Materials (60 x 50 x 8 mm)	17/03/2020	23/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12451-1	B01	L1 - Bitumastic material L2 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present
20-12451-2	B02	L1 - Bitumastic material L2 - Cementitious material L3 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 16 March 2020

Watts Peninsula - Magazine No.02

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 16 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials Requiring Removal Prior to Demolition

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A05	Attic	64	Assumed Asbestos

Table E1: Friable ACM requiring removal prior to demolition/refurbishment etc.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B01	Internal ceiling cement sheet	64	Chrysotile asbestos present
B03	(internal) Wall to ceiling coving detail	10	Chrysotile asbestos present
B05	Guttering	9.6	Chrysotile asbestos present
A01	Bitumen flooring	64	Assumed Asbestos
A02	Internal wall (blast cavity)	96	Assumed Asbestos
A04	Soffits	16	Assumed Asbestos
A06	Roof and gables	64	Assumed Asbestos

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment etc.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B02	Dust and debris, internal floor	16	48.9 µg mercury, <laboratory detection limits PCB
B04	Internal paints	96	9.83 % lead
B06	Exterior paints	96	0.41 % lead
A03	Internal paint – internal (grey doors)	6	Assumed lead paint
A04	Black bitumen flooring materials	64	Assumed PAHs

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.02, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, Magazine No.02

The assessment was based on the following information known about the property and/or observed during the survey conducted on 16 March 2020:

- Single story structure.
- Foundation: Concrete slab.
- Roof: Cement sheet (i.e. Super 6 ACM).
- Ceiling: Cement sheet.
- Walls: (internal) plaster over brick, (external) brisk.
- Flooring: Black bitumen coating over concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** - electrical equipment/apparatus was present internal and external to this building.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, 2nd edition) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a. Visually assessed each area individually.
   b. Worked in the same pattern in each area (e.g. clockwise from entry).
   c. Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey (refer to Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis was:

- By polarized light microscopy (PLM) was utilised to test for the presence of asbestos.
- ICP-MS for mercury and lead.
- GCMSMS for PCBs.

Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that asbestos may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energised services etc. (list not exhaustive).

During the survey conducted on the 16 March 2020, the following areas/features of Magazine No.02 could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Cavity between inner and outer walls (i.e. blast cavity wall); confined space and not entered.
- Attic space (observation limited to loft hatch only).
- Electrical equipment.
- Roofing, gable end sheet and guttering materials (observation limited by 3 m height restrictions).

5 Results and Conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM, lead paints, assumed PAHs** and **dust containing mercury** within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at Magazine No.02 (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

- Prior to refurbishment, demolition or relocation of Magazine No.02 (assumed) friable ACM must be removed by a Class A licensed asbestos removalist. Friable ACM is identified in Table E1 (Executive Summary).
- Prior to refurbishment, demolition or relocation of Magazine No.02 non-friable ACM of over 10 m^2 must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (Executive Summary).
- This hazardous materials survey report shall be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a licensed asbestos assessor/competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works (for Class A and Class B removal works respectively).
- On completion of the asbestos removal works, a licensed asbestos assessor/competent person will conduct the required clearance(s) for this building (competent person – see Regulation 3(a) - Health and Safety at Work (Asbestos) Regulations 2016) (for Class A and Class B removal works respectively). A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on Magazine No.02, the contractor will familiarise themselves with the areas/features of this structure excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and Limitations

This report has been prepared for the exclusive use of Land Information New Zealand, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:

.....
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

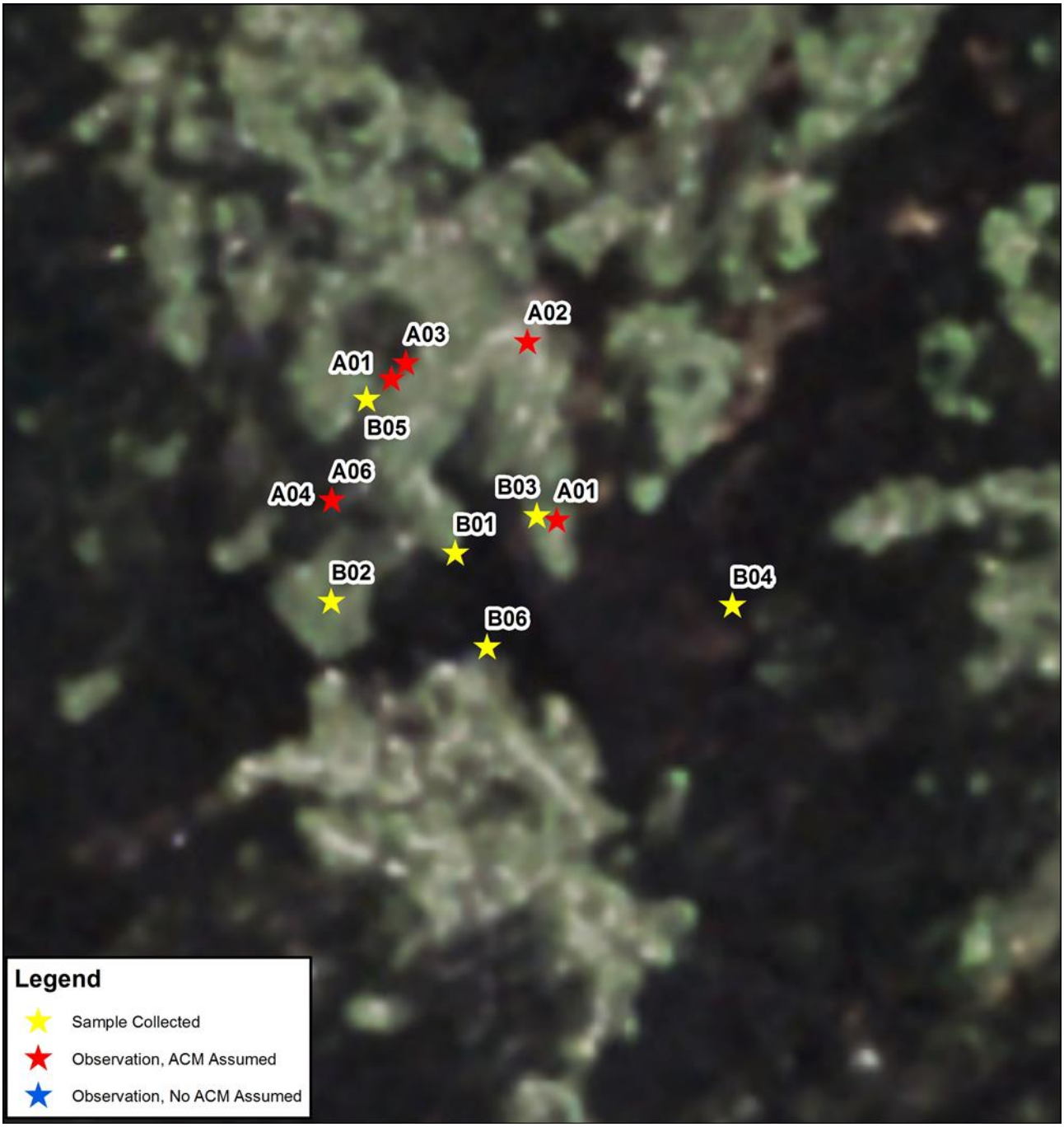
.....
Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:

.....
Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula, Magazine No.02 - Samples, Assumptions and Observation Locations



General Photos of External Parts of Structure

Left side

Right side

Front side

NB – rear not accessible, fallen trees

External to Building Samples and Observation Details

Sample/Observation Reference: **A06**
Assumed ACM
Roof, and gable materials (cement sheet materials)

Sample/Observation Reference: **A04**
Assumed ACM
Soffits

Sample/Observation Reference: **B05**
Guttering
Chrysotile asbestos (laboratory result)

Sample/Observation Reference: **B06**
Exterior paints
0.41 % lead (laboratory result)

Internal to Building Samples and Observation Details

Sample/Observation Reference: **A02**
Assumed ACM
Internal wall (blast cavity)

Sample/Observation Reference: **A03**
Assumed lead paint
Internal doors blue grey paint

Sample/Observation Reference: **B03**
Wall to ceiling coving detail
Chrysotile asbestos (laboratory result)

Sample/Observation Reference: **B04**
Internal paint
9.83 % lead (laboratory result)

Sample/Observation Reference: **B02**
Debris on floor below broken light tubes
48.9 mg mercury, < laboratory detection limits for PCB
(laboratory results)

Sample/Observation Reference: **A01 + A04**
Assumed ACM
Assumed PAHs
Bitumen flooring

Sample/Observation Reference: **B01**
Internal ceiling cement sheet
Chrysotile asbestos (laboratory result)

Beneath Building Samples and Observation Details

Not accessible – concrete slab

Above Ceiling Space Samples and Observation Details

Sample/Observation Reference: **A05**
Assumed ACM
Attic (viewed from access hatch)

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12379 – 30/03/2020
- 20-12486 – 23/03/2020

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12379
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated: 25/03/2020
Date Completed: 30/03/2020
Order Number: ASB3001217
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No. 02

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Elements by ICP-MS

		Client Sample ID	B02
		Date Sampled	17/03/2020
Analyte	Unit	*Reporting Limit*	20-12379-1
Ghost Wipes - Preparation			Complete
Mercury*	µg/sample	*0.05*	48.9

Polychlorinated Biphenyls

		Client Sample ID	B02
		Date Sampled	17/03/2020
Analyte	Unit	*Reporting Limit*	20-12379-1
PCB-1	µg/sample	*0.010*	<0.010
PCB-3	µg/sample	*0.01*	<0.010
PCB-4	µg/sample	*0.01*	<0.010
PCB-8	µg/sample	*0.01*	<0.010
PCB-15	µg/sample	*0.010*	<0.010
PCB-18	µg/sample	*0.010*	<0.010
PCB-28	µg/sample	*0.010*	<0.010
PCB-31	µg/sample	*0.010*	<0.010
PCB-44	µg/sample	*0.010*	<0.010
PCB-49	µg/sample	*0.010*	<0.010
PCB-52	µg/sample	*0.010*	<0.010

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Polychlorinated Biphenyls

			Client Sample ID	B02
			Date Sampled	17/03/2020
PCB-60	µg/sample	*0.010*	<0.010
PCB-66	µg/sample	*0.010*	<0.010
PCB-77	µg/sample	*0.010*	<0.010
PCB-81	µg/sample	*0.010*	<0.010
PCB-86	µg/sample	*0.010*	<0.010
PCB-101	µg/sample	*0.010*	<0.010
PCB-105	µg/sample	*0.010*	<0.010
PCB-114	µg/sample	*0.010*	<0.010
PCB-118	µg/sample	*0.010*	<0.010
PCB-121	µg/sample	*0.010*	<0.010
PCB-123	µg/sample	*0.010*	<0.010
PCB-126	µg/sample	*0.010*	<0.010
PCB-128	µg/sample	*0.010*	<0.010
PCB-138	µg/sample	*0.010*	<0.010
PCB-141	µg/sample	*0.010*	<0.010
PCB-149	µg/sample	*0.010*	<0.010
PCB-151	µg/sample	*0.010*	<0.010
PCB-153	µg/sample	*0.010*	<0.010
PCB-156	µg/sample	*0.010*	<0.010
PCB-157	µg/sample	*0.010*	<0.010
PCB-159	µg/sample	*0.010*	<0.010
PCB-167	µg/sample	*0.010*	<0.010
PCB-169	µg/sample	*0.010*	<0.010
PCB-170	µg/sample	*0.010*	<0.010
PCB-180	µg/sample	*0.010*	<0.010
PCB-187	µg/sample	*0.010*	<0.010
PCB-189	µg/sample	*0.010*	<0.010
PCB-194	µg/sample	*0.010*	<0.010
PCB-195	µg/sample	*0.010*	<0.010
PCB-206	µg/sample	*0.010*	<0.010
PCB-209	µg/sample	*0.010*	<0.010
2,3,7,8-TCDD TEQ	µg/sample	*0.05*	<0.0500
PBB-103 (Surrogate)	%	*1*	103.6

Lead by ICP-MS (Bulk Materials)

		Client Sample ID	B04	B06
		Date Sampled	17/03/2020	17/03/2020
Analyte	Unit	*Reporting Limit*	20-12379-2	20-12379-3
Lead*	mg/kg	*2.5*	98,300	4,060
Lead	%	*0.0025*	9.83	0.41

Method Summary

Ghost Wipes ICP-MS	Client swab analysed by ICP-MS following an acid digestion.
PCB (Ghost Wipe)	Samples were extracted with hexane/acetone then analysed by GCMSMS.
Elements in Bulk Materials	Samples analysed as received by ICP-MS following an acid digestion.

Karam Wadi, B.E. (Hons)
Technologist

Terry Cooney, Ph.D.
Signatory

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Sydenham
Christchurch 8023, New Zealand
Ph. +64 (03) 662 9357
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12486
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 23/03/2020
Order Number: ASB3001217
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No.02
Description of Work: Bulk - Te Moto Kairangi Magazine No.02

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12486-1	B01		Bulk Materials (100 x 60 x 20 mm)	17/03/2020	23/03/2020
20-12486-2	B03		Bulk Materials (80 x 40 x 10 mm)	17/03/2020	23/03/2020
20-12486-3	B05		Bulk Materials (70 x 50 x 15 mm)	17/03/2020	23/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12486-1	B01	L1 - Paint L2 - Fibre cement sheet L3 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present
20-12486-2	B03	L1 - Paint L2 - Fibre cement sheet L3 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present
20-12486-3	B05	L1 - Fibre cement sheet L2 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 16 March 2020

Watts Peninsula - Magazine No.03

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 16 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A01	Attic	64	Assumed Asbestos
A05	Fire water riser (gaskets)	1.2	Assumed Asbestos

Table E1: Friable ACM requiring removal prior to demolition/refurbishment etc.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B01	Internal ceiling and coving cement sheet materials	64	Chrysotile asbestos present
B05	Roof and gutters	64	Chrysotile asbestos present
A02	Bitumen flooring	64	Assumed Asbestos
A03	Interior wall (blast cavity)	96	Assumed Asbestos
A06	Soffits	64	Assumed Asbestos

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment etc.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B02	Red paint on fire riser (external)	2 lin m	21.6 % lead
B03	Exterior paint	96	9.45 % lead
B04	Internal paint	96	0.02 % lead
A04	Paint on internal doors	6	Assumed lead paint
A05	Bitumen flooring	64	PAHs

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.03, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, Magazine No.03

The assessment was based on the following information known about the property and/or observed during the survey conducted on 16 March 2020:

- Single story structure.
- Foundation: Concrete slab.
- Roof: Cement sheet (i.e. Super 6).
- Ceiling: Cement sheet.
- Walls: (internal) plaster over brick, (external) brick
- Flooring: Bitumen coating over concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** – electrical and fire fighting (sprinkler) equipment/apparatus present internal and external to this building.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, 2nd edition) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a. Visually assessed each area individually.
   b. Worked in the same pattern in each area (e.g. clockwise from entry).
   c. Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey (refer to Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis by polarized light microscopy (PLM) was utilised to test for the presence of asbestos and by ICP-MS for lead. Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that hazardous building materials may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energised services etc. (list not exhaustive).

During the survey conducted on the 16 March 2020, the following areas/features of Magazine No.03 could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Cavity between inner and outer walls (i.e. blast cavity wall); confined space and not entered.
- Attic space (access blocked by equipment and shelves).
- Electrical and sprinkler equipment.

5 Results and Conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM, PAHs lead paints** and assumed PAHs within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at Magazine No.03 (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

- Prior to refurbishment, demolition or relocation of Magazine No.03 (assumed) friable ACM must be removed by a Class A licensed asbestos removalist. Friable ACM is identified in Table E1 (Executive Summary).
- Prior to refurbishment, demolition or relocation of Magazine No.03 non-friable ACM of over 10 m² must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (Executive Summary).
- This hazardous materials survey report shall be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a licensed asbestos assessor/competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works (for Class A and Class B removal works respectively).
- On completion of the asbestos removal works, a licensed asbestos assessor/competent person will conduct the required clearance(s) for this building (competent person – see Regulation 3(a) - Health and Safety at Work (Asbestos) Regulations 2016) (for Class A and Class B removal works respectively). A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on Magazine No.03, the contractor will familiarise themselves with the areas/features of this structure excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and Limitations

This report has been prepared for the exclusive use of Tonkin + Taylor, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:

.....

Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

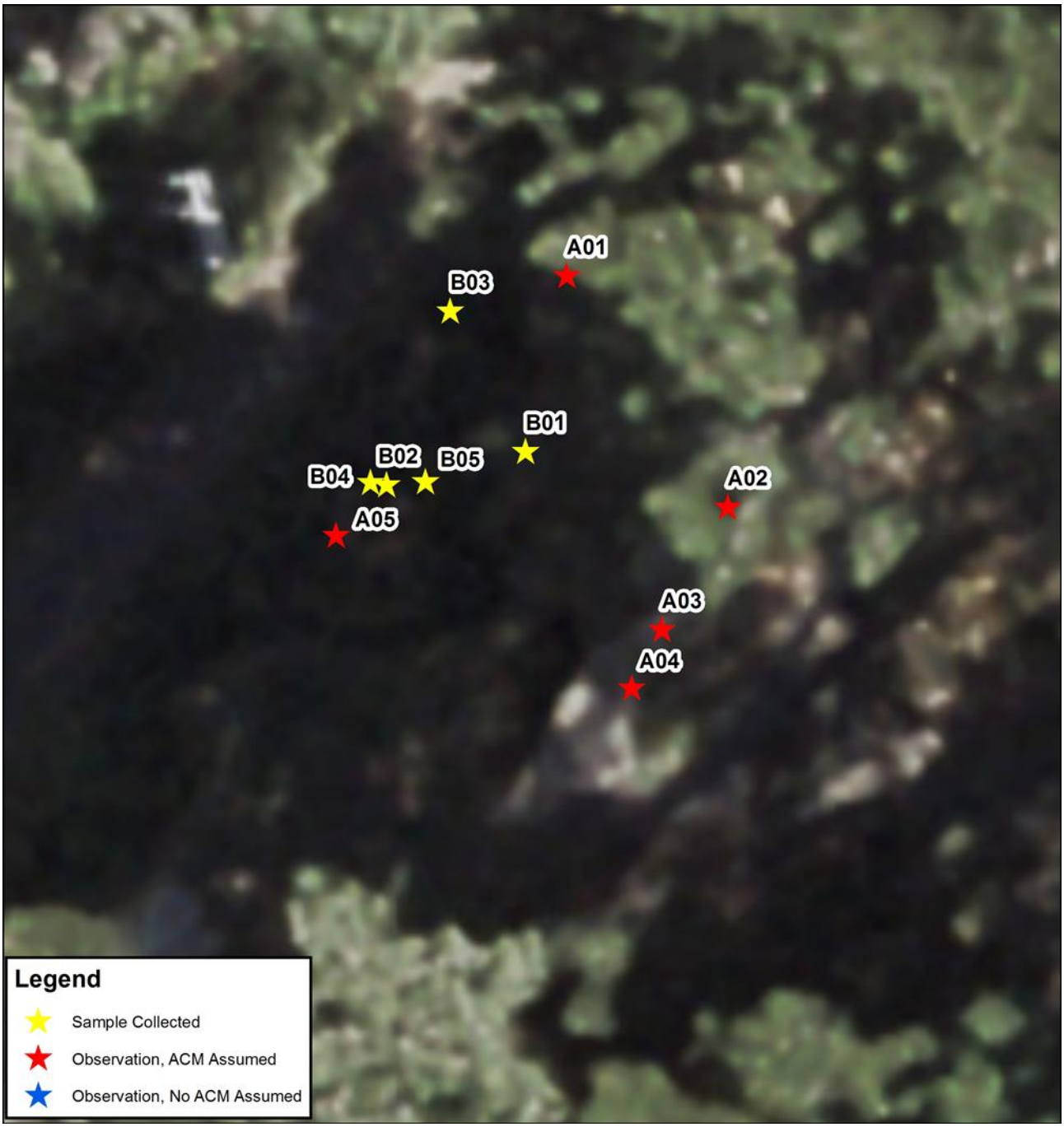
Technical Review by:

.....

Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula, Magazine No.03 - Samples, Assumptions and Observation Locations



Site Plan (source LINZ).

General Photos of External Parts to Building

Rear side

Front side

Right side

Left side

External Building Samples and Observation Details

Sample/Observation Reference: **B02**
Red paint to fire riser
21.6 % lead (laboratory result)

Sample/Observation Reference: **B03**
Exterior paints
9.45 % lead (laboratory result)

Sample/Observation Reference: **A05**
Assumed ACM
Fire water riser (gaskets)

Sample/Observation Reference: **B05**
Roof and gutters
Chrysotile asbestos (laboratory result)

Sample/Observation Reference: **A06**
Assumed ACM
Soffits

Internal Building Samples and Observation Details

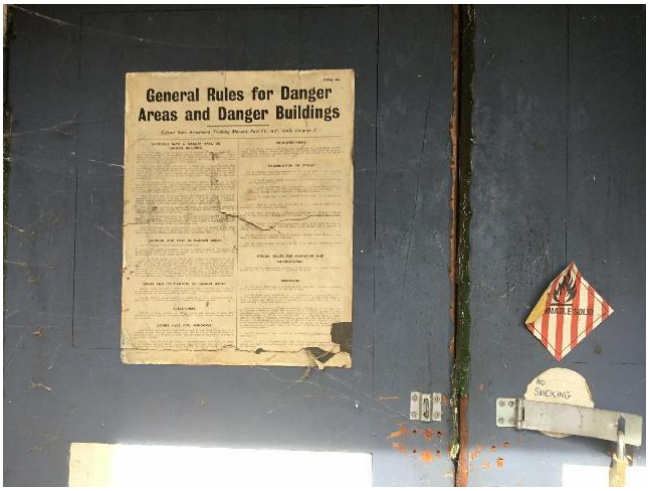
Sample/Observation Reference: **B04**
Internal paint
0.02 % lead (laboratory result)

Sample/Observation Reference: **A02**
Assumed ACM
Bitumen flooring

Sample/Observation Reference: **A01**
Assumed ACM
Attic

Sample/Observation Reference: **A03**
Assumed ACM
Interior wall/exterior wall (blast cavity)

Sample/Observation Reference: **A04**
Assumed lead paint
Interior doors blue grey paint



Sample/Observation Reference: **B01**
Cement sheet ceiling and coving materials
Chrysotile asbestos (laboratory result)

Beneath Building Samples and Observation Details

Not accessible – concrete slab

Above Ceiling Space Samples and Observation Details

Not accessible – shelving and sprinkler pipes prohibit access through hatch (see A01)

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12373 – 25/03/2020
- 20-12482 – 23/03/2020

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12373
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated:
Date Completed: 25/03/2020
Order Number: ASB3001218
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No. 03

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Lead by ICP-MS (Bulk Materials)

Client Sample ID			B02	B03	B04
Date Sampled			17/03/2020	17/03/2020	17/03/2020
Analyte	Unit	*Reporting Limit*	20-12373-1	20-12373-2	20-12373-3
Lead	mg/kg	*2.5*	216,000	94,500	165
Lead	%	*0.0025*	21.6	9.45	0.02

Method Summary

Elements in Bulk Materials Samples analysed as received by ICP-MS following an acid digestion.

Sharelle Frank, B.Sc. (Tech)
Technologist

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sales@analytica.co.nz
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Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12482
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 23/03/2020
Order Number: ASB3001218
Reference: 1013126.0000

Sampling Site: TeMoto Kairangi Magazine No.03
Description of Work: Bulk - TeMoto Kairangi Magazine No.03

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12482-1	B01		Bulk Materials (70 x 60 x 10 mm)	17/03/2020	23/03/2020
20-12482-2	B05		Bulk Materials (90 x 70 x 20 mm)	17/03/2020	23/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12482-1	B01	L1 - Fibre cement L2 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present
20-12482-2	B05	L1 - Fibre cement L2 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 16 March 2020

Watts Peninsula - Magazine No.04

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 16 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A02	(internal) water riser for sprinklers (gaskets)	6.4	Assumed Asbestos
A06	(external) fire riser (gaskets at connections)	2.4	Assumed Asbestos

Table E1: Friable ACM requiring removal prior to demolition/refurbishment etc.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B01	Bitumen floor coating	64	Chrysotile asbestos present
B02	Switch board	0.16	Chrysotile asbestos present
A01	Internal ceiling and coving materials	64	Assumed Asbestos
A03	Internal walls	96	Assumed lead paint
A04	Inside wall (blast cavity)	96	Assumed Asbestos
A05	Soffits and flashing over door	16	Assumed Asbestos
A07	Gutters and roofing	64	Assumed Asbestos

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment etc.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B01	Bitumen floor coating	64	1.61 mg/kg BaP eq (PAHs)
B03	External paints	96	11.8 % lead
A08	Black bitumen flooring	64	Assumed PAHs

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.04, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, Magazine No.04

The assessment was based on the following information known about the property and/or observed during the survey conducted on 16 March 2020:

- Single story structure.
- Foundation: Concrete slab.
- Roof: Cement sheet (i.e. Super 6).
- Ceiling: Cement sheet.
- Walls: (internal) plaster over brick, (external) brick.
- Flooring: Bitumen coating over concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** – electrical and sprinkler fixtures and fittings were present.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, 2nd edition) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a. Visually assessed each area individually.
   b. Worked in the same pattern in each area (e.g. clockwise from entry).
   c. Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey (refer to Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis by polarized light microscopy (PLM) was utilised to test for the presence of asbestos, by ICP-MS for lead and GC-MS for PAHs. Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that hazardous building materials may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energised services (list not exhaustive).

During the survey conducted on the 16 March 2020, the following areas/features of Magazine No.04 could not be accessed and therefore should be treated as if hazardous materials are present within them until proven otherwise:

- Cavity between inner and outer walls (i.e. blast cavity wall); confined space and not entered.
- Attic space.
- Electrical and sprinkler equipment.

5 Results and Conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM, PAHs** and **lead paints** within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at Magazine No.04 (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

- Prior to refurbishment, demolition or relocation of Magazine No.04 (assumed) friable ACM must be removed by a Class A licensed asbestos removalist. Friable ACM is identified in Table E1 (Executive Summary).
- Prior to refurbishment, demolition or relocation of Magazine No.04 non-friable ACM of over 10 m^2 must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (Executive Summary).
- This hazardous materials survey report shall be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a licensed asbestos assessor/competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works (for Class A and Class B removal works respectively).
- On completion of the asbestos removal works, a licensed asbestos assessor/competent person will conduct the required clearance(s) for this building (competent person – see Regulation 3(a) - Health and Safety at Work (Asbestos) Regulations 2016) (for Class A and Class B removal works respectively). A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on Magazine No.04, the contractor will familiarise themselves with the areas/features of this structure excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and Limitations

This report has been prepared for the exclusive use of Land Information New Zealand, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:

.....
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

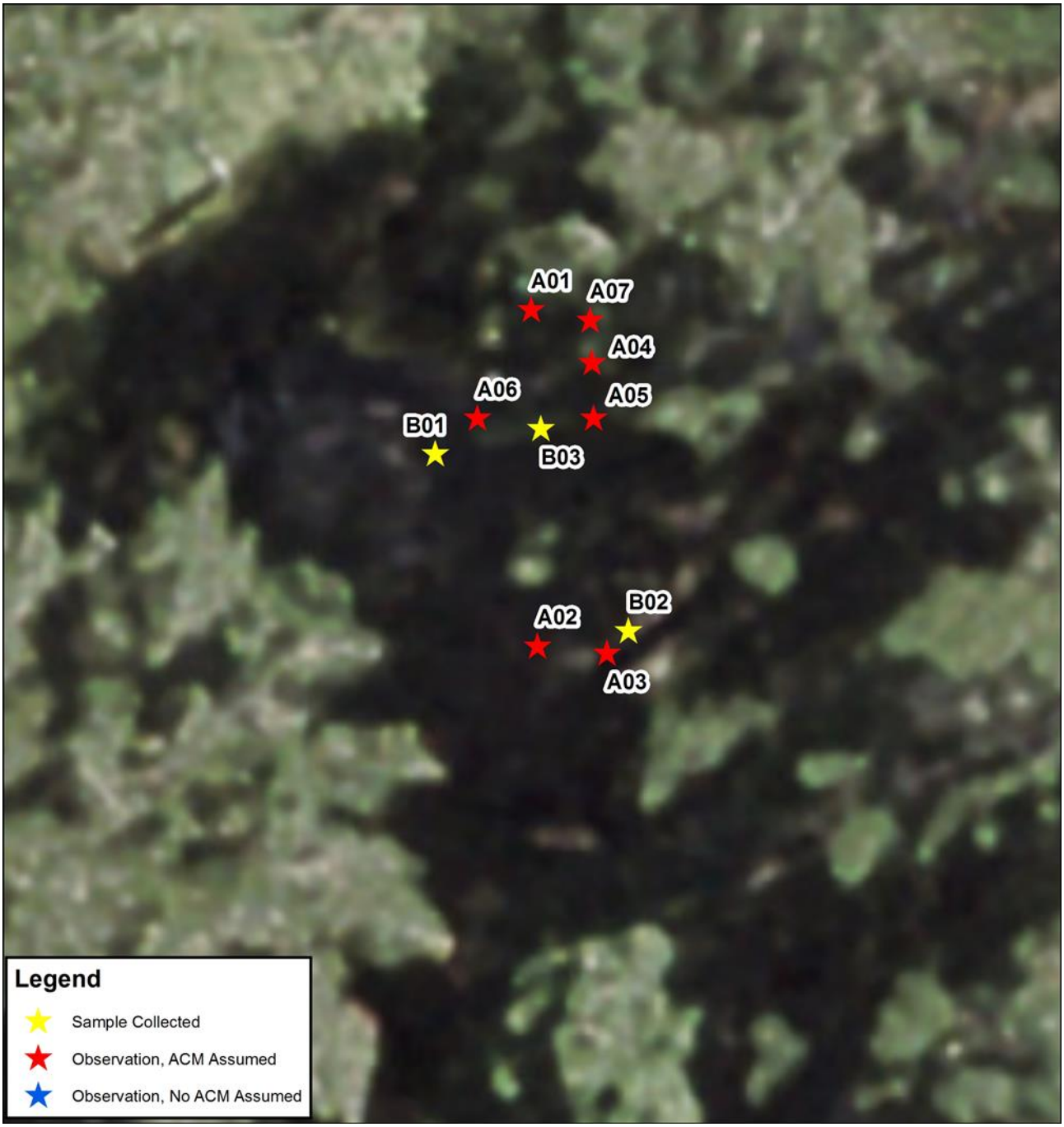
.....
Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:

.....
Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula, Magazine No.04 - Samples, Assumptions and Observation Locations



Site Plan (source LINZ).

General Photos of External Parts to Building

Left side

Right side

Front side

Rear – not accessible, fallen trees

External Building Samples and Observation Details

Sample/Observation Reference: **A06**
Assumed ACM
Fire riser (gasket)

Sample/Observation Reference: **A05**
Assumed ACM
Soffits and flashing over door

Sample/Observation Reference: **B03**
Exterior paint
11.8 % lead (laboratory result)

Sample/Observation Reference: **A07**
Assumed ACM
Gutters and roofing

Internal Building Samples and Observation Details

Sample/Observation Reference: **B02**
Switch board
Chrysotile asbestos present (laboratory result)

Sample/Observation Reference: **A04**
Assumed ACM
Inside cavity wall

Sample/Observation Reference: **B01 + A08**
Bitumen floor coating
Chrysotile asbestos present (laboratory result)
Assumed PAHs

Sample/Observation Reference: **A01**
Assumed ACM
Internal ceiling and coving cement sheet materials

Sample/Observation Reference: **A03**
Paint on walls
Assumed lead paint

Sample/Observation Reference: **A02**
Water riser for sprinklers (gaskets)
Assumed ACM

Beneath Building Samples and Observation Details

Not accessible - concrete slab

Above Ceiling Space Samples and Observation Details

View Above Ceiling Space

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12256 – 24/03/2020
- 20-12367 – 31/03/2020

Analytica Laboratories Limited
Unit 4, 91 Byron Street
Sydenham
Christchurch 8023, New Zealand
Ph. +64 (03) 662 9357
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12256
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 24/03/2020
Order Number: ASB3001219
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No.04
Description of Work: Bulk - Te Moto Kairangi Magazine No.04

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12256-1	B01		Bulk Materials (150 x 60 x 15 mm)	17/03/2020	24/03/2020
20-12256-2	B02		Bulk Materials (25 x 15 x 5 mm)	17/03/2020	21/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12256-1	B01	L1 - Bitumastic material L2 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present
20-12256-2	B02	L1 - Resinous board L2 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12367
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated: 25/03/2020
Date Completed: 31/03/2020
Order Number: ASB3001219
Reference: 10131256.0000

Sampling Site: Te Moto Kairangi Magazine No.04

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Lead by ICP-MS (Bulk Materials)

		Client Sample ID	B03
		Date Sampled	17/03/2020
Analyte	Unit	*Reporting Limit*	20-12367-2
Lead*	mg/kg	*2.5*	118,000
Lead*	%	*0.0025*	11.8

Polycyclic Aromatic Hydrocarbons - Soil

		Client Sample ID	B01
		Date Sampled	17/03/2020
Analyte	Unit	*Reporting Limit*	20-12367-1
1-Methylnaphthalene	mg/kg dry wt	*0.01*	3.53
2-Methylnaphthalene	mg/kg dry wt	*0.01*	5.60
Acenaphthene	mg/kg dry wt	*0.01*	0.30
Acenaphthylene	mg/kg dry wt	*0.01*	0.12
Anthracene	mg/kg dry wt	*0.01*	0.63
Benz[a]anthracene	mg/kg dry wt	*0.02*	1.24
Benzo[a]pyrene	mg/kg dry wt	*0.01*	0.98
Benzo[b]&[j] fluoranthene	mg/kg dry wt	*0.02*	1.18
Benzo[g,h,i]perylene	mg/kg dry wt	*0.02*	0.95
Benzo[k]fluoranthene	mg/kg dry wt	*0.01*	0.33
Chrysene	mg/kg dry wt	*0.01*	1.74

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Polycyclic Aromatic Hydrocarbons - Soil

		Client Sample ID	B01
		Date Sampled	17/03/2020
Dibenz(a,h)anthracene	mg/kg dry wt	*0.01*	0.27
Fluoranthene	mg/kg dry wt	*0.02*	2.33
Fluorene	mg/kg dry wt	*0.01*	0.64
Indeno(1,2,3-cd)pyrene	mg/kg dry wt	*0.01*	0.46
Naphthalene	mg/kg dry wt	*0.01*	2.42
Phenanthrene	mg/kg dry wt	*0.01*	3.36
Pyrene	mg/kg dry wt	*0.02*	2.33
Benzo[a]pyrene TEQ (LOR)	mg/kg dry wt	*0.03*	1.61
Benzo[a]pyrene TEQ (Zero)	mg/kg dry wt	*0.01*	1.61
Anthracene-d10 (Surrogate)	%	*1*	98.9

Moisture Content

		Client Sample ID	B01
		Date Sampled	17/03/2020
Analyte	Unit	*Reporting Limit*	20-12367-1
Moisture Content	%	*1*	2

Method Summary

Elements in Bulk Materials Samples analysed as received by ICP-MS following an acid digestion.

PAH in Soil Solvent extraction, silica cleanup, followed by GC-MS analysis.
Benzo[a]pyrene TEQ (LOR): The most conservative TEQ estimate, where a result is reported as less than the limit of reporting (LOR) the LOR value is used to calculate the TEQ for that PAH.
Benzo[a]pyrene TEQ (Zero): The least conservative TEQ estimate, PAHs reported as less than the limit of reporting (LOR) are not included in the TEQ calculation.
Benzo[a]pyrene toxic equivalence (TEQ) is calculated according to *'Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health'*. Ministry for the Environment. 2011. (In accordance with in-house procedure).

Moisture Moisture content is determined gravimetrically by drying at 103 °C.

Emily Hanna, B.Sc.
Trace Elements Team Leader

Rong Zhang
Technician

Tonkin+Taylor

Job No: 1013126
15 July 2020

Land Information New Zealand
112 Tuam Street
Christchurch 8140

Attention: Kim Wepansnick

Dear Kim

Hazardous Building Materials Survey
Watts Peninsula - Magazine No.05

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.05, Watts Peninsula, Wellington which has been completed in accordance with our offer of service dated 4 February 2020.

1 Site conditions

On 17 March 2020 and during the survey of other buildings at Watts Peninsula, Magazine No.05 was visited. At this time the building was locked and access within the structure was not possible.

Magazine No.05.

Tonkin & Taylor Ltd | Level 3, PwC Centre, 60 Cashel Street, West End, Christchurch, 8013, New Zealand | PO Box 13-055, Christchurch 8141
P +64-3-363 2440 F +64-9-307 0265 E chc@tonkintaylor.co.nz

Front elevation of Magazine No.05.

2 Survey

Based on the collective findings of T+T's survey of the other magazine buildings at Watts Peninsula, in the absence of being able to conduct a survey, the following *assumptions* are made regarding the presence of hazardous building materials at Magazine No.05:

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
Assumption	Attic – asbestos dust	64	Assumed Asbestos

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
Assumption	Internal ceiling and coving cement sheet materials	64	Assumed Asbestos
	Internal - bitumen floor coating	64	
	Internal wall (blast cavity)	96	
	External - guttering	9.6	
	External – soffits and flashing over door	16	
	External - roof and gable materials	64	

Other Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
Assumption	Internal – dust, debris from broken electrical equipment	tbc	Assumed mercury and PCBs
	Internal - paints	96	Assumed lead
	Internal –bitumen floor coating	64	Assumed PAHs
	External - paints	96	Assumed lead

Until such time that a survey of Magazine No.05 can be conducted, all work disturbing the building materials at this structure should be managed as if hazardous building materials are present.

Before undertaking any works at Magazine No.05, the contractor will familiarise themselves with this report.

3 Applicability

This report has been prepared for the exclusive use of our Land Information New Zealand, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

.....

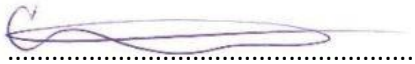
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin & Taylor Ltd by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:



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Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

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Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 17 March 2020

Watts Peninsula - Magazine No.06

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 17 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A07	Attic – dust/debris from Super 6 roof	64	Assumed Asbestos

Table E1: Friable ACM requiring removal prior to demolition/refurbishment etc.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B01	Super 6 roofing	64	Chrysotile asbestos present
B02	Soffits	16	Chrysotile asbestos present
B03	Gutters and downpipes	9.6	Chrysotile asbestos present
A01	Flashing over door	0.9	Assumed Asbestos
A02	Cement sheet debris on floor in front door (guttering)	0.3	Assumed Asbestos
A03	Internal wall (blast cavity)	96	Assumed Asbestos
A04	Bitumen floor coating	64	Assumed Asbestos
A05	Ceiling and coving cement sheet materials	64	Assumed Asbestos

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment etc.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A04	Bitumen floor coating	64	Assumed PAHs
A06	Internal doors - paint	6	Assumed lead paint

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.06, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, Magazine No.06

The assessment was based on the following information known about the property and/or observed during the survey conducted on 17 March 2020:

- Single story structure.
- Foundation: Concrete slab.
- Roof: Cement sheet (i.e. Super 6).
- Ceiling: Cement sheet.
- Walls: (internal) plaster over brick, (external) brick.
- Flooring: Bitumen coating over concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** - electrical fixtures and fittings were present.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, 2nd edition) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a Visually assessed each area individually.
   b Worked in the same pattern in each area (e.g. clockwise from entry).
   c Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey (refer to Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis by polarized light microscopy (PLM) was utilised to test for the presence of asbestos and by ICP-MS for lead. Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that asbestos may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energised services etc (list not exhaustive).

During the survey conducted on the 17 March 2020, the following areas/features of Magazine No.06 could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Cavity between inner and outer walls (i.e. blast cavity wall); confined space and not entered.
- Attic space (access to hatch not accessible due to materials stored).
- Electrical equipment (i.e. fittings and fixtures – there is a modern switch box at doors (reference N01, see Appendix A and photos).

5 Results and Conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM** and **assumed the presence of lead paint** and **PAHs** within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at Magazine No.06 (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

- Prior to refurbishment, demolition or relocation of Magazine No.06 (assumed) friable ACM must be removed by a Class A licensed asbestos removalist. Friable ACM is identified in Table E1 (Executive Summary).
- Prior to refurbishment, demolition or relocation of Magazine No.06 non-friable ACM of over 10 m² must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (Executive Summary).
- This hazardous materials survey report shall be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a licensed asbestos assessor/competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works (for Class A and Class B removal works respectively).
- On completion of the asbestos removal works, a licensed asbestos assessor/competent person will conduct the required clearance(s) for this building (competent person – see Regulation 3(a) - Health and Safety at Work (Asbestos) Regulations 2016) (for Class A and Class B removal works respectively). A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on Magazine No.06, the contractor will familiarise themselves with the areas/features of this structure excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and Limitations

This report has been prepared for the exclusive use of Land Information New Zealand strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:

.....
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

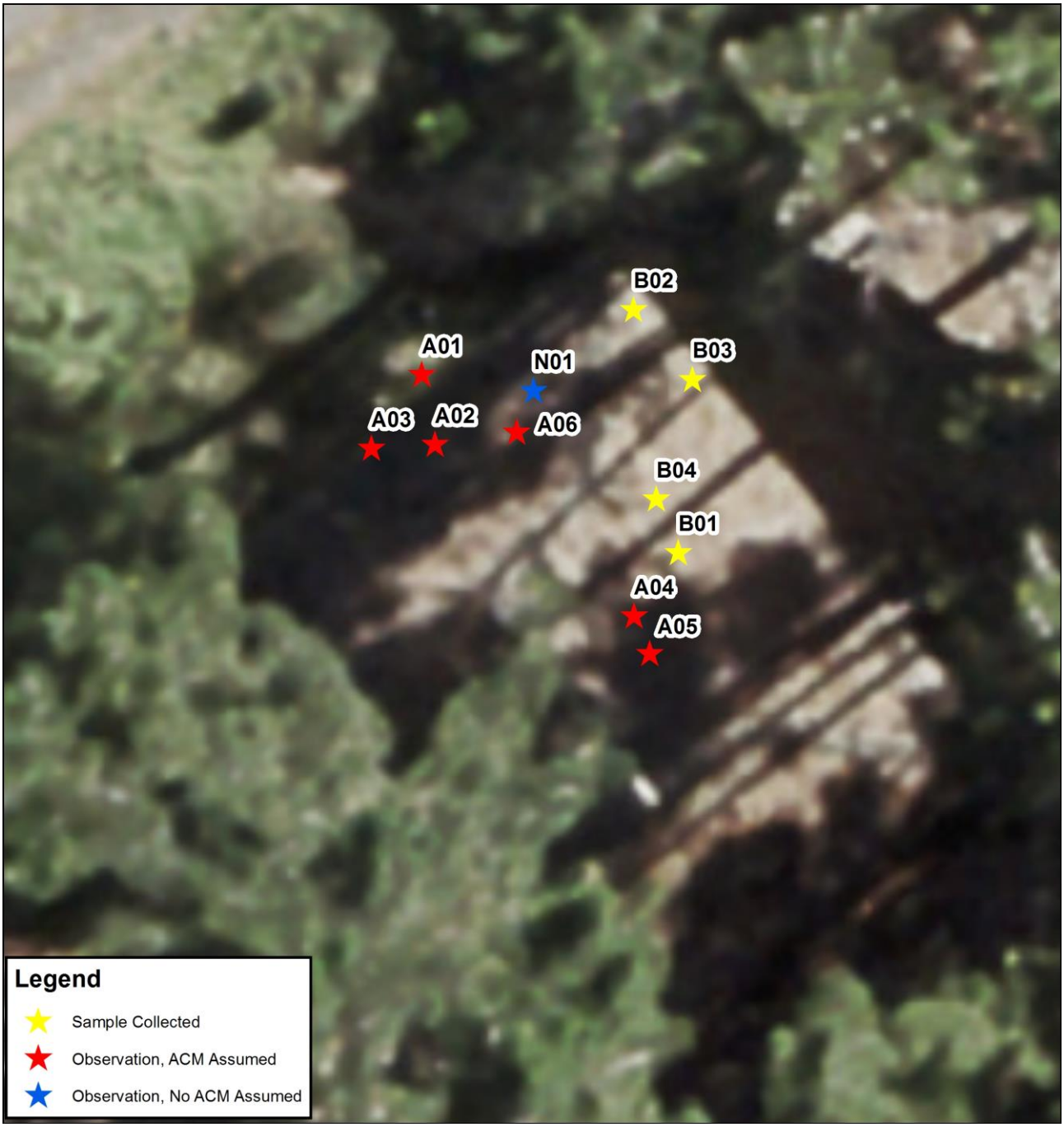
.....
Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:

.....
Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula, Magazine No.06 - Samples, Assumptions and Observation Locations



General Photos of External Building Detail

Front side

Rear side

Right side

Left side

External Building Samples and Observation Details

Sample/Observation Reference: **B01**
Super 6 roofing
Chrysotile asbestos (laboratory result)

Sample/Observation Reference: **B02**
Soffits
Chrysotile asbestos (laboratory result)

Sample/Observation Reference: **A01**
Assumed ACM
Flashing over door

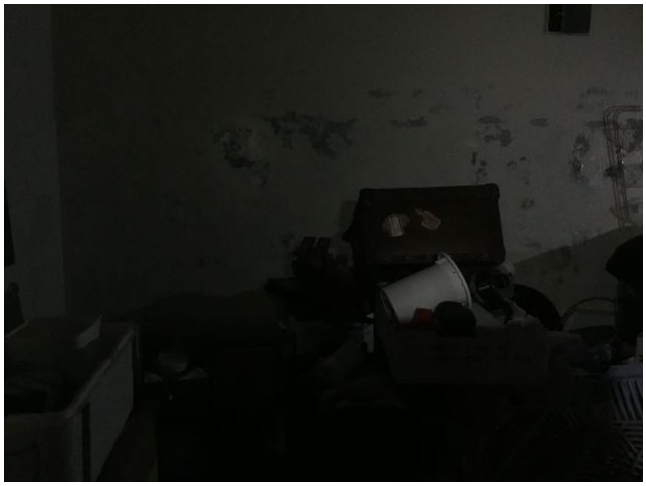
Sample/Observation Reference: **B03**
Gutters and downpipes
Chrysotile asbestos (laboratory result)

Sample/Observation Reference: **A02**
Assumed ACM
Cement sheet debris on floor in front door (guttering)

Internal Building Samples and Observation Details

Sample/Observation Reference: **N01**
No ACM Assumed
Modern electric board

Sample/Observation Reference: **B04**
Paint on walls
0.6 % lead (laboratory result)



Sample/Observation Reference: **A06**
Internal doors grey blue paint
Assumed lead paint

Sample/Observation Reference: **A03**
Internal wall / external wall (blast cavity)
Assumed ACM

Sample/Observation Reference: **A04**
Assumed ACM
Assumed PAHs
Bitumen floor coating

Sample/Observation Reference: **A05**
Assumed ACM
Ceiling and coving sheet materials

Sample/Observation Reference: **A07**

Assumed ACM

Attic (not accessible)

Beneath Building Samples and Observation Details

n/a concrete slab

Above Ceiling Space Samples and Observation Details

n/a attic not observed, material storage blocking access to hatch

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12372 – 25/03/2020
- 20-12527 – 23/03/2020

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12372
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated:
Date Completed: 25/03/2020
Order Number: ASB3001222
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No. 06

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Lead by ICP-MS (Bulk Materials)

		Client Sample ID	B04
		Date Sampled	17/03/2020
Analyte	Unit	*Reporting Limit*	20-12372-1
Lead	mg/kg	*2.5*	6,020
Lead	%	*0.0025*	0.60

Method Summary

Elements in Bulk Materials Samples analysed as received by ICP-MS following an acid digestion.

Sharelle Frank, B.Sc. (Tech)
Technologist

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Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12527
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 23/03/2020
Order Number: ASB3001222
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No.6
Description of Work: Bulk - Te Moto Kairangi Magazine No.6

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12527-1	B01		Bulk Materials (80 x 50 x 15 mm)	17/03/2020	23/03/2020
20-12527-2	B02		Bulk Materials (80 x 50 x 10 mm)	17/03/2020	23/03/2020
20-12527-3	B03		Bulk Materials (100 x 50 x 20 mm)	17/03/2020	23/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12527-1	B01	L1 - Fibre cement sheet L2 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present
20-12527-2	B02	L1 - Fibre cement sheet L2 - Surface debris L3 - Moss	Chrysotile (White Asbestos) Organic Fibres	Present
20-12527-3	B03	L1 - Fibre cement sheet L2 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 17 March 2020

Watts Peninsula - Magazine No.07

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 17 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A05	Asbestos dust/debris, under replacement roof and gable end materials	64	Assumed Asbestos
A06	Asbestos dust/debris in attic	64	Assumed Asbestos

Table E1: Friable ACM requiring removal prior to demolition/refurbishment etc.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B01	Cement sheet ceiling and coving materials	64	Chrysotile asbestos present
B02	Bitumen floor coating	64	Chrysotile asbestos present
A01	Cavity (blast wall)	96	Assumed Asbestos
A02	Guttering debris	1 lin m	Assumed Asbestos
A03	Soffits	16	Assumed Asbestos
A04	Gutters and flashing over door	9.6	Assumed Asbestos

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment etc.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B03	External paint	96	3.62 % lead
A07	Bitumen floor coating	64	Assumed PAHs

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.07, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, Magazine No.07

The assessment was based on the following information known about the property and/or observed during the survey conducted on 17 March 2020:

- Single story building.
- Foundation: Concrete slab.
- Roof: Steel sheet (replacement materials, look recent).
- Ceiling: Cement sheet.
- Walls: (internal) plaster over brick, (external) brick.
- Flooring: Bitumen coating over concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** – no electrical fixtures or fittings observed to be present.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, 2nd edition) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a Visually assessed each area individually.
   b Worked in the same pattern in each area (e.g. clockwise from entry).
   c Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey (refer to Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis by polarized light microscopy (PLM) was utilised to test for the presence of asbestos and by ICP-MS for lead. Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that hazardous building materials may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energised services etc. (list not exhaustive).

During the survey conducted on the 17 March 2020, the following areas/features of Magazine No.07 could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Cavity between inner and outer walls (i.e. blast cavity wall); confined space and not entered.
- Attic space and roof, confined space and/or heights above 3 m.

5 Results and Conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM** and **lead paint** and assumed PAHs within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at Magazine No.07 (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

- Prior to refurbishment, demolition or relocation of Magazine No.07 (assumed) friable ACM must be removed by a Class A licensed asbestos removalist. Friable ACM is identified in Table E1 (Executive Summary).
- Prior to refurbishment, demolition or relocation of Magazine No.07 non-friable ACM of over 10 m² must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (Executive Summary).
- This hazardous materials survey report shall be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a licensed asbestos assessor/competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works (for Class A and Class B removal works respectively).
- On completion of the asbestos removal works, a licensed asbestos assessor/competent person will conduct the required clearance(s) for this building (competent person – see Regulation 3(a) - Health and Safety at Work (Asbestos) Regulations 2016) (for Class A and Class B removal works respectively). A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on Magazine No.07, the contractor will familiarise themselves with the areas/features of this structure excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and Limitations

This report has been prepared for the exclusive use of Land Information New Zealand, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:

.....
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

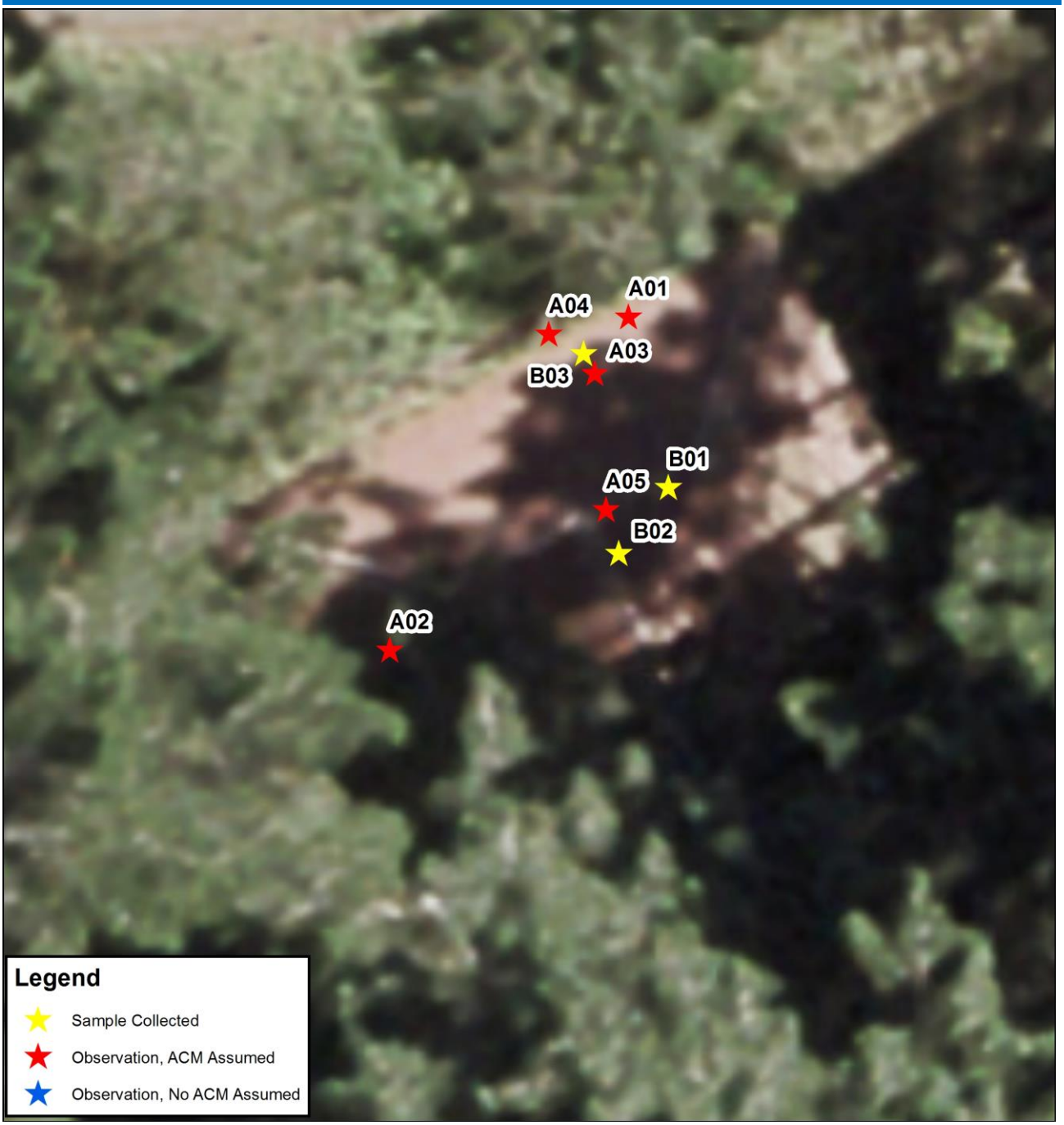
.....
Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:

.....
Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula, Magazine No.07 - Samples, Assumptions and Observation Locations



General Photos of External Parts of Structure

Front side

Right side

Left side

Rear side

External Building Samples and Observation Details

Sample/Observation Reference: **A04**
Assumed ACM
Gutters and flashing over door

Sample/Observation Reference: **A02**
Assumed ACM
Guttering debris

Sample/Observation Reference: **A03**
Assumed ACM
Soffits

Sample/Observation Reference: **A05**
Assumed ACM
Replacement roof (steel) and gable end materials
(assumed asbestos dust on roof structure below)

Sample/Observation Reference: **B03**
Exterior paints
3.62% lead (laboratory result)

Internal Building Samples and Observation Details

Sample/Observation Reference: **B01**
Cement sheet ceiling includes coving and trim
Chrysotile asbestos (laboratory result)

Sample/Observation Reference: **A01**
Assumed ACM
Internal wall/external wall (blast cavity)

Sample/Observation Reference: **B02 + A07**
Bitumen floor coating
Chrysotile asbestos (laboratory result)
Assumed PAHs

Sample/Observation Reference: **A06**
Assumed ACM
Attic

Beneath Building Samples and Observation Details

Concrete slab

Above Ceiling Space Samples and Observation Details

View Above Ceiling Space

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12375 – 25/03/2020
- 20-12477 – 23/03/2020

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12375
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated:
Date Completed: 25/03/2020
Order Number: ASB3001223
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No. 07

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Lead by ICP-MS (Bulk Materials)

		Client Sample ID	B03
		Date Sampled	17/03/2020
Analyte	Unit	*Reporting Limit*	20-12375-1
Lead	mg/kg	*2.5*	36,200
Lead	%	*0.0025*	3.62

Method Summary

Elements in Bulk Materials Samples analysed as received by ICP-MS following an acid digestion.

Sharelle Frank, B.Sc. (Tech)
Technologist

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Christchurch 8023, New Zealand
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sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12477
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 23/03/2020
Order Number: ASB3001223
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No.07
Description of Work: Bulk - Te Moto Kairangi Magazine No.07

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12477-1	B01		Bulk Materials (30 x 30 x 5 mm)	17/03/2020	23/03/2020
20-12477-2	B02		Bulk Materials (60 x 20 x 10 mm)	17/03/2020	23/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12477-1	B01	L1 - Paint L2 - Fibre cement sheet L3 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present
20-12477-2	B02	L1 - Bitumastic material L2 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 17 March 2020

Watts Peninsula - Magazine No.08

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 17 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A07	Asbestos dust/debris in attic	64	Assumed Asbestos
A08	Asbestos dust/debris under sheet roofing materials	64	Assumed Asbestos

Table E1: Friable ACM requiring removal prior to demolition/refurbishment etc.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A01	Soffits	16	Assumed Asbestos
A03	Internal wall (blast cavity)	96	Assumed Asbestos
A04	Bitumen floor coating	64	Assumed Asbestos
A05	Internal ceiling and coving cement sheet materials	64	Assumed Asbestos

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment etc.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A02	External paint	96	Assumed lead paint
A04	Bitumen floor coating	64	Assumed PAHs

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.08, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, Magazine No.08

The assessment was based on the following information known about the property and/or observed during the survey conducted on 17 March 2020:

- Single story structure.
- Foundation: Concrete slab.
- Roof: Steel sheet (replacement material).
- Ceiling: Cement sheet.
- Walls: (internal) plaster over brick, (external) brick.
- Flooring: Bitumen coating over concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** – electrical equipment/features were observed to be present.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, second edition) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a Visually assessed each area individually.
   b Worked in the same pattern in each area (e.g. clockwise from entry).
   c Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structure identified for future disturbance work, where these were reasonably accessible at the time of the survey (refer to Section 6 for areas excluded from inspection/testing).

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that hazardous building materials may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energised services etc. (list not exhaustive).

During the survey conducted on the 17 March 2020, the following areas/features of Magazine No.08 could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Cavity between inner and outer walls (i.e. blast cavity wall); confined space and not entered.
- Attic space and roof, confined space and/or heights above 3 m.

5 Results and Conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM and lead paints, PAHs** within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at Magazine No.08 (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

- Prior to refurbishment, demolition or relocation of Magazine No.08 (assumed) friable ACM must be removed by a Class A licensed asbestos removalist. Friable ACM is identified in Table E1 (Executive Summary).
- Prior to refurbishment, demolition or relocation of Magazine No.08 non-friable ACM of over 10 m² must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (Executive Summary).
- This hazardous materials survey report shall be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a licensed asbestos assessor/competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works (for Class A and Class B removal works respectively).
- On completion of the asbestos removal works, a licensed asbestos assessor/competent person will conduct the required clearance(s) for this building (competent person – see Regulation 3(a) - Health and Safety at Work (Asbestos) Regulations 2016) (for Class A and Class B removal works respectively). A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on Magazine No.08, the contractor will familiarise themselves with the areas/features of this structure excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and Limitations

This report has been prepared for the exclusive use of Land Information New Zealand, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:

.....

Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:

.....

Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula, Magazine No.08 - Samples, Assumptions and Observation Locations

General Photos of External Parts of Building

Right side

Left side

Rear side

Front side

External Building Samples and Observation Details

Sample/Observation Reference: **A02**
Exterior paints
Assumed lead paint

Sample/Observation Reference: **A08**
Assumed ACM
Dust under replacement steel

Sample/Observation Reference: **A01**
Assumed ACM
Soffits

Internal Building Samples and Observation Details

Sample/Observation Reference: **A04**
Assumed ACM
Assumed PAHs
Bitumen floor coating

Sample/Observation Reference: **N01**
No ACM Assumed
Electric box (modern)

Sample/Observation Reference: **A03**
Assumed ACM
Internal wall/external wall (blast cavity)

Sample/Observation Reference: **A06**
Assumed lead paints
Internal paints

Sample/Observation Reference: **A05**
Assumed ACM
Internal ceiling and coving materials

Sample/Observation Reference: **A07**
Assumed ACM
Asbestos dust/debris in attic
(No photograph)

Beneath Building Samples and Observation Details

Concrete slab

Above Ceiling Space Samples and Observation Details

Internal feature (cage) prevented access via hatch

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Note – no laboratory testing undertaken at this structure, see other T+T reports for Magazines 1 to 10, materials observed commensurate in type/condition at Magazine No.08 so assumed.

Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 17 March 2020

Watts Peninsula - Magazine No.09

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 17 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
No friable ACMs observed during this survey			

Table E1: Friable ACM requiring removal prior to demolition/refurbishment etc.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A01	Internal wall (blast cavity)	96	Assumed Asbestos
B02	Bitumen floor coating	64	Chrysotile asbestos present

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment etc.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B03	Internal paint	96	0.24 % lead
B04	External paint	96	0.02 % lead
A02	Bitumen floor coating	64	Assumed PAHs

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.09, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, Magazine No.09

The assessment was based on the following information known about the property and/or observed during the survey conducted on 17 March 2020:

- Single story building.
- Foundation: Concrete slab.
- Roof: removed.
- Ceiling: n/a, roof removed.
- Walls: (internal) plaster over brick, (external) brick.
- Flooring: Bitumen coating over concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** – electrical fixtures/fittings were observed to be present.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, 2nd edition) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a Visually assessed each area individually.
   b Worked in the same pattern in each area (e.g. clockwise from entry).
   c Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey (refer to Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis by polarized light microscopy (PLM) was utilised to test for the presence of asbestos and by ICP-MS for lead. Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that hazardous building materials may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energised services etc. (list not exhaustive).

During the survey conducted on the 17 March 2020, the following areas/features of Magazine No.09 could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Cavity between inner and outer walls (i.e. blast cavity wall); confined space and not entered.
- Electrical fixtures/fittings.

5 Results and Conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM** and **lead paint** and assumed PAHs within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at Magazine No.09 (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

- Prior to refurbishment, demolition or relocation of Magazine No.09 non-friable ACM of over 10 m² must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (Executive Summary).
- This hazardous materials survey report shall be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works.
- On completion of the asbestos removal works, a competent person will conduct the required clearance(s) for this building. A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on Magazine No.09, the contractor will familiarise themselves with the areas/features of this structure excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and Limitations

This report has been prepared for the exclusive use of Land Information New Zealand, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:

.....
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

.....
Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:

.....
Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula, Magazine No.09 - Samples, Assumptions and Observation Locations

General Photos of External Parts of Building

Right side

Left side

Rear side

Front side

External Building Samples and Observation Details

Sample/Observation Reference: **B04**
Exterior paint
0.14 % lead (laboratory result)

Internal Building Samples and Observation Details

Sample/Observation Reference: **B02 + A02**
Bitumen floor coating
Chrysotile asbestos (laboratory result)
Assumed PAHs

Sample/Observation Reference: **B01**
Black bitumen material
No Asbestos Detected (laboratory result)

Sample/Observation Reference: **B03**
Internal walls paint
0.11 % lead (laboratory result)

Sample/Observation Reference: **A01**
Assumed ACM
Internal wall/external wall (blast cavity)

Beneath Building Samples and Observation Details

Concrete slab

Above Ceiling Space Samples and Observation Details

Roof removed

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12377 – 25/03/2020
- 20-12471 – 23/03/2020

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12377
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated:
Date Completed: 25/03/2020
Order Number: ASB3001228
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No. 09

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Lead by ICP-MS (Bulk Materials)

			Client Sample ID	B03	B04
			Date Sampled	17/03/2020	17/03/2020
Analyte	Unit	*Reporting Limit*		20-12377-1	20-12377-2
Lead	mg/kg	*2.5*		1,070	1,370
Lead	%	*0.0025*		0.11	0.14

Method Summary

Elements in Bulk Materials Samples analysed as received by ICP-MS following an acid digestion.

Sharelle Frank, B.Sc. (Tech)
Technologist

Analytica Laboratories Limited
Unit 4, 91 Byron Street
Sydenham
Christchurch 8023, New Zealand
Ph. +64 (03) 662 9357
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12471
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 23/03/2020
Order Number: ASB3001228
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi Magazine No.09
Description of Work: Bulk - Te Moto Kairangi Magazine No.09

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12471-1	B01		Bulk Materials (60 x 30 x 10 mm)	17/03/2020	23/03/2020
20-12471-2	B02		Bulk Materials (40 x 30 x 20 mm)	17/03/2020	23/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12471-1	B01	L1 - Bitumastic material L2 - Debris	Asbestos NOT Detected. Organic Fibres	Absent
20-12471-2	B02	L1 - Bitumastic material L2 - Debris	Chrysotile (White Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Job No: 1013126
15 July 2020

Land Information New Zealand
112 Tuam Street
Christchurch 8140

Attention: Kim Wepansnick

Dear Kim

Hazardous Building Materials Survey
Watts Peninsula - Magazine No.10

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.10, Watts Peninsula, Wellington which has been completed in accordance with our offer of service dated 4 February 2020.

1 Site conditions

On 17 March 2020 and during the survey of other buildings at Watts Peninsula, Magazine No.10 was visited. At this time the door could not be slid open and access within the structure was not possible.

Magazine No.10.

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2 Survey

Based on the collective findings of T+T's survey of the other magazine buildings at Watts Peninsula, in the absence of being able to conduct a survey, the following *assumptions* are made regarding the presence hazardous building materials at Magazine No.10:

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
Assumption	Attic – asbestos dust	64	Assumed Asbestos

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
Assumption	Internal ceiling and coving cement sheet materials	64	Assumed Asbestos
	Internal - bitumen floor coating	64	
	Internal wall (blast cavity)	96	
	External - guttering	9.6	
	External – soffits and flashing over door	16	
	External - roof and gable materials	64	

Other Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
Assumption	Internal – dust, debris from broken electrical equipment	tbc	Assumed mercury and PCBs
	Internal - paints	96	Assumed lead
	Internal –bitumen floor coating	64	Assumed PAHs
	External - paints	96	Assumed lead

Until such time that a survey of Magazine No.10 can be conducted, all work disturbing the building materials at this structure should be managed as if hazardous building materials are present.

Before undertaking any works at Magazine No.10, the contractor will familiarise themselves with this report.

3 Applicability

This report has been prepared for the exclusive use of our Land Information New Zealand, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

.....

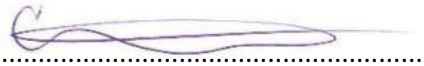
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin & Taylor Ltd by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:



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Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

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Job No: 1013126
15 July 2020

Land Information New Zealand
112 Tuam Street
Christchurch 8140

Attention: Kim Wepansnick

Dear Kim

Hazardous Building Materials Survey
Watts Peninsula - Magazine No.11

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Magazine No.11, Watts Peninsula, Wellington which has been completed in accordance with our offer of service dated 4 February 2020.

1 Site conditions

On 17 March 2020 and during the survey of other buildings at Watts Peninsula, Magazine No.11 was visited.

Magazine No.11.

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Magazine No.11.

2 Survey

Based on the collective findings of T+T's survey of the other magazine buildings at Watts Peninsula, the following *assumptions* are made regarding the presence hazardous building materials at Magazine No.11:

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
No friable asbestos ACMs assumed (roof absent)			

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
Assumption	Internal - bitumen floor coating	64	Assumed Asbestos
	Internal wall (blast cavity)	96	
	External –flashing over door	2	

Other Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
Assumption	Internal - paints	96	Assumed lead
	Internal –bitumen floor coating	64	Assumed PAHs
	External - paints	96	Assumed lead

Before undertaking any works at Magazine No.11, the contractor will familiarise themselves with this report.

3 Applicability

This report has been prepared for the exclusive use of our Land Information New Zealand, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Because it is possible that asbestos and other hazardous building materials may be concealed within areas/voids which were not accessible during the survey, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

.....

Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin & Taylor Ltd by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:

.....

Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

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Job No: 1013126
15 July 2020

Land Information New Zealand
112 Tuam Street
Christchurch 8140

Attention: Kim Wepansnick

Dear Kim

Hazardous Building Materials Survey
Watts Peninsula - reservoir and standpipe/hydrant

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of fire-fighting related features at Watts Peninsula, Wellington. These have been completed in accordance with our offer of service dated 4 February 2020.

1 Site conditions

A small reservoir and single standpipe/hydrant were observed at the peninsula during our survey works for other structures on 17 March 2020 (see Figure 1).

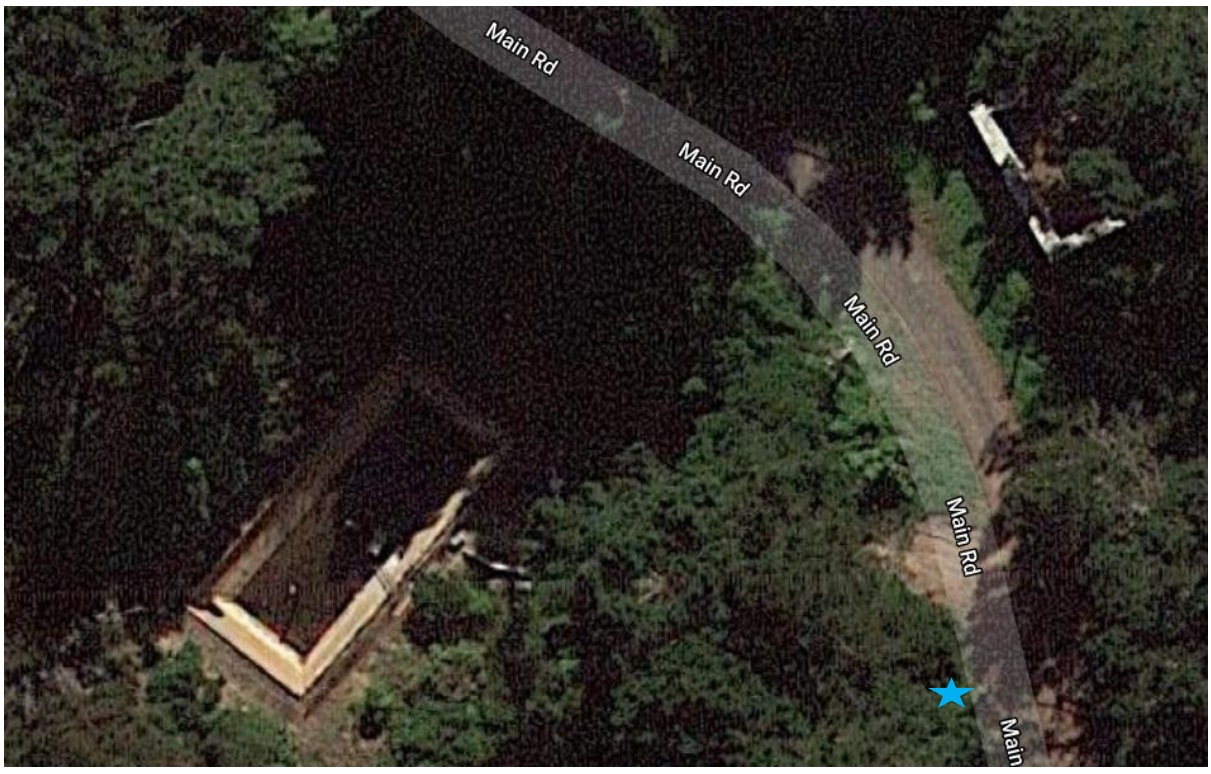

Figure 1: Reservoir and (blue star) standpipe/hydrant, note Magazine No. 09 right of frame (source: LINZ database).

Tonkin & Taylor Ltd | Level 3, PwC Centre, 60 Cashel Street, West End, Christchurch, 8013, New Zealand | PO Box 13-055, Christchurch 8141
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Access to the reservoir was prohibited by secure/high fencing. It comprises a concrete structure with a (beige) coating, possibly bitumen based material.

Reservoir.

Reservoir coating materials.

A (firefighting) standpipe/hydrant was observed close to the reservoir at the side of the access road connecting the other structures at the peninsula; see photograph below. It is made with (assumed) steel.

Standpipe/hydrant.

2 Survey

Our survey methodology is detailed in Appendix A.

Until proven otherwise by sampling/observation the coating at the reservoir and any gaskets and paint associated with the standpipe/hydrant should be considered to be hazardous building materials, principally *asbestos containing materials* (friable asbestos) and lead containing paints.

This applies to all pipework associated with the standpipe/hydrant including other such features not observed or buried.

Work disturbing any gaskets should be treated as Class A asbestos removal work and undertaken by a licensed asbestos removalist as these are a friable material. Handling of the reservoir coating will be based on the findings of survey observations and laboratory testing.

Before undertaking any works at the reservoir and/or standpipe/hydrant (including any other like features present at the peninsula, the contractor will familiarise themselves with this report.

3 Applicability

This report has been prepared for the exclusive use of our Land Information New Zealand, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Because it is possible that hazardous building materials may be concealed within areas/voids which were not accessible during the survey, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if suspect hazardous building materials are encountered.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

.....

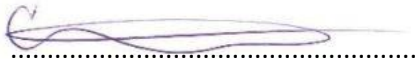
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin & Taylor Ltd by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:



.....

Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

mddm
\\ttgroup.local\corporate\christchurch\tt projects\1013126\3000 reporting\workingmaterial\hazardous building materials survey_watts peninsula_reservoir and standpipe.v01.docx

Appendix A: Survey methodology

The survey was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, 2nd edition) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM and other hazardous building materials in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:

   a. Visually assessed each area individually.

   b. Worked in the same pattern in each area (e.g. clockwise from entry).

   c. Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey.

Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 16 March 2020

Watts Peninsula - The Cabin

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 16 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials Requiring Removal Prior to Demolition

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A01	Attic space	50.00	Assumed Asbestos (from ACM cement sheet roof materials)

Table E1: Friable ACM requiring removal prior to demolition/refurbishment.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
A02	(Not accessible) window putty	4	Assumed Asbestos
B02	Down pipe	3 lin m	Chrysotile asbestos present
B04	Soffits	6	Chrysotile asbestos present
B03	Rainwater gutter	15 lin m	Chrysotile asbestos present
A03	(Not accessible) Flashing and roof	80.00	Assumed Asbestos

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B03	External paint work - rainwater gutter	15 lin m	7.40 % lead
B05	External paint work	84	2.95 % lead

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of The Cabin, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, The Cabin

The assessment was based on the following information known about the property and/or observed during the survey conducted on 16 March 2020:

- Single story structure.
- Foundation: Timber piles.
- Roof: Corrugated ACM sheet (i.e. Super 6).
- Ceiling: GIB.
- Walls: GIB.
- Flooring: Timber, vinyl sheet, carpet.
- Ancillary structures: no ancillary structures.
- ***Note*** - electrical equipment/apparatus present internal and external to this building.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, second edition 2012) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a. Visually assessed each area individually.
   b. Worked in the same pattern in each area (e.g. clockwise from entry).
   c. Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey (refer to Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis by polarized light microscopy (PLM) was utilised to test for the presence of asbestos and by ICP-MS for lead. Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that asbestos may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaced, energised services etc. (list not exhaustive).

During the survey conducted on the 16 March 2020, the following areas/features of the Cabin could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Electrical equipment.
- Exterior window putty (inaccessible due to hoarding secured over windows).
- Loft space (observation limited to loft hatch only).
- Roofing and flashing materials (observation limited by 3 m height restrictions).

5 Results and conclusions

The survey results are presented in Appendix A. In summary, the survey **confirmed the presence of ACM** and **lead** within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

Specific to undertaking any works at The Cabin (i.e. demolition, refurbishment, relocation), LINZ shall ensure the following steps are undertaken:

- Prior to refurbishment, demolition or relocation of The Cabin (assumed) friable ACM must be removed by a Class A licensed asbestos removalist. Friable ACM is identified in Table E1 (Executive Summary).
- Prior to refurbishment, demolition or relocation of The Cabin non-friable ACM of over 10 m² must be removed by a Class B or Class A licensed asbestos removalist. Non-friable ACM is identified in Table E2 (Executive Summary).
- This hazardous materials survey report shall be made available to an asbestos removalist contractor who should prepare an Asbestos Removal Control Plan (ARCP). The ARCP must be reviewed and approved by a licensed asbestos assessor/competent person (as defined by Regulation 3(a) – Health and Safety at Work (Asbestos) Regulations 2016) prior to the commencement of asbestos removal works (for Class A and Class B removal works respectively).
- On completion of the asbestos removal works, a licensed asbestos assessor/competent person will conduct the required clearance(s) for this building (competent person – see Regulation 3(a) - Health and Safety at Work (Asbestos) Regulations 2016) (for Class A and Class B removal works respectively). A clearance certificate(s) will be issued after the four-stage clearance inspection process has been completed for each ACM removal area.
- With respect to lead paint, this report shall be made available to an appropriately competent contractor to inform them of the conditions and help them prepare their works accordingly and with reference to WorkSafe New Zealand good practice (https://worksafe.govt.nz/topic-and-industry/hazardous-substances/guidance/substances/managing-lead-based-paint/).
- Before undertaking any works on The Cabin, the contractor will familiarise themselves with the areas/features of this structure excluded from this survey and plan their works accordingly. These are detailed in Section 4.

6 Applicability and limitations

This report has been prepared for the exclusive use of Land Information New Zealand, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:

.....

Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

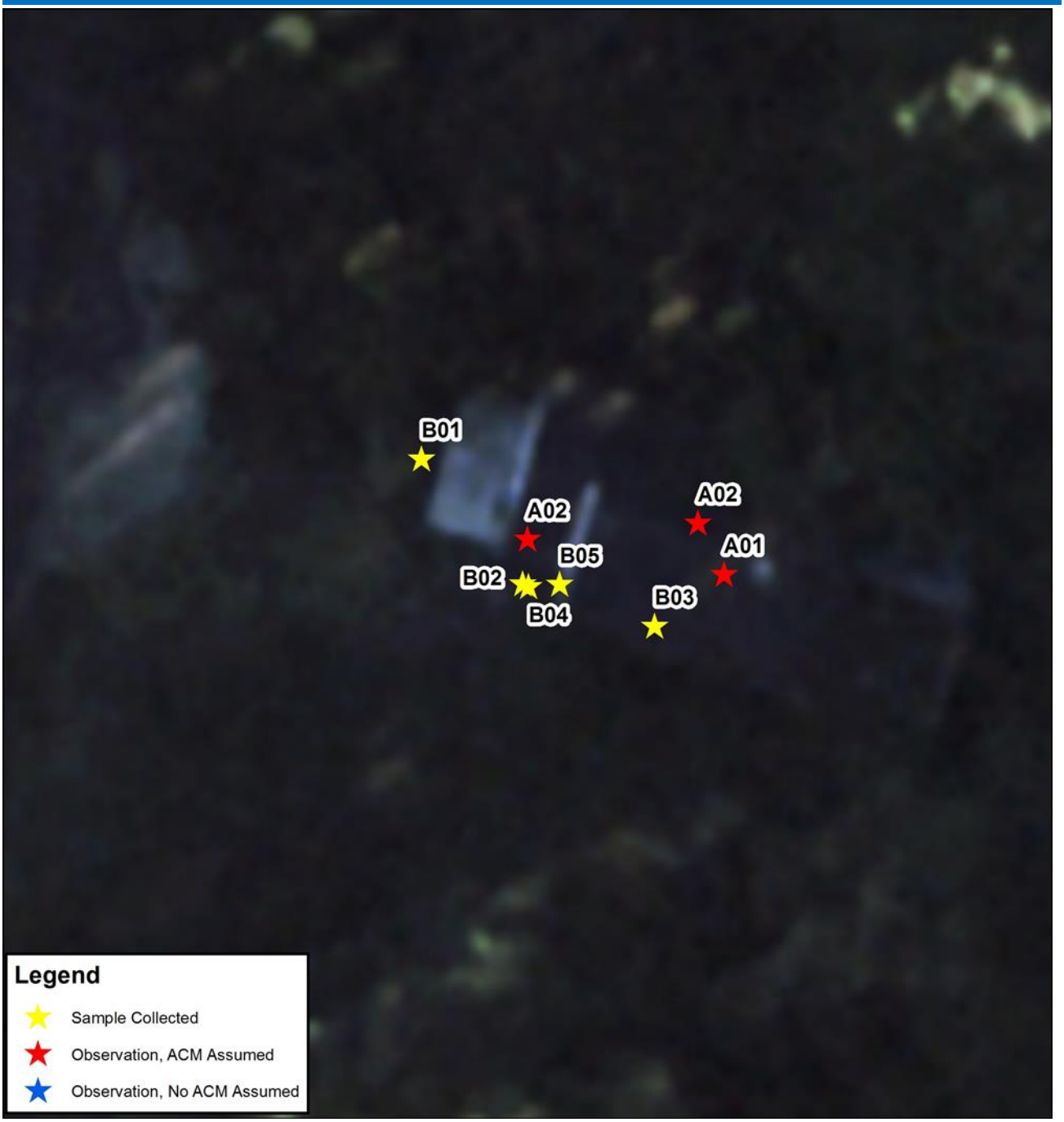
Technical Review by:

.....

Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula The Cabin - Samples, Assumptions and Observation Locations



Site Plan (source Google Maps).

General Photos of External Parts to Building

Left side

Front side

Right side

External to Building Samples and Observation Details

Sample/Observation Reference: **B03**
Rainwater gutter -
Chrysotile asbestos (laboratory result)
External paint - 7.4 % lead (laboratory result)

Sample/Observation Reference: **B04**
Soffits
Chrysotile asbestos (laboratory result)

Sample/Observation Reference: **B02**
Down pipe - **Chrysotile asbestos** (laboratory result)

Sample/Observation Reference: **B05**
External paint work – 2.95 % lead (laboratory result)

Sample/Observation Reference: **A02**
Assumed ACM
(Not accessible) window putty

External window putty (covered by security boarding)

Sample/Observation Reference: **A03**
Assumed ACM
Flashing and roof (above 3 m height)

Internal to Building Samples and Observation Details

Sample/Observation Reference: **B01**
Bathroom vinyl flooring – brown
No asbestos detected (laboratory result)

Beneath Building Samples and Observation Details

View Beneath Dwelling

Above Ceiling Space Samples and Observation Details

Sample/Observation Reference: **A01**
Assumed ACM
Attic space viewed from loft hatch

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12263 – 23/03/2020
- 20-12368 – 26/03/2020

Analytica Laboratories Limited
Unit 4, 91 Byron Street
Sydenham
Christchurch 8023, New Zealand
Ph. +64 (03) 662 9357
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12263
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 23/03/2020
Order Number: ASB3001226
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi, The Cabin
Description of Work: Bulk - Te Moto Kairangi, The Cabin

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12263-1	B01		Bulk Materials (60 x 40 x 1 mm)	16/03/2020	23/03/2020
20-12263-2	B02		Bulk Materials (40 x 25 x 10 mm)	16/03/2020	23/03/2020
20-12263-3	B03		Bulk Materials (130 x 30 x 15 mm)	16/03/2020	20/03/2020
20-12263-4	B04		Bulk Materials (30 x 10 x 5 mm)	16/03/2020	23/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12263-1	B01	L1 - Vinyl sheet L2 - Surface debris	Asbestos NOT Detected. Organic Fibres	Absent
20-12263-2	B02	L1 - Paint L2 - Fibre cement sheet L3 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present
20-12263-3	B03	L1 - Paint L2 - Fibre cement sheet	Chrysotile (White Asbestos) Organic Fibres	Present
20-12263-4	B04	L1 - Paint L2 - Fibre cement sheet L3 - Surface debris	Chrysotile (White Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
Ph +64 (07) 974 4740
sales@analytica.co.nz
www.analytica.co.nz

Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12368
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated:
Date Completed: 26/03/2020
Order Number: ASB001226
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi The Cabin

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Lead by ICP-MS (Bulk Materials)

			Client Sample ID	B03	B05
			Date Sampled	16/03/2020	16/03/2020
Analyte	Unit	*Reporting Limit*		20-12368-1	20-12368-2
Lead	mg/kg	*2.5*		74,000	29,500
Lead	%	*0.0025*		7.40	2.95

Method Summary

Elements in Bulk Materials Samples analysed as received by ICP-MS following an acid digestion.

Emily Hanna, B.Sc.
Trace Elements Team Leader

Hazardous Building Materials Survey

Prepared for identification of hazardous building materials

Survey Date - 16 March 2020

Watts Peninsula - The Shed

Executive Summary

This hazardous materials survey inspection was conducted on site by Tonkin & Taylor Ltd (T+T) on 16 March 2020. The subject structure (shown on front cover and in Figure 1.1) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including asbestos-containing materials (ACM), lead paint and other hazardous building materials likely to be disturbed by refurbishment, demolition or relocation of this structure as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016.

Areas excluded from the survey (e.g. because of access restraints) are documented in Section 4, until such time that they have been surveyed, they should be managed as if hazardous building materials, including asbestos, are present.

Asbestos Containing Materials Requiring Removal Prior to Demolition

Friable ACM of any amount or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or has a high probability of becoming or has become crumbled or reduced to powder by the forces expected to act on the material in the course of refurbishment, demolition, or relocation operations must be removed by a Class A licenced asbestos removalist.

Non-friable ACM over quantities of 10 m² must be removed by a Class B or Class A licenced asbestos removalist.

FRIABLE ACM CLASS A REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
No friable ACMs observed during this survey			

Table E1: Friable ACM requiring removal prior to demolition/refurbishment.

NON-FRIABLE ACM CLASS B REMOVAL			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
No non-friable ACMs observed during this survey			

Table E2: Non-friable ACM requiring removal prior to demolition/refurbishment.

Other Hazardous Building Materials

Hazardous Building Materials			
Sample/ Observation	**Material Description**	**Apx Qty m²**	**Analytical Result/Field Observation**
B02	External paint	54	0.24 % lead
B03	Internal paint	54	0.51 % lead

Table E3: Other hazardous building materials requiring management.

1 Background

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of The Shed, Watts Peninsula, Wellington. This survey has been completed in accordance with our offer of service dated 4 February 2020.

2 Objectives

The subject structure (shown in Figure 1.1 and cover photograph) was surveyed by T+T for the purpose of identifying the presence and location of potential hazardous building materials including ACM, lead paint, polychlorinated biphenyls (PCBs), mercury and polyaromatic hydrocarbons (PAHs) likely to be disturbed by refurbishment, demolition or relocation of this building as required by the Health and Safety at Work Act 2015 and Health and Safety at Work (Asbestos) Regulations 2016. Disturbance of any such hazardous materials must be undertaken by an appropriately competent contractor and specific to asbestos (including ACM), by a licensed removal specialist prior to demolition or works that would disturb ACM. This report documents the results of the survey.

3 General Building Details at Watts Peninsula, The Shed

The assessment was based on the following information known about the property and/or observed during the survey conducted on 16 March 2020:

- Single story structure.
- Foundation: Concrete slab.
- Roof: Steel sheet.
- Ceiling: Hardboard.
- Walls: Hardboard.
- Flooring: Concrete.
- Ancillary structures: no ancillary structures.
- ***Note*** – no electrical switch board observed, light fitting present.

4 Methodology

The inspection was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard second edition 2012) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:
   a. Visually assessed each area individually.
   b. Worked in the same pattern in each area (e.g. clockwise from entry).
   c. Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of the structure where these were reasonably accessible at the time of the survey (refer below and to Section 6 for areas excluded from inspection/testing).

Samples were placed in double plastic snap-lock bags and transported under chain of custody procedures to Analytica Laboratories in Christchurch and Hamilton. Laboratory analysis by polarized light microscopy (PLM) was utilised to test for the presence of asbestos and by ICP-MS for lead. Analytica Laboratories is an IANZ accredited laboratory for these tests.

Asbestos is known to have been used in over 3,000 building products. Although asbestos is most common in fibre cement, vinyl flooring, electrical components and insulation materials, it can also be found in many other products, some of which may be in areas that were not accessed as part of this survey.

Lead was a common component of paint until the 1970s. PCBs and mercury are used in electrical equipment and fixtures which if damaged can result in contamination of a building/room/space. PAHs are a component of bitumen based building materials.

This survey was limited to visual assessment and invasive investigation of accessible materials suspected to contain hazardous building materials. It is therefore possible that hazardous building materials may be concealed within areas/voids, equipment which were not accessible during the survey such as confined spaces, energised services etc. (list not exhaustive).

During the survey conducted on the 16 March 2020, the following areas/features of The Shed could not be accessed and therefore should be managed as if hazardous materials are present within them until proven otherwise:

- Beneath concrete floor slab of The Shed.

5 Results and conclusions

The survey results are presented in Appendix A. In summary, the survey has confirmed the presence lead containing paints within the accessible areas of the building surveyed (see appended summary table, photo log and laboratory reports for detail).

This report should be made available to the demolition/refurbishment contractor for their records and in preparing their task analysis and environmental management plan for their works involving this structure.

6 Applicability and Limitations

This report has been prepared for the exclusive use of Land Information New Zealand, strictly for the purposes of the works being undertaken and it may not be relied upon in other contexts or for any other purpose, or by any person, without our prior written agreement.

Because it is possible that asbestos may be concealed within areas/voids which were not accessible during the survey, as detailed in Section 4, no warranty or guarantee, whether express or implied, is given that this survey has revealed all asbestos that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Report prepared by:

.....
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin + Taylor by:

.....
Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:

.....
Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Appendix A: Hazardous Building Materials Survey Findings

Watts Peninsula The Shed - Samples, Assumptions and Observation Locations

Site Plan (sample locations) (source Google Maps).

General Photos of External Parts to Building

Right side

Rear side

Front side

Left side

External Building Samples and Observation Details

Sample/Observation Reference: **B02**
Exterior paint – 0.24 % lead (laboratory result)

Sample/Observation Reference: **B01**
Cement sheet bottom of porch
No asbestos detected (laboratory result)

Internal Building Samples and Observation Details

Sample/Observation Reference: **B03**
Interior paint – 0.51 % lead (laboratory result)

Sample/Observation Reference: **N01**
No ACM Assumed
Paper lining (wood fibres)

Beneath Dwelling/Building Samples and Observation Details

View Beneath Dwelling
Shed built on concrete slab

Above Ceiling Space Samples and Observation Details

View Above Ceiling Space
Internal ceiling (hard board, directly underneath the sheet steel roofing)

Ancillary Structures Samples and Observation Details

n/a

Appendix B: Laboratory Report

Analytica Laboratories references:

- 20-12371 – 25/03/2020
- 20-12474 – 23/03/2020

Analytica Laboratories Limited
Ruakura Research Centre
10 Bisley Road
Hamilton 3214, New Zealand
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Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch

Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12371
Submitted by: Mark Morley
Date Received: 21/03/2020
Testing Initiated:
Date Completed: 25/03/2020
Order Number: ASB3001221
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi The Shed

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Lead by ICP-MS (Bulk Materials)

			Client Sample ID	B02	B03
			Date Sampled	17/03/2020	17/03/2020
Analyte	Unit	*Reporting Limit*		20-12371-1	20-12371-2
Lead	mg/kg	*2.5*		2,440	5,070
Lead	%	*0.0025*		0.24	0.51

Method Summary

Elements in Bulk Materials Samples analysed as received by ICP-MS following an acid digestion.

Sharelle Frank, B.Sc. (Tech)
Technologist

Analytica Laboratories Limited
Unit 4, 91 Byron Street
Sydenham
Christchurch 8023, New Zealand
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sales@analytica.co.nz
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Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 60 Cashel Street, West End
Christchurch
Attention: Mark Morley
Phone: 021 114 3395
Email: mmorley@tonkintaylor.co.nz

Lab Reference: 20-12474
Submitted by: Katie Stephenson
Date Received: 20/03/2020
Date Completed: 23/03/2020
Order Number: ASB3001221
Reference: 1013126.0000

Sampling Site: Te Moto Kairangi the shed
Description of Work: Bulk - Te Moto Kairangi the shed

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
20-12474-1	B01		Bulk Materials (40 x 40 x 20 mm)	17/03/2020	23/03/2020

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
20-12474-1	B01	L1 - Fibre cement sheet L2 - Surface debris	Asbestos NOT Detected. Organic Fibres	Absent

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Jenny Nichols, M.Sc.
Christchurch Lab Coordinator

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)	Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples. Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised. Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Tonkin+Taylor

Job No: 1013126
15 July 2020

Land Information New Zealand
112 Tuam Street
Christchurch 8140

Attention: Kim Wepansnick

Dear Kim

Hazardous Building Materials Survey
Watts Peninsula - Timber Store

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of the Timber Store, Watts Peninsula, Wellington. This has been completed in accordance with our offer of service dated 4 February 2020.

1 Site conditions

On 16 March 2020 and during the survey of other buildings at Watts Peninsula, the Timber Store was visited. Photographs of the store are presented overleaf. In summary the construction of this structure was observed to comprise:

- A timber frame with sheet steel roof materials.
- Alsynite™ plastic sheet materials for the walls.
- Gravel floor.

Left elevation of the Timber Store.

Tonkin & Taylor Ltd | Level 3, PwC Centre, 60 Cashel Street, West End, Christchurch, 8013, New Zealand | PO Box 13-055, Christchurch 8141
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Gravel floor, the Timber Store.

Rear elevation of the Timber Store.

2 Survey

No hazardous building materials (e.g. asbestos containing materials (ACM), lead paint, etc.) were noted in this structure surveyed on 16 March 2020.

Before undertaking any works at the Timber Store, the contractor will familiarise themselves with this report.

3 Applicability

This report has been prepared for the exclusive use of our Land Information New Zealand, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

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Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin & Taylor Ltd by:

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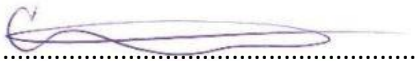
Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:



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Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

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Job No: 1013126
14 July 2020

Land Information New Zealand
112 Tuam Street
Christchurch 8140

Attention: Kim Wepansnick

Dear Kim

Hazardous Building Materials Survey
Watts Peninsula - Fort Ballance

Tonkin & Taylor Ltd (T+T) has been engaged by Land Information New Zealand (LINZ) to perform a hazardous building materials survey of Fort Ballance, Watts Peninsula, Wellington. This has been completed in accordance with our offer of service dated 4 February 2020.

1 Site conditions

The various structures at Fort Ballance were surveyed on 18 March 2020 (see Figure 1).

Figure 1: Fort Balance (source: LINZ database).

Tonkin & Taylor Ltd | Level 3, PwC Centre, 60 Cashel Street, West End, Christchurch, 8013, New Zealand | PO Box 13-055, Christchurch 8141
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The construction details of these structures (a number of gun emplacements/batteries and communication centre/accommodation block, observation points) were observed to be:

- Concrete walls, floors and ceilings.
- Unpainted (other than where tagged with graffiti).
- No electric or other service (e.g. firefighting water) equipment/fixtures were observed.
- The exterior of these structures was observed. Internally, many of the passageways within the structures were not observed as they were a confined space. It is noted there is a feature in the gun emplacement behind the accommodation and communications building described as 'the shaft'; again this was not entered nor conditions observed.

The following photographs illustrate these buildings and the type of building materials/conditions observed.

Fort Ballance (accommodation and communications building).

Example of a gun emplacement/battery structure.

Example of passageway into gun emplacement/battery.

Interior of accommodation and communications building.

During the survey the project archaeologist detailed a history of Fort Ballance that indicated these structures were all constructed during the late 19th and early 20th centuries.

2 Survey

Our survey methodology is detailed in Appendix A. With the exception of the following, no hazardous building materials were noted in the structures surveyed on 18 March 2020 (e.g. asbestos containing materials (ACM), lead paint, etc.).

Lengths of lead flashing were noted in the side walls of the gun emplacements/batteries, this is illustrated below.

Lead flashing in sidewall to gun emplacement/battery.

Before undertaking any works at Fort Ballance, Watts Peninsula, the contractor will need to familiarise themselves with this report.

3 Applicability

This report has been prepared for the exclusive use of our Land Information New Zealand, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Because it is possible that hazardous building materials may be concealed within areas/voids which were not accessible during the survey, no warranty or guarantee, whether express or implied, is given that this survey has revealed all hazardous building materials that may be located in the structures described in this report. Care should be exercised when entering any previously inaccessible areas and further investigations undertaken if materials suspected to contain asbestos or unknown materials are encountered in those areas.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

.....

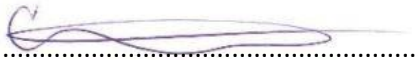
Mark Morley
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

Authorised for Tonkin & Taylor Ltd by:

.....

Sarah Schiess
Project Director – Contaminated Land Discipline Manager

Technical Review by:



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Cliff Westerbur
Hazmat & Land Remediation Specialist
Licensed Asbestos Assessor

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Appendix A: Survey methodology

The survey was carried out utilising a systematic methodology developed by Tonkin + Taylor based on UK Health and Safety Executive (HSE) Asbestos: The Survey Guide (2012) guidance document (UK HSE HSG 264 Standard, 2nd edition) and the WorkSafe New Zealand Good Practice Guidelines for Conducting Asbestos Surveys (2016). Visual identification of suspected ACM and other hazardous building materials in accessible areas was undertaken by a trained, competent asbestos surveyor in accordance with the following methodology:

1 Performed a walk-through of the building to determine the different homogeneous material locations and quantities.

2 Collected samples of all accessible materials that were suspected of containing asbestos and other hazardous building materials, following a systematic inspection method:

   a Visually assessed each area individually.

   b Worked in the same pattern in each area (e.g. clockwise from entry).

   c Inspected components in the same order within each area/compartment (e.g. ceiling, walls, floors, fixtures/fittings, equipment and services).

3 Took photographs.

4 Rechecked complex/unusual areas.

5 Performed a final walk-through, crosschecked notes.

The surveyor viewed the interior and exterior of structures identified for future disturbance work, where these were reasonably accessible at the time of the survey.