DISCLAIMER

Statement of Passing Over: This information has been supplied by the vendor or the vendor's agents and TRG Dunedin (powered by ownly Ltd licensed REAA 208) is merely passing over this information as supplied to us. We cannot guarantee its accuracy as we have not checked, audited, or reviewed the information and all intending purchasers are advised to conduct their own due diligence investigation into this information. Where you have been supplied with a Council Property File or a LIM Report, please note there may be matters relating to pre-1992 consents or permits in this file which may need further investigation in order to determine their relevance. To the maximum extent permitted by law we do not accept any responsibility to any party for the accuracy or use of the information herein.

Dunedin City Council – Land Information Memorandum

Property Address: 58 Mayfield Avenue Dunedin

Prepared for: Housing N Z Limited
Prepared on: 13-Aug-2025

Property Details:

Property ID	5104185
Address	58 Mayfield Avenue Dunedin
Parcels	LOT 3 DP 27721, LOT 4 DP 27721
Property ID	5100828
Address	60 Mayfield Avenue Dunedin
Parcels	LOT 4 DP 27721

Disclaimer:

Issued in accordance with Section 44A of the Local Government Official Information and Meetings Act 1987

Should you require further clarification of any of the information listed in this report, please phone our Customer Services Agency on 03 477 4000.

This Land Information Memoranda (LIM) has been prepared in accordance with Sections 44A, 44B, 44C, and 44D of the Local Government Official Information and Meetings Act 1987. It contains only information obtained from the records held by the Dunedin City Council as at 13-Aug-2025

The Dunedin City Council has not carried out an inspection of the land and/or buildings for the purposes of preparing this LIM. The Dunedin City Council records may not show illegal or unauthorised buildings or works on the land. Accordingly this report may not necessarily reflect the current status of the property. Examples of situations which affect the property but are not recorded in this report include: unauthorised work not known to Council and breaches of Consents or Licences that are not the subject of a formal Requisition or Notice. The applicant is solely responsible for ensuring that the land or any building or works on the land is suitable for a particular purpose. The applicant should check the Certificate(s) of Title as this report may not include information that is registered on the Certificate(s) of title. The Certificate(s) of title may record further information or obligations relating to the land.

Further information about this property may be available from other agencies such as the Otago Regional Council, Nova Gas, Telecom New Zealand (Chorus) or Delta Utility Services Limited.

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

Contents

s44A(2)(a) Information identifying any special feature or characteristics of the land

District Plan Hazard Information

Refer to District Plan for Natural Hazards Information section: s44A (2)(f) *Information relating to the use to which the land may be put and any conditions attached to that use*.Building Act 2004 Sec 73 Hazard Information

Other Natural Hazard Information

Flood Hazards

No information.

Land Stability Hazards

No information.

Coastal Hazards

No information.

Seismic Hazards

No information.

Other Natural Hazards

No information.

Otago Regional Council Hazard Information

The Regional Council is required to provide information that it holds on Natural Hazards: https://www.orc.govt.nz/managing-our-environment/natural-hazards/otago-natural-hazards-database.

Contaminated Site, Hazardous Substances and Dangerous Goods

Contaminated Site Information

No information.

Historic Dangerous Goods Licence(s)

No information.

Hazardous Substances

No information.

WARNING – Change in legislation and management of hazardous substances

On 1 April 2004, all Dunedin City Council Dangerous Goods Licences expired. From this date they became the responsibility of the Environmental Protection Authority (EPA) under the Hazardous Substances and New Organisms Act 1996.

All new licences for hazardous substances were issued by independent Test Certifiers approved by the EPA. The Council no longer holds current information on the use of hazardous substances at these premises and hazardous substances may be present without the Council's knowledge.

The Council was advised by the EPA in 2016 that Worksafe had taken over responsibility for managing Location Test certificates under the Hazardous Substances and New Organisms Act 1996. The EPA no longer hold any information in relation to Location Test Certificates If you have any questions, please contact Worksafe.

s44A(2)(b) Information on private and public stormwater and sewerage drains

Drainage

Drainage plans on file are indicative only.
Obtaining your own independent review may be required before commencing drainage works.

Foul Sewer and Waste Water

Drainage Reticulation Plans
A copy of the Dunedin City Council's drainage infrastructure in the vicinity of the subject property is attached. Public foul sewers are show in red and stormwater sewers in green. All public drainage services are available to receive connections from the property and limited flows of stormwater may also be discharged to the street channel or an approved outfall.

Stormwater/Sewer Separation - Compliant
The Dunedin City Council requires the foul sewer and storm water being discharged from a property to be directed to the separate foul sewer and storm water networks, respectively. This property is in an area where inspections have been undertaken to ensure compliance with this requirement. This property was certified as complying with Council's requirements for storm water separation at the time of inspection on **5th December 1994**.

No comment is made with regard to this property's compliance with the requirement for storm water separation after the date of inspection.

Public Sewer Sheets

WARNING. Please note that public sewer reticulation sheets are scaled in either Imperial feet or Metric metres. Please check with the Duty Drainage Inspector if in doubt.

Dunedin City Council Private Drainage plans incomplete

WARNING. The Dunedin City Council's private drainage records (plans) prior to 1 January 1993 may be incomplete or not clearly recorded. Owners therefore are advised to carry out work with due care to avoid damage to any private drain not detailed because of the lack of information filed in the Council's records.

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

s44A(2)(bb) Information Council holds regarding drinking water supply to the land

Water Supply

Urban water supply area – Connected
This property is connected to the Dunedin City Council's urban (on-demand) water supply. Indicative water pressures are available to view at www.dunedin.govt.nz/water-pressure, and flows available to the property can be provided on request. Any change in water use (e.g. for a new commercial activity) requires a new application to be made to the Council. It is recommended that the applicant check the property for the location and suitability of the water service.

Terms and conditions of supply
All new and existing connections to the Dunedin City Council's water supply network are subject to the terms and conditions of the Dunedin City Council Water Bylaw 2011. The bylaw is available to view at www.dunedin.govt.nz/water-bylaw.

Water pressure
Indicative network water pressure to the property is shown on maps available at www.dunedin.govt.nz/water-pressure. Specific detail is available on request.

Water reticulation maps
A copy of the water reticulation map of Dunedin City Council infrastructure in the vicinity of the subject property is attached. These show the location of the water main in the road. It may or may not show the water service to the property. It is recommended that the applicant check the property

s44A(2)(c) Information relating to any rates owing in relation to the land

Rates Details

Rates Assessment Details

Rate Account	2103121
Address	58 Mayfield Avenue Dunedin
Valuation Number	26950-16400
Latest Valuation Details	
Capital Value	$635,000
Land Value	$420,000
Value of Improvements	$215,000
Area (Hectares)	0.1155HA
Units of Use	2

Current Rates

Current Rating Year Starting	01-Jul-2025
Dunedin City Council Rates	$5,995.10
Rates Outstanding for Year	$5,995.10

For further explanation on the rate account, or to enquire about information referred to on this page, please contact Rates Staff between 8:30am and 5:00pm weekdays at the enquiries counter on the Ground floor of the Civic Centre, 50 The Octagon, Dunedin, or by phoning 477 4000.

s44A(2)(d) Consents, Certificates, Notices, Orders or Requisitions affecting the land or any buildings on the land

(da) the information required to be provided to a territorial authority under section 362T(2) of the Building Act 2004:s44A and

(2)(e) Information concerning any Certificate issued by a Building Certifier pursuant to the Building Act 1991 or the Building Act 2004

Building and Drainage Consents

The following consents are recorded for this property:

Status Key:	BC	- Building Consent Issued
	CCC	- Code Compliance Certificate Issued
	Archived /CCC Refused	- In accordance with section 93(2)(b) of the Building Act, the consent was reviewed for code compliance after two years. Compliance with the Building Code could not be established and therefore the Code Compliance Certificate has been refused.
	Lapsed	- Work has not commenced and no extension of time applied for within 12 months of date of consent issue. Consent is of no further effect

NOTE: This is not a comprehensive list of all building consent statuses

ABA-1998-344231 Building Consent - Repair Foul Drainage, Cheque - DL MIitchell Plb & Drnge, No Plan

Lodgement Date	31-Jul-1998
Decision	Granted
Decision Date	03-Aug-1998
Current Status	**CCC Issued**
Previous Number *(Applications before 2007)*	ABA982251

ABA-2017-129 Building Consent - Install Drain Channel, Sump to End of Driveway and Install 80mm D-Class Drain to Kerb

Lodgement Date	01-Feb-2017
Decision	Granted
Decision Date	10-Feb-2017
Current Status	**CCC Issued**
Previous Number *(Applications before 2007)*	

ABA-2017-763 Building Consent - Install Insulation to Exterior Walls

Lodgement Date	28-Apr-2017
Decision	Granted
Decision Date	01-May-2017
Current Status	**CCC Issued**
Previous Number	
(Applications before 2007)	

Building and Drainage Permits

H-1938-21487 AAB19380982
Government Dwelling, No Plan. The permit was lodged on 05-Oct-1938.
H-1939-155921 AAD19390640
D4667 - Plumbing and Drainage New Double Unit, (New Zealand Government). The permit was lodged on 03-Apr-1939.

Earthquake Prone Building

The following information is recorded for this property:

Earthquake Prone Status	Not yet profiled
Assessment Due Date	
Extension Granted	
Extension Description	
Assessment Status	
Assessment Result (%)	
Earthquake Rating Category	
EPB Notice Issued	

If Earthquake Prone status is set to EPB Methodology, it has been assessed under the Building Amendment Act 2016. This status will remain in place under the Building Amendment Act 2016.

Otherwise, the building was identified as potentially earthquake prone under the Dunedin City Council Earthquake prone buildings policy. This work predates the Building (earthquake-prone buildings) Amendment Act 2016. New or additional information may be requested to establish whether or not the building is deemed earthquake prone under the current legislation.

Information regarding managing earthquake-prone buildings is available on the Ministry of Business, Innovation and Employments web site https://www.building.govt.nz/managing-buildings/managing-earthquake-prone-buildings/
For further information refer to the Dunedin City Council Earthquake Prone Buildings information on the website: https://www.dunedin.govt.nz/services/building-services/earthquake-prone-buildings

Building Notices

No Building Notices

Resource Consents

The following Resource Consent(s) are recorded for this property:

LUC-2019-662 - Land Use Consent

Description	soil disturbance on various Kainga Ora owned sites in conjunction with demolition of buildings and the establishment of new buildings, vehicle access and landscaping under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011
Lodgement Date	11-Dec-2019
Decision	Granted
Decision Date	17-Apr-2020
Current Status	**Monitoring Commenced**

LUC-2020-198 - Land Use Consent

Description	land use consent for a density breach consequential to a subdivision consent
Lodgement Date	29-Apr-2020
Decision	Withdrawn
Decision Date	15-Dec-2020
Current Status	**Application Withdrawn**

SUB-2020-63 - Subdivision Consent

Description	undertake a 4-lot infill residential subdivision
Lodgement Date	29-Apr-2020
Decision	Withdrawn
Decision Date	15-Dec-2020
Current Status	**Application Withdrawn**

Consent Notices

There are no Consent Notices recorded for this property. It is recommended that the applicant check the Record of Title for any notices or covenants that may affect the property.

Alcohol Licensing

There are no records of any Alcohol Licences for this property.

Health Licensing

There are no records of any Health Licences for this property.

s44A(2)(ea) Information notified under Section 124 of the Weathertight Homes Resolution Services Act 2006

No information.

s44A (2)(f) Information relating to the use to which the land may be put and any conditions attached to that use

District Plan

Dunedin currently has two district plans, and as at 19th August 2024, the partially operative Dunedin City Second Generation District Plan ("The 2GP") almost completely superceded the 2006 version of the District Plan. The exceptions where the 2GP has not yet replaced the 2006 Plan relate to two specific provisions and several areas still subject to appeal.

As a general principle, rules in the 2GP must be considered along with the rules of the Operative District Plan 2006, until such time as the rules of the 2GP become operative, or are treated as operative. The policies and objectives of both plans should also be considered.

The schedule of original appeals on the 2GP can be viewed at https://www.dunedin.govt.nz/council/district-plan/2nd-generation-district-plan/appeals-received-on-the-2gp.

The schedule of appeals on Variation 2 can be viewed at https://www.dunedin.govt.nz/council/district-plan/2nd-generation-district-plan/plan-change-dis-2021-1-variation-2

The 2GP is subject to change at any time. Plan Change 1 (Minor Improvements) to the 2GP was notified on Wednesday 20 November 2024. Rules that protect areas of significant indigenous vegetation or habitats of indigenous fauna, and that protect historic heritage, have immediate legal effect from notification of Plan Change 1. Once the initial submission period ends on 18 December 2024, rules that do not have submissions in opposition to them will be deemed operative. Please refer to our website for more information on Plan Change 1 at http://www.dunedin.govt.nz/2gp-plan-change-1 .

You should check with the Council whether any changes have occurred since the date this LIM report was issued. **The information provided with this LIM on district plan requirements is applicable as at the date this LIM is issued:** there may be changes to the district plan rules following the release of this LIM that may affect this site and surrounding properties.

You should ensure that you consult the information and relevant planning maps in the Operative District Plan which can be found on our website at https://www.dunedin.govt.nz/council/district-plan/district-plan-2006 and the 2GP which can be found on our website at https://www.dunedin.govt.nz/council/district-plan/2nd-generation-district-plan as well as at all Dunedin City Council service centres and libraries.

OPERATIVE DISTRICT PLAN INFORMATION

Zoning

This property is zoned as follows in the District Plan.

Zone

RESIDENTIAL 1

Noise
This property is located in a Noise Area where the noise limits outlined below apply. Rule 21.5.1(i)(b) also specifies a maximum noise limit of 75 dBA Lmax between 9.00 pm on any night and 7.00 am the following day measured at the boundary of the site or within any other site. Note that some activities have a resource consent or existing use rights that allow these limits to be exceeded. Some activities are also exempted from noise limits. Furthermore, the actual limits that apply will also depend on whether this site adjoins a Noise Area Boundary and whether there are Special Audible Characteristics. Refer to Section 21.5 of the District Plan for further details. Every occupier of land is also under a general duty to adopt the best practicable option to ensure that the emission of noise from land does not exceed a reasonable level.

Noise Zone

50Dt/35Nt dBA, 45SP dBA

SECOND GENERATION PLAN INFORMATION

Zoning

- General Residential 1 (refer Section 15, Residential)

Scheduled Items

- Nil

Overlay Zones

- Nil

Mapped Areas

- Nil

District Plan Map

The District Plan map is available online here. Instructions on how to use the map are available here.

You can also access the District Plan map and instructions by visiting the Dunedin City Council 2GP Website at:
https://www.dunedin.govt.nz/council/district-plan/2nd-generation-district-plan

s44A(2)(g) Information regarding the land which has been notified to Council by another statutory organisation

No information.

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

s44A(2)(h) Information regarding the land which has been notified to Council by any network utility operator pursuant to the Building Act 1991 or Building Act 2004

No information.

Section 44A(3) Information concerning the land as the authority considers, at its discretion, to be relevant.

Building Information

Drainage

Form 5 (building consent) copy

This property contains building consent application/s where a copy of the building consent (Form 5) is not able to be provided.
This may be due to the age of the consent and/or processes that were in place at the time.

Minimum Floor Levels

Clause E1.3.2 of the New Zealand Building Code requires that surface water, resulting from an event having a 2% probability of occurring annually, shall not enter buildings. This requirement applies to Housing, Communal Housing, Communal Residential and Communal non-residential buildings. For guidance when establishing minimum floor levels please refer to : https://www.dunedin.govt.nz/services/building-services/minimum-floor-levels and for links to specific areas: https://www.dunedin.govt.nz/services/building-services/minimum-floor-levels/mfl-guidance

For further explanation on the current status of any consent, or to enquire about information referred to on this page, please contact Building Control Staff between 8:30am and 5:00pm weekdays at the enquiries counter on the Ground floor of the Civic Centre, 50 The Octagon, Dunedin, or by phoning 477 4000.

Planning

Resource Consents within 50m of 58 Mayfield Avenue Dunedin

5017133 37 Greenhill Avenue Dunedin
RMA-1994-357138 Resource Management Act (Historical Data) BUILD GARAGE Ownr:R ADAMS / App: R ADAMS 37 GREENHILL AVE (Non-Notified - Non Complying). The outcome was Granted on 01/02/1995.

5017143 137 Lynn Street Dunedin
RMA-1997-360645 Resource Management Act (Historical Data) ERECT GARAGE (Non-Notified - Non Complying). The outcome was Granted on 01/04/1997.

5017144 139 Lynn Street Dunedin
RMA-1998-362059 Resource Management Act (Historical Data) ERECT GARAGE AND CARPORT CHQ R J OGIER (Non-Notified - Unrestricted Discretionary). The outcome was Granted on 23/06/1998.

5017146 145 Lynn Street Dunedin
RMA-2006-370406 Resource Management Act (Historical Data) CONSTRUCT A DECK (Non-Notified - Restricted Discretionary). The outcome was Granted on 01/08/2006.

5017147 68 Mayfield Avenue Dunedin
LUC-2014-73 Land Use Consent add to dwelling. The outcome was Granted on 18/03/2014.
RMA-1995-353039 Resource Management Act (Historical Data) DISPENSATION (Non-Notified - Non Complying). The outcome was Declined on 17/06/1995.

5017165 53 Mayfield Avenue Dunedin
RMA-1996-359279 Resource Management Act (Historical Data) ERECT GARAGE (Non-Notified - Restricted Discretionary). This consent has since Lapsed.

5017167 55 Mayfield Avenue Dunedin
RMA-1996-359989 Resource Management Act (Historical Data) ERECT DECK (Non-Notified - Unrestricted Discretionary). The outcome was Granted on 04/09/1996.
RMA-1985-351697 Resource Management Act (Historical Data) ERECT GARAGE Ownr:MCKENZIE (Non-Notified - Non Complying). The outcome was Granted on 01/08/1985.

5017168 57 Mayfield Avenue Dunedin
LUC-2019-115 Land Use Consent land use consent for the construction of a new single garage. The outcome was Granted on 09/04/2019.

5100812 52 Mayfield Avenue Dunedin
LUC-2019-662 Land Use Consent soil disturbance on various Kainga Ora owned sites in conjunction with demolition of buildings and the establishment of new buildings, vehicle access and landscaping under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011. The outcome was Granted on 17/04/2020.

5100813 54 Mayfield Avenue Dunedin
LUC-2019-662 Land Use Consent soil disturbance on various Kainga Ora owned sites in conjunction with demolition of buildings and the establishment of new buildings, vehicle access and landscaping under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011. The outcome was Granted on 17/04/2020.

5100828 60 Mayfield Avenue Dunedin
LUC-2019-662 Land Use Consent soil disturbance on various Kainga Ora owned sites in conjunction with demolition of buildings and the establishment of new buildings, vehicle access and landscaping under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011. The outcome was Granted on 17/04/2020.

The information provided with this LIM on District Plan requirements and resource consents has been verified by City Planning in relation to the subject property only. All information included in relation to other land surrounding the site is indicative.

Accuracy of Boundaries
Knowing the true location of the property boundaries on the ground is important in determining what can be carried out on the land under the District Plan and in determining whether the current activity complies with the District Plan or any resource consent. Please note that the Council's aerial photographs may not accurately depict the extent of the property. The Record of Title for the site should be checked in the first instance. A surveyor may need to be consulted to establish the true location of the title boundaries on the ground.

Access to Site
The legality of any access to the site is important in determining what can be carried out on the land under the District Plan and in determining whether the current activity complies with the District Plan or any resource consent. It is recommended that the Record of Title and/or a lawyer be consulted regarding the legality of any legal and/or physical access to the site (and the maintenance thereof).

Heritage New Zealand Pouhere Taonga Act 2014
The Heritage New Zealand Pouhere Taonga Act 2014 applies in addition to any protection provided to a building or site by the District Plan. The Heritage New Zealand Pouhere Taonga Act 2014 makes it unlawful for any person to destroy, or modify the whole or any part of an archaeological site, whether or not the land on which the site is located is designated, or a resource or building consent has been issued, without the prior authority of Heritage New Zealand. The Heritage New Zealand Pouhere Taonga Act 2014 defines an archaeological site as a place associated with pre-1900 activity, where there may be evidence relating to the history of New Zealand. Pre-1900 buildings are considered archaeological sites under the Heritage New Zealand Pouhere Taonga Act 2014 and are also often associated with subsurface archaeological remains that provide evidence of pre-existing use of the site. Council records may not necessarily identify the precise date upon which an existing building was constructed. Contact the Dunedin office of Heritage New Zealand for further information: infodeepsouth@heritage.org.nz; 03 477 9871.

Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011
The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 came into force on 1 January 2012. The National Environmental Standard applies to any piece of land on which an activity or industry described in the current edition of the Hazardous Activities and Industries List (HAIL) is being undertaken, has been undertaken or is more likely than not to have been undertaken. (The current edition of the HAIL is available on the Ministry for the Environment website at www.mfe.govt.nz.) Activities on HAIL sites may need to comply with permitted activity conditions specified in the National Environmental Standard and/or might require resource consent. (The Otago Regional Council should also be consulted for any rules in might have in regards to the use or development of contaminated sites.)

If a person wishes to establish whether a piece of land has had hazardous activities or industries conducted on it, and thus whether activities on that land are controlled by the National Environmental Standard, then the person must pay for a review of the information about the land held by the Council, or pay for a suitably qualified and experienced practitioner to undertake a preliminary site inspection. Formal confirmation from the Council that resource consent is not required under the National Environmental Standard can only be given through a certificate of compliance application.

If you would like a copy of any Resource Consent decision or advice on the current status and relevance of any planning matter referred to in the LIM, enquiries may be made at the Planning Enquiries desk on the Ground Floor of the Civic Centre, 50 The Octagon, or by phoning 477 4000 and asking for the Duty Planner. Planners are available at the Planning Enquiries desk to answer your enquiries between 8:30am and 5:00pm weekdays.

3 Waters

Information Regarding Watercourses

The controlling authority for all water and waterbodies in Dunedin City is the Otago Regional Council. The Regional Plan: Water addresses water take and use, diversions, damming, discharges and bed alteration under the Resource Management Act 1991. They are also responsible for the Flood Protection Management Bylaw 2012.

The controlling authority for watercourses in relation to stormwater drainage, and removal of obstructions in accordance with Local Government Act 1974 is the Dunedin City Council. The Council also issues building and resource consents for certain works around watercourses.

Not all watercourses within Dunedin City are recorded or known to the Council, therefore it is recommended that the applicant inspect the property for watercourses.

For further information on watercourses it is recommended the applicant read the Watercourse Information Sheet. A copy of this document is available on request or for download from the Dunedin City Council website www.dunedin.govt.nz.

Transport

DCC Transport has carried out a desktop inspection of this property and found the following:

Non-compliant vehicle crossing - crossing grade more than DCC specifications (1 in 8)
The vehicle crossing on the Mayfield Avenue frontage appears to exceed the Councils maximum allow able grade of 1 in 8 for first five meters from the back of the footpath which might lead to scraping issues and damage to the footpath. Council accepts this situation but accepts no liability and points out that maintenance is the responsibility of the property owner.

Encroachment on road reserve – privately owned vegetation over footpath.
It appears that the vegetation at this property's frontage is encroaching on the footpath. Private vegetation is required to be maintained so that it does not interfere with footpath users or extend over your property boundary. Council accepts this situation but accepts no liability. Maintenance is the responsibility of the property owner. The Council may require this to be addressed in the future.

Private stormwater lateral.
Private stormwater laterals collect stormwater from private properties guttering and runs under the footpath to the kerb and channel on the roadside. The stormwater laterals are private pipes and are the responsibility of the landowner who they service, the repair and maintenance of these pipe's rests solely with the property owner. As the landowner you must maintain your stormwater lateral to ensure that it doesn't become a safety hazard for pedestrians or other road users.

For further explanations on property owner obligations in regard to local road encroachments, vehicle entrances, vegetation management or retaining structures please refer to the Dunedin City Council website at http://www.dunedin.govt.nz/services/roads-and-footpaths or contact Transport on 477 4000.

For properties abutting the state highway, Waka Kotahi NZ Transport Agency is the Road Controlling Authority.

Glossary of Terms and Abbreviations

The following are abbreviations and terms that may appear as a part of a LIM.

Consent, Permit, Licence & Complaint types

AAB	DCC Building permit
AAD	DCC Drainage permit
AAG	Green Island drainage permit
AAH	Hyde permit
AAK	St Kilda permit
AAM	Mosgiel permit
AAP	Port Chalmers permit
AAS	Silverpeaks permit
AAT	Maniototo permit
ABA	Application Building Act 1991
AMD	Amendment to a Building Consent
BC	Building Consent
BCC	Building Compliance Certificate - Sale and Supply of Alcohol Act
BCM	Building Complaint
CER	Certifier
COA	Certificate of Acceptance
DGL	Dangerous Goods Licensing
ENV	Health complaint
HTH	Health licence
LIQ	Alcohol licence
NTF	Notice to Fix
NTR	Notice to Rectify
PIM	Project Information Memorandum
POL	Planning Other Legislation
RMA	Resource Management Act - Resource consent
RMC	Resource consent complaint
WOF	Building Warrant of Fitness

Terms used in Permits & Consents

ALT	Alteration
ADD	Addition
BD D/C	Board drain in common
BLD	Building
BLDNG	Building
BT	Boundary trap
B/T	Boiler tube
CCC	Code Compliance Certificate
DAP	Drainage from adjacent property
DGE	Drainage
DIC	Drain in common
DR	Drainage
DWG	Dwelling
FS	Foul sewer

HEA	Heater
ICC	Interim Code Compliance
MH	Manhole
PL	Plumbing
PLB	Plumbing
PTE	Private
SIS	Sewer in section
WC	Water course
WT	Water table
SW	Stormwater

General terms

RDMS	Records and Document Management System

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

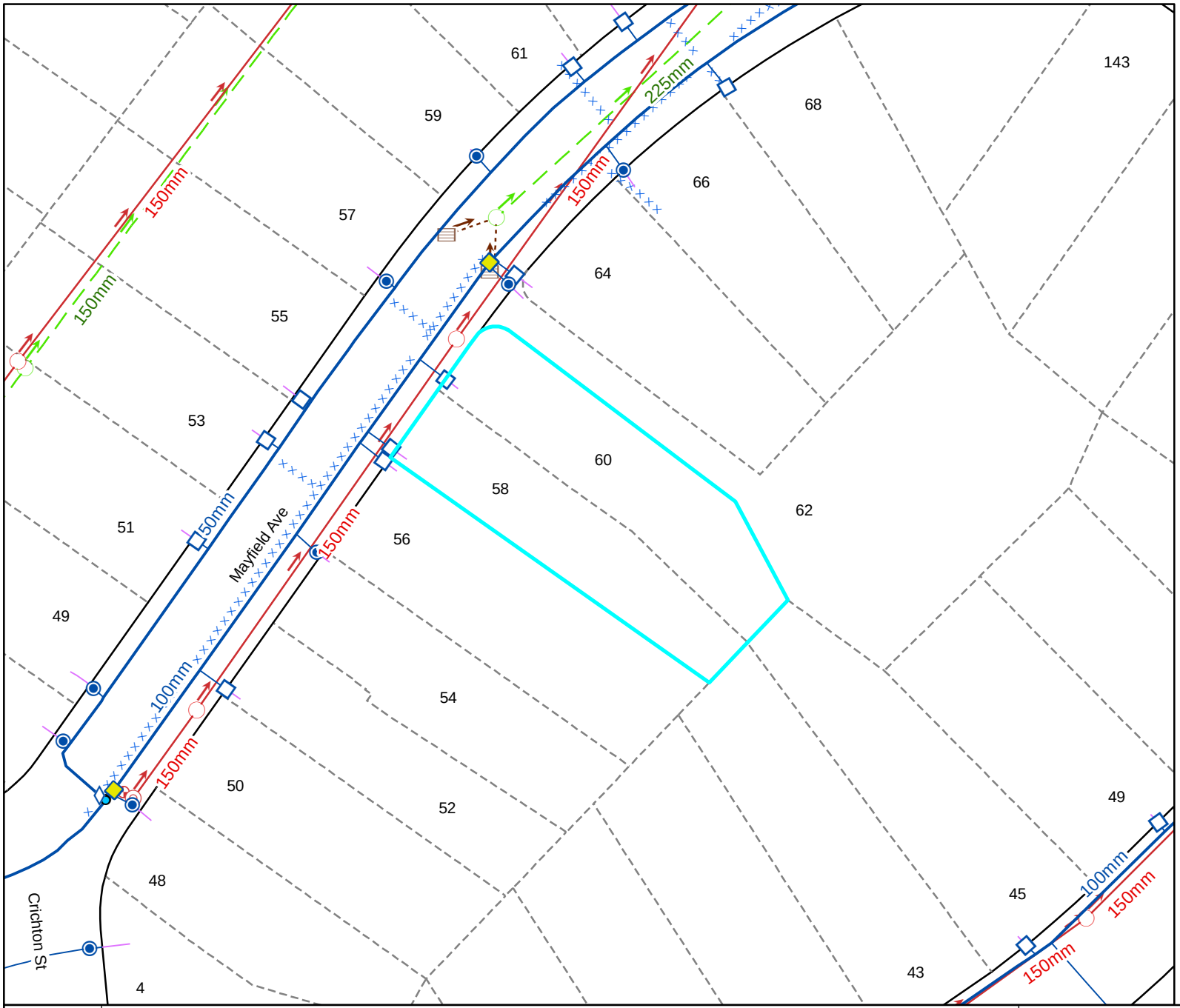
Appendices

Photographic Map

Scale at A4:
1:750
7/08/2025
8:07:06 PM

N

PARCEL LINES CAN VARY FROM LEGAL PARCEL BOUNDARIES
This map is for illustration purposes only and is not accurate to surveying, engineering or orthophotographic standards. Every effort has been made to ensure correctness and timeliness of the information presented.



Legend

Water Supply

- Manifold Box
- Water Meter
- Toby
- Meter without manifold box
- Retic Flow Meter
- Combination Meter
- Manifold Box With Restrictor
- Water Valve - Zone
- Non Return Valve
- Water Valve - Gate
- Water Valve - Sluice
- Water Hydrant
- Water Backflow Preventor - RPZ
- Water Non-Return Valve
- Water Pump Station
- Water Bore
- Water Treatment Plant
- Water Storage Tank
- Supply Main
- Trunk Main
- Disused
- Reticulation
- Rider
- Scour
- Water Service Lateral
- Water Fire Service Lateral
- Water Critical Service Lateral
- Water Zone Boundary
- Water Reservoir
- Redundant Water Main

NOTE:
Private water services have the same symbols as those above, however they are coloured pink.

Foul Sewerage

- Standard Manhole
- Valve Chamber (pressurised)
- Boundary Kit
- Non-Return Valve
- Pump Station Domestic
- Drop Manhole
- Inspection Manhole
- Inspection Opening
- Lamphole
- Outlet
- Pump Station
- Treatment Plant
- Vent
- Foul Sewer Node
- Foul Drains in Common (public)
- Sewer
- Trunk Sewer
- Vent Line
- Rising Main
- Redundant Foul Sewer Pipe

NOTE:
Private foul drains have the same symbols as those above, however they are coloured orange.

Stormwater

- SW Bubble-up Tank
- SW Drop Manhole
- SW Insp Chamber and Grating Inlet
- SW Inspection Manhole
- SW Inspection Opening
- SW Lamphole
- SW Mudtank Inlet
- SW Outlet
- SW Pipe Inlet
- SW Pressure Manhole
- SW Standard Manhole
- SW Stormwater Node
- Roading Bubble-Up Tank
- Roading Mudtank
- Stormwater Main
- Stormwater Trunk Main
- DCC Open Channel
- Piped WC
- Open WC
- Culvert
- Stormwater Mudtank Pipe
- Redundant Stormwater Main
- SW Sump
- SW Pump Station

NOTE:
Private stormwater drains have the same symbols as those above, however they are coloured light green.

General

- DCC Water & Waste Structure
- Railway Centreline

Cadastral

- Parcel
- Hydro
- Strata
- Road/Rail
- Motorway Parcels
- Easment (where recorded)

Full legend can be viewed at https://www.dunedin.govt.nz/council-online/webmaps/waterservices

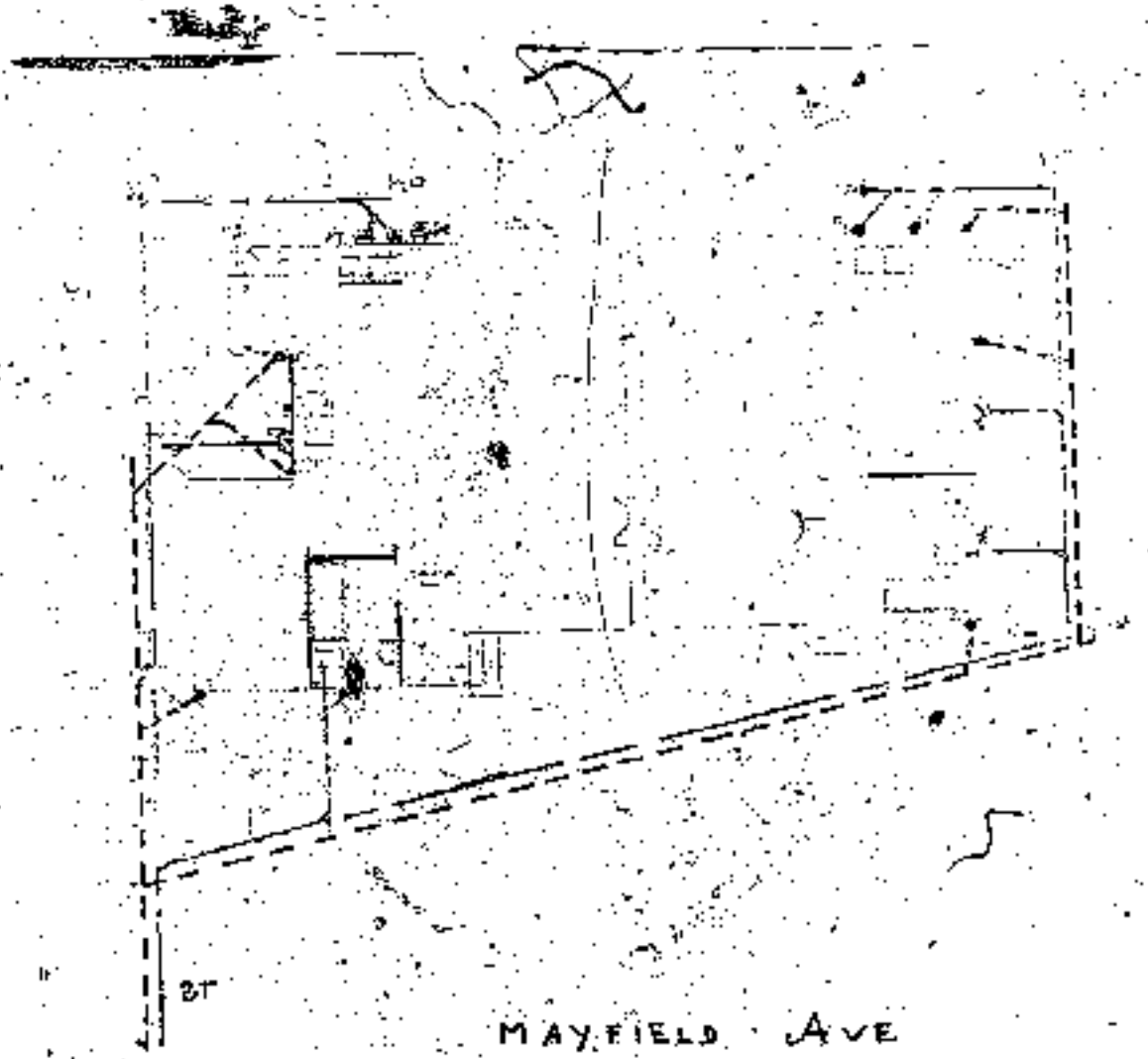
Council Water & Drainage Services

Information shown is the best available at the time of publishing. The accuracy and completeness of This information is variable. Private assets are typically not mapped. Recent changes may not be reflected. Verify on site before commencing work. For all enquiries phone 03 477 4000.

Scale at A4:
1:750
7/08/2025
8:07:13 PM

N

PARCEL LINES CAN VARY FROM LEGAL PARCEL BOUNDARIES
This map is for illustration purposes only and is not accurate to surveying, engineering or orthophotographic standards. Every effort has been made to ensure correctness and timeliness of the information presented.


MAYFIELD AVE

CODE COMPLIANCE CERTIFICATE

Section 43(3), Building Act 1991

ISSUED BY: DUNEDIN CITY COUNCIL

50 THE OCTAGON. P.O. BOX 5045. DUNEDIN 9031, NEW ZEALAND. TELEPHONE: (03) 477-4000. FACSIMILE: (03) 474-3594

Telephone No:	477-4000	CCC No:	ABA 982251	Reference No:	5100828

(Insert a cross in each applicable box. Attach relevant documents).

APPLICANT DETAILS

Name and Mailing Address:

HOUSING N Z LIMITED
C/O D L MITCHELL
22 FORFAR ST
MOSGIEL 9007

LEGAL DESCRIPTION

Property Number: 5100828
Valuation Roll No: 26950 16400 B

Project Location:
60 MAYFIELD AVENUE, DUNEDIN 9001

Legal Description:

LOT 7 BLK V DP 7073

PROJECT

All ☒

Stage No .....of an intended .....stages

New Building ☐

Alteration ☒

Intended Use(s) in detail:

REPAIR FOUL DRNGE

Intended Life:

Indefinite, not less than 50 years ☑

Specified as ..... years

Demolition ☐

This is:

☒ A final code compliance issued in respect of all of the building work under the above building consent.

☐ An interim code compliance certificate in respect of part only, as specified in the attached particulars, of the building work under the above building consent.

☐ This certificate is issued subject to the conditions specified in the attached ..... page(s) headed "Conditions of Code Compliance Certificate No:....." (being this certificate).

The Council charges payable on the uplifting of this code compliance, in accordance with the attached details are: $

Receipt No:

Signed for and on behalf of the Council:

Name:.....

Position: AUTHORISED OFFICER

Date: 01/03/1999

BUILDING CONSENT

Section 35, Building Act 1991

ISSUED BY: DUNEDIN CITY COUNCIL

50 THE OCTAGON. P.O. BOX 5045. DUNEDIN 9031, NEW ZEALAND. TELEPHONE: (03) 477-4000. FACSIMILE: (03) 474-3594

Telephone No:	477-4000	Consent No:	ABA 982251	Reference No:	5100828

(Insert a cross in each applicable box. Attach relevant documents).

APPLICANT

Name: HOUSING N Z LIMITED

Mailing Address:
C/O D L MITCHELL, 22 FORFAR ST, MOSGIEL 9007

PROJECT LOCATION

Street Address:

60 MAYFIELD AVENUE, DUNEDIN 9001

LEGAL DESCRIPTION

Property Number: 5100828

Valuation Roll No: 26950 16400 B

Legal Description:
LOT 7 DP 7073

COUNCIL CHARGES

The balance of Council's charges payable on uplifting of this building consent, in accordance with the tax invoice are:

Total: $

ALL FEES ARE GST INCLUSIVE

PROJECT

All ☒

Stage No ..... of an intended .....stages

New Building ☐

Alteration ☒

Intended Use(s) in detail:

REPAIR FOUL DRNGE

Intended Life:

Indefinite, not less than 50 years ☒

Specified as ..... years

Demolition ☐

Estimated Value: $2000

Signed for and on behalf of the Council:

Name: .....

Position: AUTHORISED OFFICER

Date: 03/08/1998

This building consent is a consent under the Building Act 1991 to undertake building work in accordance with the attached plans and specifications so as to comply with the provisions of the building code. It does not affect any duty or responsibility under any other Act nor permit any breach of any other Act.

This building consent is issued subject to the conditions specified in the attached ..... pages headed "Conditions of Building Consent No....."

DUNEDIN CITY COUNCIL
Kaunihera-a-rohe o Otepoti

50 The Octagon, PO Box 5045, Moray Place
Dunedin 9058, New Zealand
Telephone: 03 477 4000, Fax: 03 474 3488
Email: dcc@dcc.govt.nz
www.dunedin.govt.nz

CODE COMPLIANCE CERTIFICATE

DCC BCA-F4-07-v3.0

Section 95, Building Act 2004

CCC NO:	ABA 2017 129	Telephone No:	03 477 4000

APPLICANT

Housing N Z Limited
C/O Adams Plumbing and Drainage (2010) Limited
PO Box 292
Mosgiel 9053

PROJECT

Work Type:
New Construction

Intended Use/Description of Work:
Install Drain Channel, Sump to End of Driveway and Install 80mm D-Class Drain to Kerb

Intended Life:
Indefinite, not less than 50 years.

PROJECT LOCATION

58 Mayfield Avenue Dunedin

LEGAL DESCRIPTION

Legal Description: LOT 3 DP 27721, LOT 4 DP 27721

Valuation Roll No: 26950-16400

Building Name: N/A

This CCC also applies to the following Amended Consents:
N/A

The Building Consent Authority named above is satisfied, on reasonable grounds, that:

(a) The building work complies with the Building Consent, and
(b) The specified systems in the building are capable of performing to the performance standards set out in the Building Consent.

☐ Compliance Schedule attached

Signed for and on behalf of the Council:

Team Leader Inspections

Date: 19 April 2017

DUNEDIN CITY COUNCIL
APPROVED BUILDING CONSENT DOCUMENTS

2017-129

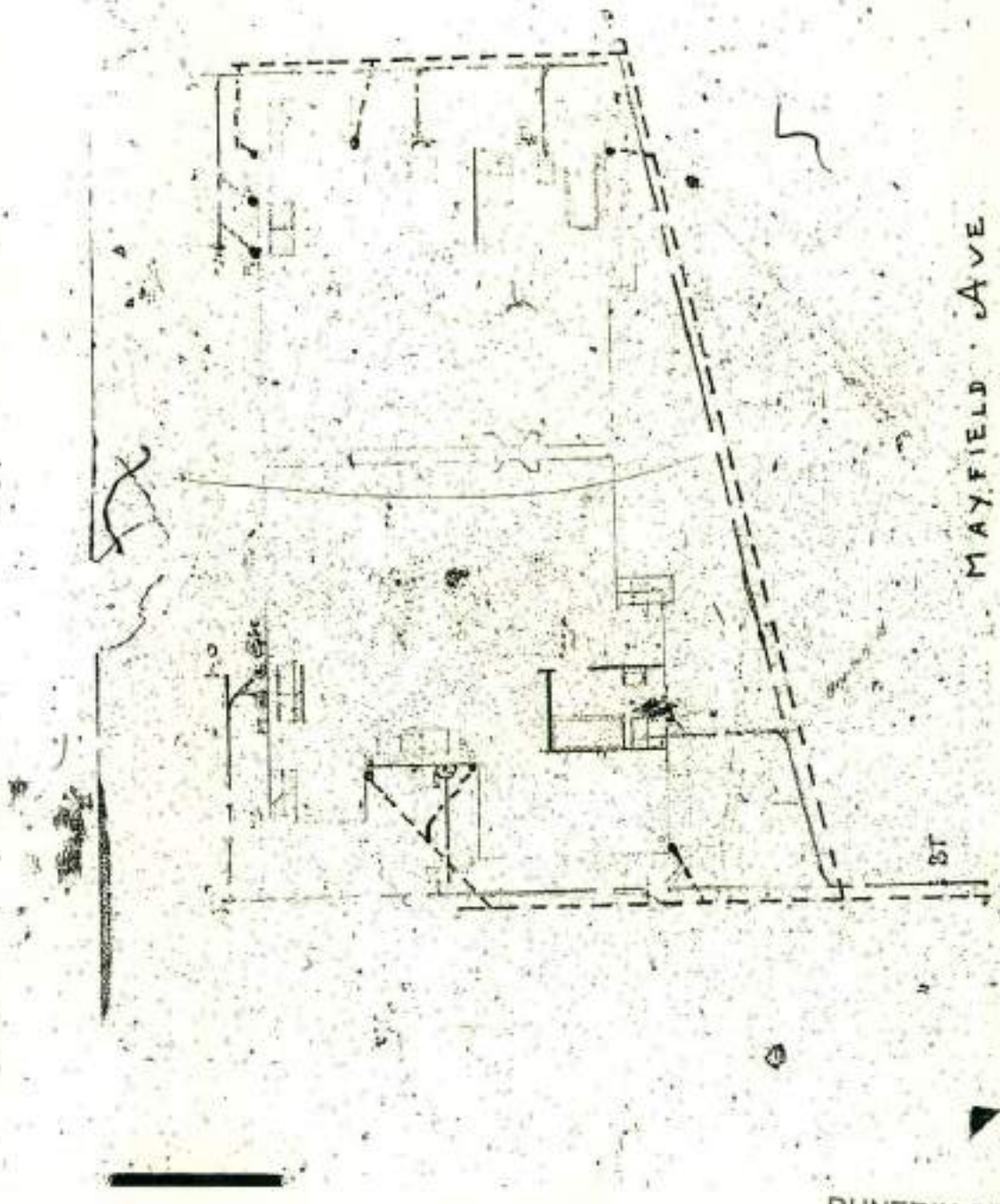
Council Water & Drainage Services

Information shown is the best available at the time of publishing. The accuracy and completeness of this information is variable. Private assets are typically not mapped. Recent changes may not be reflected. Verify on site before commencing work. For all enquiries phone 03 477 4000.

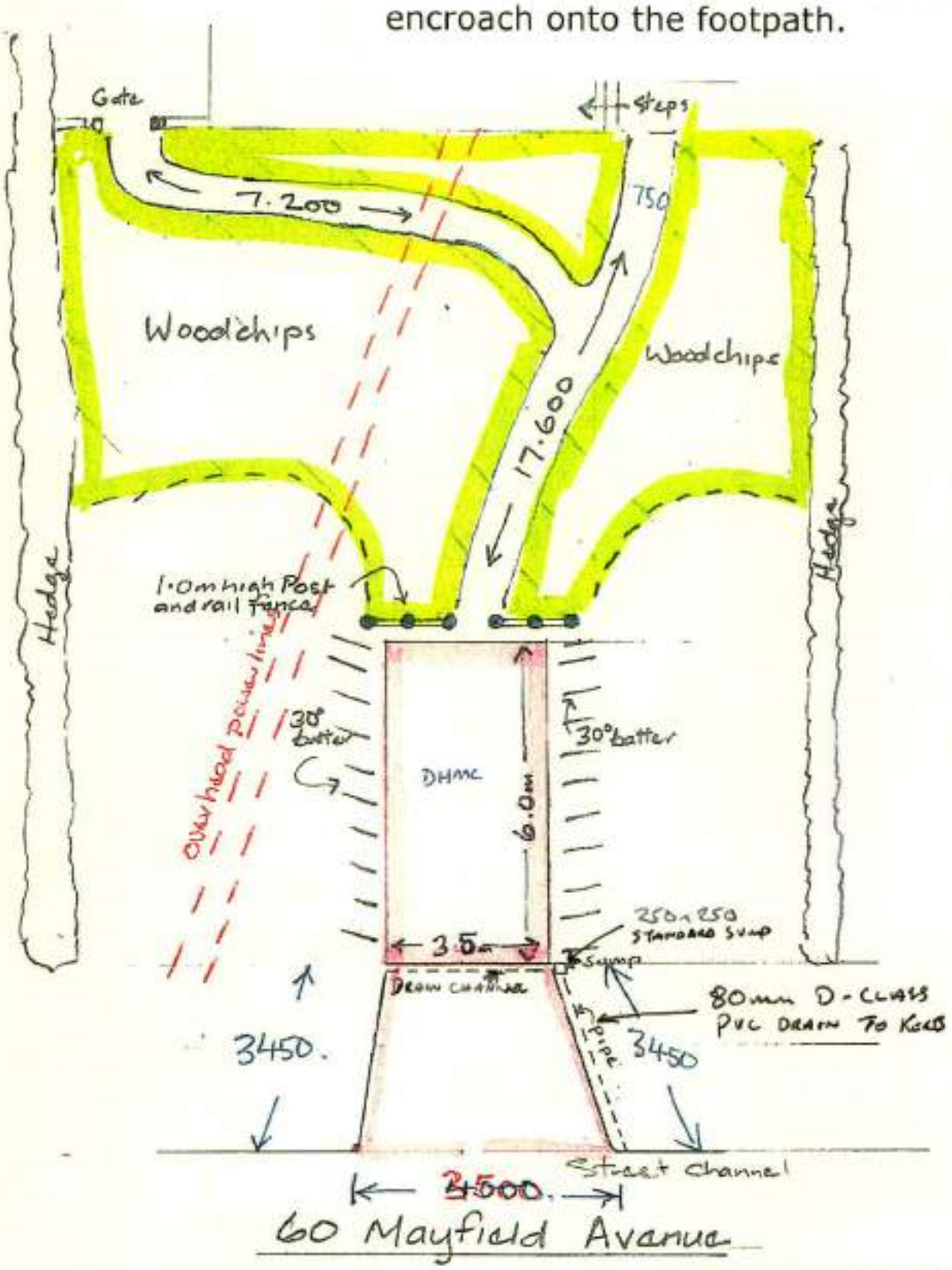
Scale at A3:
1:257
10/02/2017 10:06:14 AM

N

PARCEL LINES CAN VARY FROM LEGAL PARCEL BOUNDARIES
This map is for illustration purposes only and is not accurate to surveying, engineering or orthophotographic standards. Every effort has been made to ensure correctness and timeliness of the information presented.



Note; the drain channel & mudtank to be within the property boundaries on not to encroach onto the footpath.



DUNEDIN CITY COUNCIL
APPROVED BUILDING CONSENT DOCUMENTS

2017-129

DCC COPY

DUNEDIN CITY COUNCIL
Plans and Specifications Approved in accordance with The New Zealand Building Code and Approved Documents. To be retained on works and produced on request.

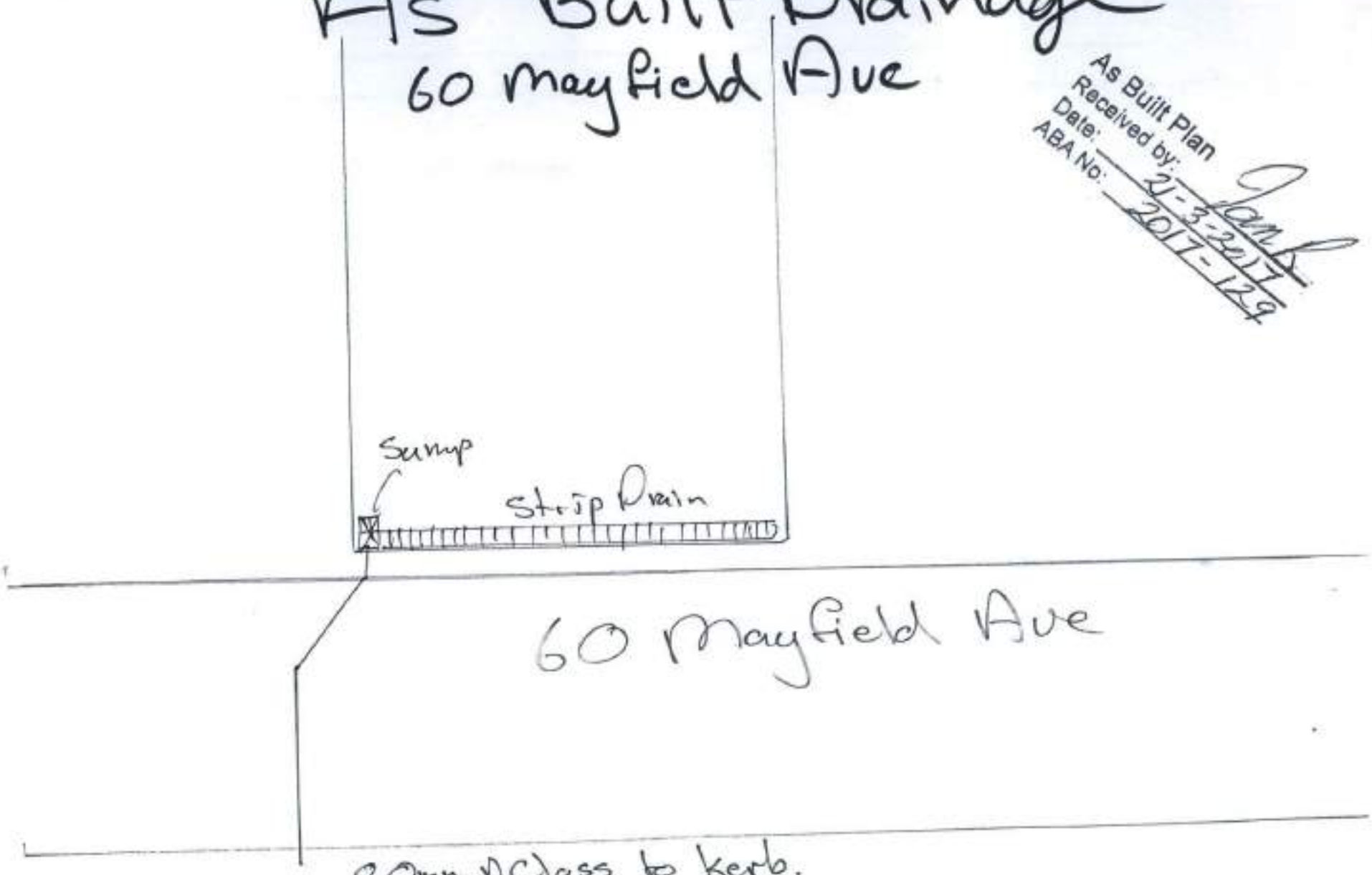
Building
Plumbing
Health

Date
Date 10-02-17
Date

DCC foul sewer in footpath (manhole) NOTE to be protected & no alteration to manhole without approval

As Built Drainage
60 Mayfield Ave

As Built Plan
Received by: [signature]
Date: 21-3-2017
ABA No: 2017-129



DUNEDIN CITY COUNCIL
Kaunihera-a-rohe o Otepoti

50 The Octagon, PO Box 5045, Moray Place
Dunedin 9058, New Zealand
Telephone: 03 477 4000, Fax: 03 474 3488
Email: dcc@dcc.govt.nz
www.dunedin.govt.nz

Code Compliance Certificate Form 7

Section 95, Building Act 2004

Housing N Z Limited
C/O Dunedin Housing Maintenance
PO Box 13150
Green Island
Dunedin 9052

The building

Street address of building: 58 Mayfield Avenue Dunedin

Legal description of land where building is located: LOT 3 DP 27721, LOT 4 DP 27721

Building Name: N/A

Location of building within site/block number:

Level/unit Number:

Current, lawfully established, use: Housing

Number of occupants: 1 **Year first constructed:** 1950

The owner

Name of owner: Housing N Z Limited

Contact person: Housing N Z Limited

Mailing address: C/O Dunedin Housing Maintenance, PO Box 13150, Green Island, Dunedin 9052

Street address/registered office:

Mobile: 021 194 0804 **Landline:**

Email address: elena.malkova@hnzc.co.nz

First point of contact for communications with the building consent authority: As above

Building work

Building Consent Number: ABA-2017-763 Install Insulation to Exterior Walls

This CCC also applies to the following amended consents: N/A

Issued by: Dunedin City Council

Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that-

(a) The building work complies with the building consent

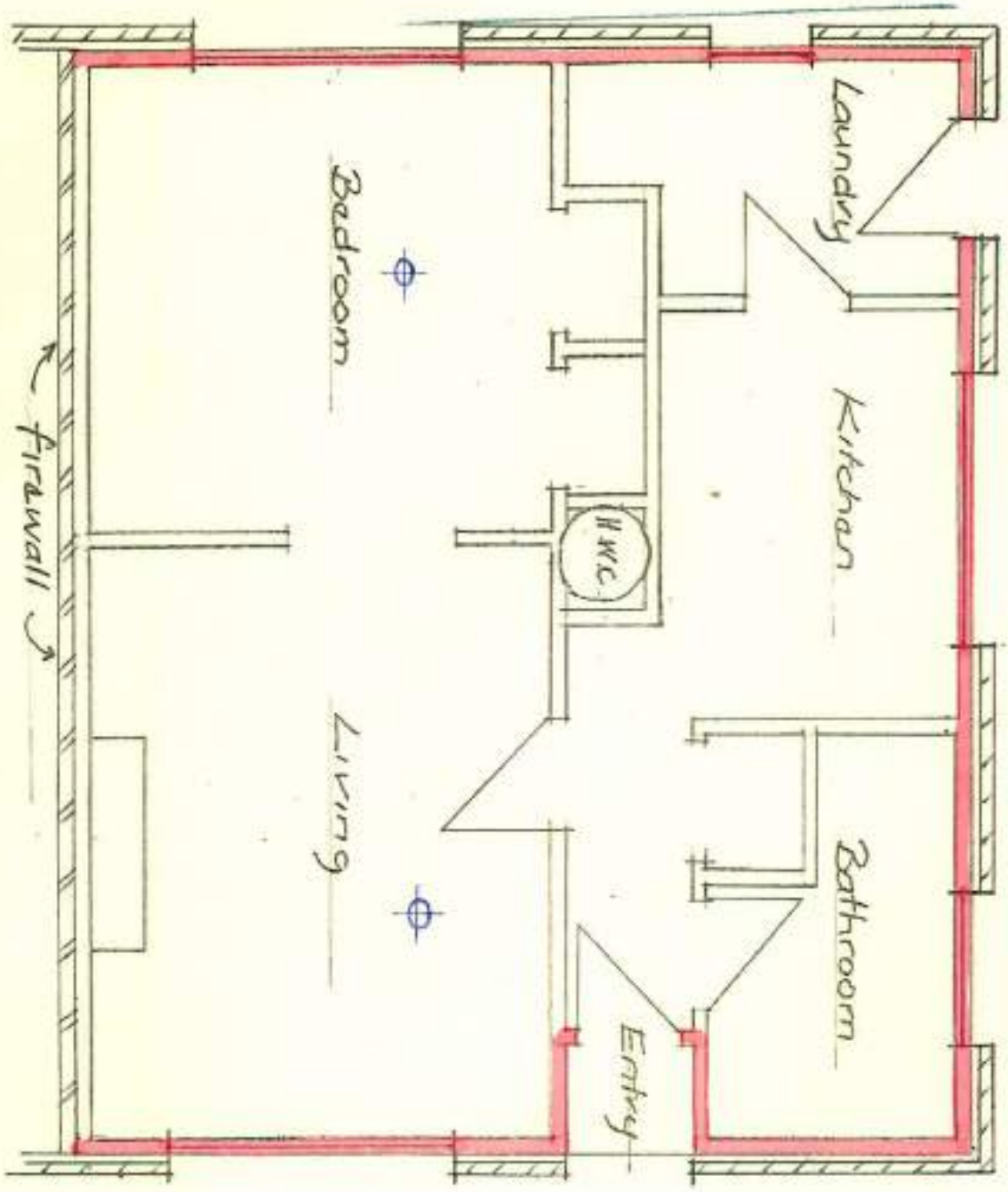
Team Leader Inspections
On behalf of Dunedin City Council Date: 7 March 2019

Plans and Specifications Approved in accordance with The New Zealand Building Code and Approved Documents. To be retained on works and produced on request.

Building Date 1-5-17
Plumbing Date
Health Date

DCC COPY

NOTE



DUNEDIN CITY COUNCIL
APPROVED BUILDING CONSENT DOCUMENTS

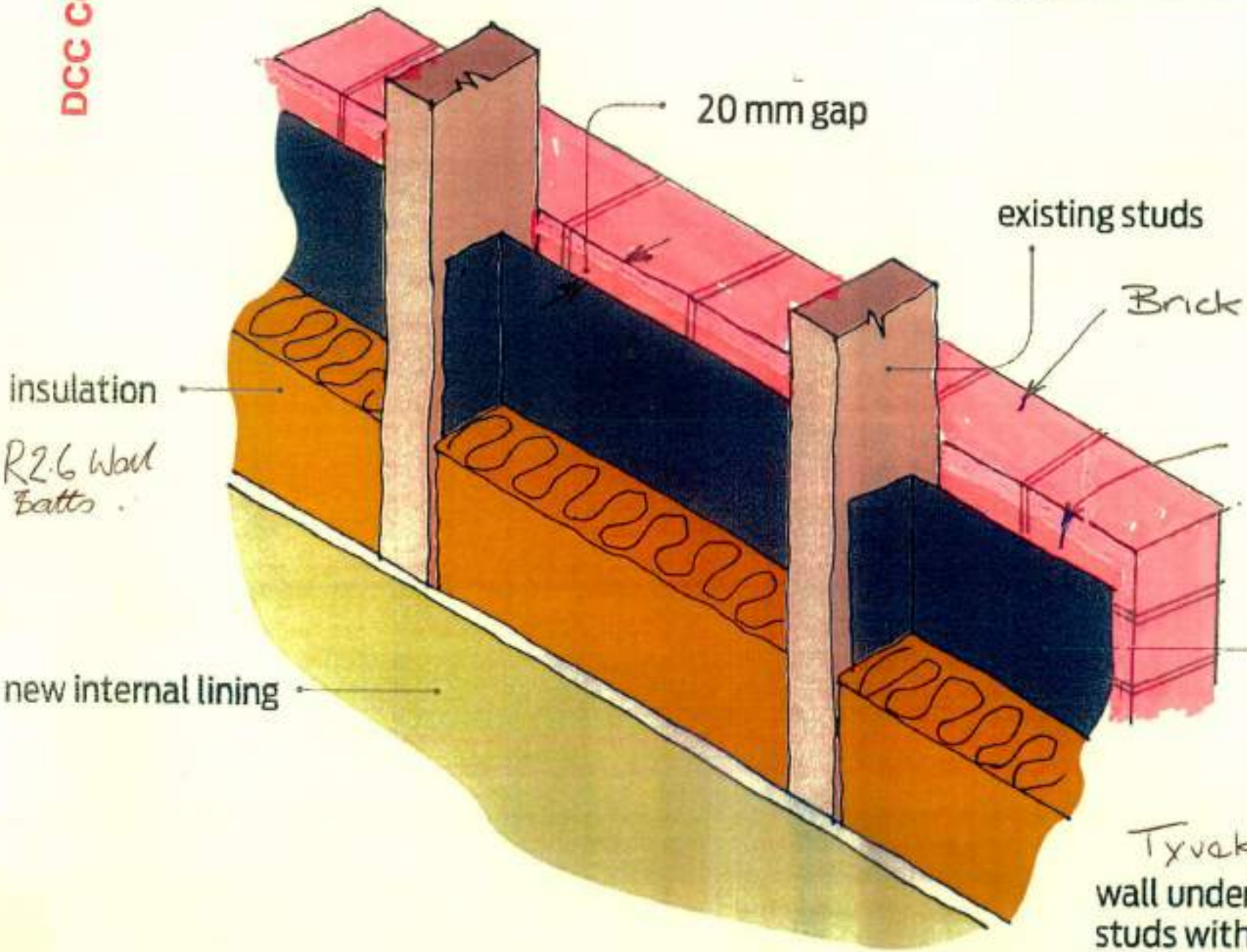
2017-763

58 Mayfield Avenue

Scale 1:50

April 2017

Brick Veneer



17 April 2020

Kāinga Ora – Homes and Communities
C/- Tonkin Taylor Ltd
PO Box 13055
Christchurch 8141

Via email: jbould@tonkintaylor.co.nz

Dear Ms Bould,

RESOURCE CONSENT APPLICATION: **LUC-2019-662**
VARIOUS SITES

Your application for land use consent under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 was processed on a non-notified basis in accordance with sections 95A to 95G of the Resource Management Act 1991. The application was considered by a Senior Planner – Consents, under delegated authority, on 17 April 2020.

The Council has granted consent to the application with conditions. The assessment of the application, including the reasons for the decision, is set out in the report attached to this letter. The consent certificate is attached to the rear of this letter.

Please note that the processing of this application could not be completed within the 20 working day time limit prescribed under section 115 of the Resource Management Act 1991. The time limits for the processing of this consent have been extended pursuant to sections 37A(2)(a) and 37A(4)(b)(i) of the Resource Management Act 1991.

The consent certificate outlines the conditions that apply to your proposal. Please ensure that you have read and understand all of the consent conditions.

You may object to this decision or any condition within 15 working days of the decision being received, by applying in writing to the Dunedin City Council at the following address:

Senior Planner - Enquiries
Dunedin City Council
PO Box 5045
Dunedin 9054

You may request that the objection be considered by a hearings commissioner. The Council will then delegate its functions, powers and duties to an independent hearings commissioner to consider and decide the objection. Please note that you may be required to pay for the full costs of the independent hearings commissioner.

Alternatively, there may be appeal rights to the Environment Court. Please refer to section 120 of the Resource Management Act 1991. It is recommended that you consult a lawyer if you are considering this option.

You will be contacted in due course if you are due a partial refund or you have to pay additional costs for the processing of your application. Given the nature of your intended works/activity, this consent will require one inspection but given the number of sites three inspection fees will be charged to take account of the number of sites involved. The fee for your scheduled inspections will be included in the invoice for your application. If additional inspections are required beyond those scheduled, then you will be invoiced at that time in accordance with the Council's fees schedule.

Please feel free to contact me if you have any questions.

Yours faithfully

Amy Young
Planner

APPLICATION LUC-2019-662: VARIOUS SITES

Department: Resource Consents

BACKGROUND

The applicant is Kāinga Ora Homes and Communities, which is a government department which recently combined the former Housing New Zealand, Kiwibuild and HLC (Hobsonville Land Company). The existing buildings on each site will be demolished and the foundations removed. New residential units will be developed on each site. The applicants also sought to allow for future development on potentially contaminated sites owned by Kāinga Ora Homes and Communities. However, without any reference to previous land use or soil testing this is not considered to be best practice when dealing with contaminated soils. Some of the sites listed above are to be subdivided, as part of those subdivisions a search of council's records have been undertaken to determine if there have been any known HAIL activities undertaken on the site. All HAIL searches undertaken have determined that it is unlikely that any HAIL activities have been undertaken on the sites. However, due to the material used in construction in the past (asbestos cladding and lead paint etc) and the typical residential use of the sites including home vehicle workshops and domestic pesticide use, it is not uncommon when soil testing is undertaken on these sites to reveal levels of contaminants that are higher than acceptable background levels in localised areas.

DESCRIPTION OF ACTIVITY

26 properties have been chosen for redevelopment for social housing. The properties are located in Wakari and Brockville and Mosgiel. A number of these sites are in the process of being subdivided. The legal descriptions for the sites at the time of writing this decision can be found in Appendix One to this report. Many of these sites are subject to subdivision consents and therefore the legal descriptions and addresses will change once new titles have been issued.

A search of the Council's files has been undertaken on the following properties:

- 33 and 33A Church Street, Mosgiel (HAIL-2019-104) subdivision reference SUB-2019-99
- 16 Forfar Street, Mosgiel (HAIL-2019-102)subdivision reference : SUB-2019-96
- 143 Helensburgh Road, Dunedin (HAIL-2019-101) subdivision reference: SUB-2019-142
- 3 and 3A Queen Street, Mosgiel (HAIL-2019-103) subdivision reference SUB-2019-105
- 2 Murray Street and 29 Oban Street, Mosgiel HAIL-2020-1 (no subdivision application)

The Hazardous Activities and Industries List (HAIL) is a compilation of activities and industries that are considered likely to cause land contamination resulting from hazardous substance use, storage or disposal. There were no HAIL activities identified as a result of these searches on the sites above. HAIL - 2020-2 6 Stirling Crescent has been applied for but not yet issued. The applicants have not applied for a HAIL search of council's records for the properties on Mayfield Street, Statham Street and Turnbull Street

Preliminary soil testing was undertaken on Church Street, Forfar Street, Helensburgh Road, Murray Street, Oban Street, Perth Street and Stirling Crescent, the results of these tests can be found in Appendix Two of this report. The soil testing identified low level asbestos contamination as well as contamination from heavy metals and polycyclic aromatic hydrocarbon compounds. Testing indicated that the levels of some of the contaminants are higher than acceptable background levels for residential sites. The soil testing completed to date was limited to topsoil on the sites, estimated to a typical depth of 0.2m below ground level.

No testing results have been provided for the properties at Wray Street, Mayfield Avenue, Statham Street, Turnbull Street, Queen Street.

Category (E1):Mineral extraction, refining and reprocessing, storage and use: Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition.

The presence of asbestos fibres in the soils and the proposal to demolish the buildings would make the sites with asbestos cladding HAIL sites.

As such, the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 apply to the activity. The permitted activity conditions in the National Environmental Standard must be complied with, or else resource consent must be obtained.

A Ground Contamination Site Management Plan (GCSMP) has been provided with the application to accommodate the contamination identified within these sites. The plan includes mitigation and controls in relation to the disturbance of soil on these sites.

Mitigation controls proposed include:

- Loading of trucks within the site to contain runoff or spills
- Vehicle wheel wash prior to vehicles leaving the site to prevent tracking
- Trucks transporting contaminated materials from site are to be covered
- Earthworks in heavy rain is avoided and the site is kept clean
- Sediment controls where appropriate will be used to divert clean water or capture sediment within the site.
- Devices such as witches hats shall be installed in stormwater devices and maintained as required
- Dust will be managed using water to dampen sediments when loaded onto trucks and on any loosened sediments on site. Where sites are left open for more than three consecutive days, a polymer or adhesive spray will be used.
- Stockpiling of material must be in an area where runoff is able to be controlled. Stockpiled material will be placed on a plastic sheet and preferably on a sealed area. Stockpiles must be covered when the site is not active.
- Any water ponding in excavations for longer than 48 hours will be removed from site by hydro excavation and taken to an appropriate facility for disposal.

The resource consent application involves Sampling of soil and Disturbance of soil that is covered by the National Environmental Standard. The applicant seeks consent to authorise soil disturbance for each site listed above.

REASONS FOR APPLICATION

The following conditions must be met for the soil disturbance in association with the demolition of the existing buildings and establishment of new buildings, vehicle access, infrastructure/services and landscaping to be permitted under Regulation 8 of the National Environmental Standard:

Disturbing soil

(3) Disturbing the soil of the piece of land is a permitted activity while the following requirements are met:

(a) Controls to minimise the exposure of humans to mobilised contaminants must—

(i) Be in place when the activity begins:

(ii) Be effective while the activity is done:

(iii) Be effective until the soil is reinstated to an erosion-resistant state:

(b) The soil must be reinstated to an erosion-resistant state within 1 month after the serving of the purpose for which the activity was done:

(c) The volume of the disturbance of the soil of the piece of land must be no more than 25 m^3 per 500 m^2:

(d) Soil must not be taken away in the course of the activity, except that,—

(i) For the purpose of laboratory analysis, any amount of soil may be taken away as samples:

(ii) For all other purposes combined, a maximum of 5 m^3 per 500 m^2 of soil may be taken away per year:

(e) Soil taken away in the course of the activity must be disposed of at a facility authorised to receive soil of that kind:

(f) The duration of the activity must be no longer than 2 months:

(g) The integrity of a structure designed to contain contaminated soil or other contaminated materials must not be compromised.

The proposal fails to comply with the following permitted activity conditions:

- Permitted activity condition 8(3)(c which requires:

  the volume of the disturbance of the soil of the piece of land must be no more than 25 m^3 per 500 m^2.

The applicants are unsure of the volumes of soil disturbance proposed for each site but state that is likely that his permitted threshold will be breached in the development of the sites. A Detailed Site Investigation (DSI) is not available for each of the sites. The requirements for controlled and restricted discretionary activities under the National Environmental Standard are not met. Accordingly, the proposal is a **discretionary activity** under the National Environmental Standard.

The applicants seek the following condition of consent:

"Should soil testing result in new contaminants being identified at a site or sites, or contaminant levels requiring different or more stringent controls than those set out in the GCSMP dated November 2019, the GCSMP shall be updated with the additional controls and management methods and provided to the consent authority prior to the soil removal occurring."

WRITTEN APPROVALS AND EFFECTS ASSESSMENT

Affected Persons

No affected persons forms were submitted with the application. No person or party is considered to be adversely affected by the activity. This is because the environmental effects of the proposal are internalised within the site boundaries.

Effects on the Environment

Receiving Environment

The existing and reasonably foreseeable receiving environment is made up of:

- The existing environment and associated effects from lawfully established activities;
- Effects from any consents on the subject site (not impacted by proposal) that are likely to be implemented;
- The existing environment as modified by any resource consents granted and likely to be implemented; and
- The environment as likely to be modified by activities permitted in the district plan.

For the subject sites, the existing and reasonably foreseeable receiving environment comprises low density residential neighbourhoods.

For adjacent land, the existing and reasonably foreseeable receiving environment comprises low density residential neighbourhoods.

It is against these that the effects of the activity, beyond the permitted baseline, must be measured.

Assessment Matters/Rules

Consideration is required of the National Environmental Standard. This assessment is limited to the potential impact on human health from soil contamination. No regard has been given to any trade competition or any effects of trade competition.

1. *Requirement for a Preliminary and/or Detailed Site Investigation*
   The applicants have not provided the preliminary or detailed site investigations for the sites but have undertaken some soil testing on selected sites to determine if the sites are contaminated. It is my understanding that as not all of the sites have had soil testing the applicants are seeking to undertake soil disturbance on all of the sites on the basis that there is a chance that they might have contaminated soil. The measures put in place when disturbing, handling and transporting soil from these sites are measures that would be required for contaminated material. Therefore there would be no benefit in requiring detailed site investigations for each site.

2. *Suitability of the Land for the Proposed Activity*
   The proposal is to increase the density of residential activity on sites currently used for residential activity. The proposal is to remove the existing buildings and establish new dwellings, vehicle access and landscaped areas which are safe for residential use. The soil disturbance proposed on these sites will be in accordance with the GSCMP and will ensure that the site is safe during site works and construction and after construction is completed.

   Councils Consultant Senior Environmental Specialist, Paul Heveldt from Stantec has reviewed the testing undertaken on the selected sites provided by the applicant. He makes the following assessment on a site by site basis:

   "16 Forfar Street, Mosgiel
   This property has an area of 809m^2 and currently includes a brick-clad house on a level section, with a small asbestos-cement garden shed in one corner. Soil sampling and analysis carried out by e3 Scientific (e3) revealed little of significance with respect to the heavy metals analysed, except that cadmium, lead and arsenic concentrations in various discrete samples were above the "residential, 10% produce consumption" site use criteria.

   Further investigations at this property were undertaken by Tonkin + Taylor (T+T), particularly with respect to quantification of asbestos in soil. As noted by T+T, comparison of results is most appropriately made against a "high-density residential" land use scenario and not the "residential, 10% produce consumption" scenario used by e3. The high-density residential scenario more accurately reflects the proposed future use of this property when a multi-unit dwelling is to be constructed on the land.

   One of the four samples taken by T+T showed chrysotile asbestos fibres at a concentration of 0.005% w/w; this exceeds the Asbestos in Soil Guidelines criterion of 0.001% w/w.

   T+T also prepared a Contaminated Soil Management Plan (CSMP) for the 16 Forfar St property and made recommendations for site validation after demolition of the buildings currently occupying the site. The various recommendations made by T+T for management of

the site during and following demolition and for site validation are appropriate for the level of risk associated with asbestos.

33 – 33A Church Street, Mosgiel

This property has an area of approximately 1,100m^2 and it is proposed to demolish and replace the existing dwellings on the site with five individual units in close proximity, with appropriate landscaping and driveways. This is considered by T+T to meet the "high-density residential" land use criteria and Stantec agrees with this conclusion.

There are currently two dwellings on the site and three small outhouse buildings, some with asbestos cladding / roofing. The residential dwellings are of brick and may have soffits of asbestos-containing material.

Soil sampling carried out at this property by e3 revealed elevated levels of lead and arsenic; one sample had a lead level that exceeded the "residential land use; 10% produce consumption" criterion but was still below the "high-density residential" land use criterion. A further, composited sample revealed both lead and arsenic concentrations (adjusted for compositing) that exceeded the NES SCS for both "residential 10% produce consumption" and "high-density residential" land uses.

Asbestos- in-soil sampling found chrysotile asbestos fibres in one of four samples tested; the concentration of 0.004% w/w exceeded the Asbestos in Soil Guideline of 0.001% w/w.

T+T advised that the investigation findings should be revisited post-demolition and site clearance, including visual inspection in the first instance and possible further sampling and analysis if the visual inspection supports such a course of further action. T+T's generic CSMP should be applied to the further development of the site and verification of site conditions post-remediation. Stantec is in agreement with all aspects of the suggested course of action put forward by T+T for this property.

143 Helensburgh Road, Dunedin

This property has an approximate area of 950m^2. It is currently occupied by a residence of brick construction and the section is flat. Site soil sampling and analysis carried out by e3 revealed no samples where levels of heavy metal contaminants exceeded the "residential, 10% produce consumption" land use criteria.

Further soil sampling was carried out by T+T to assess the presence/absence and quantification of asbestos in soil at the property. Low levels of asbestos fibres were detected in two of four samples, with one of these results being less than the 0.001% w/w Asbestos in Soil Guidelines criterion and the other, at 0.002% w/w, being just above the guideline.

The future configuration of high-density residential housing development of this property has not been finally confirmed but options are under consideration. As for other properties, the generic T+T CSMP should be applied to site works in the demolition and site development stages of work at the site and the eventual validation of the remediation carried out should follow the parameters outlined by T+T; i.e. visual inspection, followed by any indicated targeted soil sampling and then eventual sign-off after successful remediation has been confirmed by the validation sampling results.

2 Murray Street / 29 – 31 Oban Street, Mosgiel

The proposed development on this combined site involves the construction of seven residential units in a high-density configuration. This will entail the demolition of the dwellings at 2 Murray St and 29 Oban St, with the retention of the dwelling at 31 Oban St as part of the project's intended final configuration. The total site area is approximately 2,400m^2.

As for the other properties, a contamination investigation has been undertaken for this combined property by e3, but this was considered deficient by Kāinga Ora and T+T has subsequently conducted a reassessment of the e3 findings and conclusions, with the addition of asbestos-in-soil sampling and quantification.

Again, as for the other assessments in this Kāinga Ora high-density housing development project, e3 compared their results against the SCS for a standard residential land use (i.e. 10% home-grown produce consumption) instead of the more relevant "high-density residential" criteria which more accurately describe the future use scenario for this overall site.

The e3 investigation (as reinterpreted by T+T) showed that, for all discrete soil samples, heavy metal concentrations were below SCS standards for both "residential with 10% produce consumption" and the "high-density residential" land use scenarios, although concentrations of arsenic, lead and zinc were significantly above background levels for Otago soils.

In three composite samples taken from the "halo" around each dwelling concentrations of arsenic exceeded the "high-density residential" criterion and, for lead, this was also the case but only at the 29 Oban St property. There was no individual testing of the components of the composite samples however.

With respect to asbestos, concentrations of fibres were detected in one of 8 samples; the measured concentration in soil was however below the Asbestos in Soil Guidelines level of 0.001% w/w.

Once again, T+T's recommendations included carrying out the demolition, site development and remedial works in accordance with the conditions in the generic CSMP prepared for the Kāinga Ora project. This includes the ultimate validation of the successful remediation of the properties. Stantec is in complete agreement with T+T's recommendations for ongoing management of the properties during the project works and into the future.

6 Stirling Crescent, Mosgiel
This site of area 855m^2 is currently occupied by a timber weatherboard-clad house with a corrugated iron roof and soffits which may be of asbestos-containing material. A shed clad with ACM will also be included in the demolition programme.

The redevelopment of the site will be by way of three multiple-unit dwellings, with associated driveways and sealed areas. The appropriate standard to be used in assessing the extent of soil contamination in the surface soils of the site is that of the "high-density residential" land use scenario.

The original investigations carried out by e3 found concentrations of arsenic and lead above background levels and, in some instance in the halo around the dwelling, concentrations of arsenic were in excess of the high-density residential land use criterion. Once again, e3 did not have the individual components of each composite sample tested and thus the individual contamination hot spots could not be identified to allow specific focussed remediation.

One sample analysed by T+T had an elevated zinc concentration that exceeded Class A landfill acceptance criteria. It was suggested that, at the time of the site remediation and validation works, any soil to be disposed off-site should be resampled and analysed to determine the optimum location for bulk soil disposal. Stantec agrees with this approach.

Soil samples analysed did not reveal any asbestos fibres in the 15 individual samples taken from across the site and at various depths.

T+T concluded that if site works are conducted in accordance with the generic CSMP prepared to cover all of the Kāinga Ora project works then the health and safety of site workers, the general public and ongoing users of the property after development and reinstatement work has been completed will be satisfactorily protected. Stantec agrees with this assessment and the detailed approaches proposed.

43 Perth Street, Mosgiel
The dwelling on this property was removed following a fire in 2017. The materials of construction details for the dwelling are unknown. Aerial photographs of the 725m^2 area of the property show one small shed, in addition to the house itself. The use of asbestos-containing materials in construction cannot be ruled out.

Soil sampling and analysis across the site did not reveal significant levels of contamination and no asbestos fibres were found in any of the samples. There appear to be areas of introduced fill on the property and some concentrations of lead and zinc in surface soils were elevated above Class A landfill acceptance criteria.

T+T's conclusions were that, if site redevelopment works are carried out in accordance with the generic CSMP prepared for the Kāinga Ora project works then an appropriate level of health and safety protection will be afforded for site workers, the general public and the eventual occupiers of the on-site high-density housing units proposed to be constructed on the property."

The testing and reporting from the applicants suggest that with the proposed remediation proposed the sites identified in the application are suitable for increased density residential development.

3. <u>*Approach to the Remediation or Ongoing Management of the Land*</u>
Councils Consultant Senior Environmental Specialist recommends the following in relation to the remediation and ongoing management of the land:

"The generic T+T CSMP should be applied to site works in the demolition and site development stages for each property and the eventual validation of the remediation carried out should follow the parameters outlined by T+T. This should include visual inspection, followed by any targeted soil sampling deemed to be necessary, and finally sign-off after successful remediation has been confirmed by the validation sampling results."

The approach taken by Tonkin and Taylor in the proposed GCSMP is approved by the council's consultant expert. The GCSMP includes the remediation and management methods proposed, the timing of the remediation and the standard of remediation. The GCSMP includes mitigations methods to address risk to health and mitigation for the land. The GCSMP will be updated should contaminants be found on any of the sites that require additional controls beyond those set out in the GCSMP.

4. <u>*Adequacy of or Need for the Site Management Plan and/or Site Validation Report*</u>
Council's Consultant Senior Environmental Specialist has confirmed that the GCSMP provided by T&T is adequate. A copy of the GCSMP is included in Appendix Three of this consent. It is the intent of the applicant that the GCSMP will be updated should contaminants be found on any of the sites that require additional controls beyond those set out in the GCSMP.

5. *Transport, Disposal and Tracking of Soil and Other Materials*
All materials excavated from the site to be taken off site will be loaded onto the trucks on site and there will be a wheel wash area instated to ensure that no materials are tracked from the site.

6. *Requirement for and Conditions of a Financial Bond*
There is no requirement for a financial bond.

7. *Review of Consent Conditions*
The GSCMP will be reviewed on an as required basis. Greater controls will be imposed if contamination is found that the GSCMP does not provide for. This can be done at any time. If the GSCMP needs to be reviewed for a particular site, works at that site will need to cease until the applicant has provided an updated GSCMP to the Council.

8. *Notification of Progress and Consent Duration*
As part of the GSCMP the applicant will undertake the following reporting:

> *A works completion report shall be prepared on completion of the earthworks at each redevelopment site by the Contaminated Land Specialist including:*
> *• Confirmation that ground disturbance works were completed according to this GCSMP and any variations (if applicable) during the works;*
> *• Volumes of materials removed from the site, associated analytical laboratory test results (if any), disposal destination of surplus soils and waste disposal acceptance receipts;*
> *• Location of any contaminated materials materials remaining onsite and details of the capping to contain them; and*
> *• Confirmation that there were no environmental incidents during the works. If there was an environmental incident then the letter shall detail the nature of the incident and the measures taken to mitigate effects. The works completion reports shall be provided to DCC and/or ORC within three months of completion of the ground disturbance works.*
>
> *If soils containing contaminant concentrations above high-density residential land use criteria (see Section 5.9.4) remain on site after redevelopment (e.g. encapsulation under paving areas), a long term site management plan (LTSMP) shall be prepared. The LTSMP, prepared by the Contaminated Land Specialist, will be for the use of future site owners and users, including and not limited to contractors undertaking future ground disturbance works (e.g. repair to buried services). The LTSMP shall include summary information on the ground conditions at the site, extent and type of soil contamination and the likely controls and procedures to be employed if disturbing the remaining fill/soil below lining/capping materials. These will include the future offsite disposal of any materials and provision of appropriate PPE to comply with the Asbestos Regulations (operative at the time of the plan's preparation). The LTSMP (if required) shall be provided to DCC and/or ORC before occupation of any of the units on the site. The content of the report shall comply with the MfE CLMG #1 and Asbestos in Soil Guidelines.*

Works involving disturbance of soil and any mitigation measures must be in place prior to occupation of the sites for residential activity.

NOTIFICATION ASSESSMENT

Public Notification

Step 1: Mandatory public notification in certain circumstances

- Public notification has not been requested.
- There has been no failure or refusal to provide further information.

- There has been no failure to respond or refusal to a report commissioning request.
- The application does not involve the exchange of recreation reserve land.

Step 2: If not required by Step 1, public notification precluded in certain circumstances

- There are no rules or national environmental standards precluding public notification.
- The application does not involve: a controlled activity; a restricted discretionary or discretionary subdivision; a restricted discretionary or discretionary residential activity; a boundary activity; nor, an activity prescribed in regulations as being precluded from public notification. As a result, public notification is not precluded under Step 2.

Step 3: If not precluded by Step 2, public notification required in certain circumstances

- There are no rules or national environmental standards requiring public notification.
- The activity will not have, or be likely to have, adverse effects on the environment that are more than minor.

Step 4: Public notification in special circumstances

- There are no special circumstances that warrant the application being publicly notified. There is nothing exceptional or unusual about the application that makes public notification desirable.

Limited Notification

Section 95B of the Resource Management Act 1991 sets out a step-by-step process for determining limited notification. Each step is considered in turn below.

Step 1: Certain affected groups and affected persons must be notified

- The activity is not in a protected customary rights area; the activity is not an accommodated activity in a customary marine title area; and, the activity is not on or adjacent to, or might affect, land that is the subject of a statutory acknowledgement.

Step 2: If not required by Step 1, limited notification precluded in certain circumstances

- There are no rules or national environmental standards precluding limited notification.
- The application does not involve: a controlled activity that is not a subdivision; nor an activity prescribed in regulations as being precluded from limited notification.

Step 3: If not precluded by Step 2, certain other affected persons must be notified

- The application does not involve: a boundary activity; nor, an activity prescribed in regulations that prescribe who is an affected person.
- There are no persons where the activity's adverse effects on the person are minor or more than minor (but are not less than minor).

Step 4: Further notification in special circumstances

- There are no special circumstances that warrant the application being limited notified. There is nothing exceptional or unusual about the application that makes limited notification to any other persons desirable.

SUBSTANTIVE DECISION ASSESSMENT

Effects

In accordance with section 104(1)(a) of the Resource Management Act 1991, the actual and potential adverse effects associated with the proposed activity have been assessed and outlined above. It is considered that the adverse effects on the environment arising from the proposal are no more than minor.

Offsetting or Compensation Measures

In accordance with section 104(1)(ab) of the Resource Management Act 1991, there are no offsetting or compensation measures proposed or agreed to by the applicant that need consideration.

Objectives and Policies

In accordance with section 104(1)(b) of the Resource Management Act 1991, the objectives and policies of the Operative District Plan and the Proposed 2GP were taken into account when assessing the application.

Operative District Plan

The proposal is considered to be consistent with the following objective:

- **Objective 17.2.1 (Hazards, Hazardous Substances and Earthworks Section)**
  This seeks to ensure that the effects on the environment of technological hazards are avoided, remedied or mitigated.

Proposed 2GP

The proposal is considered to be consistent with the following Proposed 2GP objective:

- **Objective 9.2.2 (Public Health and Safety)**
  This seeks to ensure that residential activities, development, and subdivision activities provide high quality on-site amenity for residents.

National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health

In accordance with section 104(1)(b) of the Resource Management Act 1991, the provisions of the National Environmental Standard were taken into account when assessing the application. The proposal is considered to be consistent with the policy objective of the National Environmental Standard.

Other Matters

Having regard to section 104(1)(c) of the Resource Management Act 1991, no other matters are considered relevant.

Part 2

Based on the findings above, it is evident that the proposal would satisfy Part 2 of the Resource Management Act 1991. Granting of consent would promote the sustainable management of Dunedin's natural and physical resources.

RECOMMENDATION

After having regard to the above planning assessment, I recommend that:

1. This application be processed on a non-notified basis, pursuant to sections 95A and 95B of the Resource Management Act 1991.

2. The Council grant consent to the proposed activity under delegated authority, in accordance with sections 104 and 104B of the Resource Management Act 1991.

3. The time limits for the processing of this consent be extended pursuant to sections 37A(2)(a) and 37A(4)(b)(i) of the Resource Management Act 1991.

Amy Young
Planner

Date: 17 April 2020

DECISION

I have read both the notification assessment and substantive decision assessment in this report. I agree with both recommendations above.

Under delegated authority on behalf of the Dunedin City Council, I accordingly approve the granting of resource consent to the proposal:

Pursuant to Part 2 and sections 34A(1), 104 and 104B of the Resource Management Act 1991, and the provisions of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011, the Dunedin City Council ***grants*** *consent to a* ***discretionary activity*** *being soil disturbance in conjunction with the demolition of buildings and the establishment of new buildings, vehicle access and landscaping, on the Kainga ora sites referred to in Appendix One of this consent, subject to the conditions imposed under section 108 of the Act, as shown on the attached certificate.*

and

That, having taken into account:
- *The interests of any person who may be adversely affected by the time extension,*
- *The interests of the community in achieving an adequate assessment of effects of a proposal, policy statement or plan, and*
- *Its duty under section 21 to avoid reasonable delay,*

the Council has, pursuant to sections 37A(2)(a) and 37A(4)(b)(i) of the Resource Management Act 1991, extended the requirement outlined in section 115 regarding the time in which notification of a decision must be given after the date the application was first lodged with the Council.

John Sule
Senior Planner

Date: 17 April 2020

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

Consent Type: Land Use Consent

Consent Number: LUC-2019-662

Purpose: Soil disturbance on various Kainga Ora owned sites in conjunction with demolition of buildings and the establishment of new buildings, vehicle access and landscaping under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

Location and Legal Description: Various sites (See Appendix One of this decision for a full list of the sites and legal descriptions at the date of issue.

Lapse Date: 17 April 2025, unless the consent has been given effect to before this date.

Conditions:

1. *The proposed activity must be undertaken in general accordance with the approved plans attached to this certificate as Appendix One and the Ground Contamination Site Management Plan(GCSMP) attached in Appendix Three of this consent and the information provided with the resource consent application received by the Council on 11 December 2019, and further information received on 13 February 2020, except where modified by the following conditions.*

2. *The consent holder shall:*

    a. *be responsible for all contracted operations relating to the exercise of this consent; and*
    b. *ensure that all personnel (contractors) working on the site are made aware of the conditions of this consent and the approved GCSMP, have access to the contents of consent documents and to all associated plans and methodology; and*
    c. *ensure compliance with the GCSMP.*

3. *Works involving disturbance of soil and any mitigation measures required by the GCSMP must be in place on a site by site basis prior to occupation of the sites for residential activity*

4. *Should soil testing result in new contaminants being identified at a site or sites, or contaminant levels requiring different or more stringent controls than those set out in the GCSMP dated November 2019, the GCSMP shall be updated with the additional controls and management methods and provided to the consent authority prior to the soil removal occurring. A copy of the updated GCSMP must be provided to the Resource Consent Manager for approval via email: rcmonitoring@dcc.govt.nz no less than 10 working days before the scheduled start date.*

Advice Notes:

Regional Plan: Waste for Otago

1. Please contact the Otago Regional Council to determine whether you also need to obtain a resource consent under the contaminated site rules of the Regional Plan: Waste for Otago.

Transportation

2. Please contact the Dunedin City Council Transportation Department prior to any works being undertaken within the road reserve. Traffic management plans may be required depending on the duration, frequency of movements to and from the sites.

Heritage

3. Buildings built before 1900 or sites which were in use before that time are considered archaeological sites under the Heritage New Zealand Pouhere Taonga Act 2014. Before disturbing an archaeological site, or to check whether a site is an archaeological site, the consent holder is advised to discuss their proposal with Heritage New Zealand.

General

4. This is a consent for soil disturbance over the permitted volume thresholds under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011. If earthworks on any of the sites exceed the permitted thresholds in the District Plan separate land use consent will be required.

5. In addition to the conditions of a resource consent, the Resource Management Act 1991 establishes through sections 16 and 17 a duty for all persons to avoid unreasonable noise, and to avoid, remedy or mitigate any adverse effect created from an activity they undertake.

6. Resource consents are not personal property. The ability to exercise this consent is not restricted to the party who applied and/or paid for the consent application.

7. It is the responsibility of any party exercising this consent to comply with any conditions imposed on the resource consent prior to and during (as applicable) exercising the resource consent. Failure to comply with the conditions may result in prosecution, the penalties for which are outlined in section 339 of the Resource Management Act 1991.

8. The lapse period specified above may be extended on application to the Council pursuant to section 125 of the Resource Management Act 1991.

9. This is a resource consent. Please contact the Council's Building Services Department, about the building consent requirements for the work.

Issued at Dunedin on 17 April 2020

Amy Young
Planner

Appendix One: List and location map of sites and legal descriptions subject to this consent LUC-2019-662 (scanned image(s), not to scale)

- *33 Church Street Mosgiel, 33A Church Street Mosgiel, 1 - 33 Church Street Mosgiel, 2 - 33 Church Street Mosgiel, 3 - 33 Church Street Mosgiel, 4 - 33 Church Street Mosgiel, 5 - 33 Church Street Mosgiel, legally described as Lot 1 Deposited Plan 272579 held in Record of Title OT19A/414 and Lot 2 Deposited Plan 272579 held in Record of Title OT19A/415*

- *16 Forfar Street Mosgiel, 16A Forfar Street Mosgiel, 16B Forfar Street Mosgiel, 16C Forfar Street Mosgiel Legally described as Lot 32 Block VII Deposited Plan 471 held in Record of Title OT286/242*

- *143 Helensburgh Road Dunedin, 1 - 143 Helensburgh Road Dunedin, 2 - 143 Helensburgh Road Dunedin, 3 - 143 Helensburgh Road Dunedin, 4 - 143 Helensburgh Road Dunedin, 5 - 143 Helensburgh Road Dunedin legally described as Lot 2 Deposited Plan 20438 held in Record of Title OT12A/368 (Proposed addresses 143A Helensburgh Road Dunedin, 143B Helensburgh Road Dunedin, 143C Helensburgh Road Dunedin, 143D Helensburgh Road Dunedin, 143E Helensburgh Road Dunedin, 143F Helensburgh Road Dunedin)*

- *2 Murray Street Mosgiel legally described as Lot 35 Deposited Plan 8961 held in Record of Title OT17B/463*

- *52 Mayfield Avenue, Dunedin, 54 Mayfield Avenue, Dunedin, 58 Mayfield Avenue, Dunedin, 60 Mayfield Avenue, Dunedin legally described as Lot 1 Deposited Plan 27721 held in Record of Title OT19B/307 and Lot 2 Deposited Plan 27721 held in Record of Title OT19B/308 and Lot 3 Deposited Plan 27721 held in Record of title OT19B/309*

- *29 Oban Street, Mosgiel, 31 Oban Street, Mosgiel legally described as Lot 36 Deposited Plan 8961 held in Record of Title OT17B/464 and Lot 37 Deposited Plan 8961 held in Record of Title OT17B/465*

- *43 Perth Street Mosgiel Legally described as Lot 14 Deposited Plan 7453 held in Record of Title OT9B/112*

- *3 Queen Street Mosgiel, 3A Queen Street Mosgiel, legally described as Lot 1 Deposited Plan 27009 held in Record of Title OT18D/1081 and Lot 2 Deposited Plan 27009 held in Record of Title OT18D/1082 and Lot 4 Deposited Plan 27721 held in Record of Title OT19B/310.*

- *32 Statham Street Dunedin, 34 Statham Street Dunedin, 36 Statham Street Dunedin legally described as Lot 5 Deposited Plan 27067 held in Record of Title OT19A/A2 and Lot 6 Deposited Plan 27067 held in Record of Title OT19A/3 and Lot 7 Deposited Plan 27067 held in Record of Title OT19A/4 Lot 219 Deposited Plan 10063 held in Record of title OT16D/273*

- *6 Stirling Crescent Mosgiel legally described as Lot 243 Deposited Plan 8962 held in Record of Title OT17B/509*

- *7 Turnbull Street, Dunedin, 9 Turnbull Street, Dunedin, 11 Turnbull Street, Dunedin, 15 Turnbull Street, Dunedin, 17 Turnbull Street, Dunedin legally described as Lot 100 Deposited Plan 10652 held in Record of Title 16D/883 and Lot 101 Deposited Plan 10652 held in Record of title OT16D/881 and Lot 126 Deposited Plan 10652 held in Record of Title OT16D/885 and Lot 127 Deposited Plan 10652 held in Record of Title OT18A/282 and Lot 128 Deposited Plan 10652 held in Record of Title OT18A/283*

- *93 Wray Street, Dunedin, 95 Wray Street Dunedin, 97 Wray Street Dunedin legally described as Lot 236 Deposited Plan 10063 held in Record of title OT16D/910 and Lot 237 Deposited Plan 10063 held in Record of title OT16D/911*

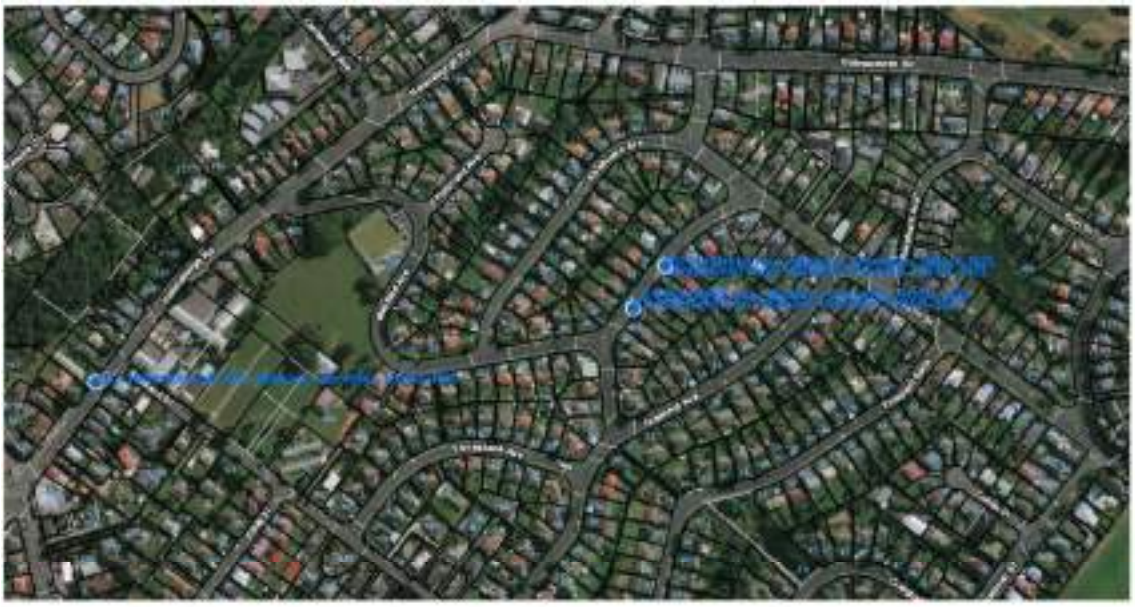


Figure 2.1: Identified properties in north west Dunedin. *Copyright T+T Mapviewer 2019.*

Figure 2.2: Identified properties in Mosgiel. *Source: T+T Mapviewer 2019.*

Figure 2.3: Identified properties in Brockville. *Source: T+T Mapviewer 2019.*

Appendix Two: Preliminary soil testing results

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

TITLE:	RHP2 – Contamination Assessments	**REDEVELOPMENT ID :**	30492
ATTENTION:	Andrew Rose Senior Programme Manager	**CLIENT DETAILS:**	Housing New Zealand (HNZ)
CONSULTANT:	e3 Scientific Ltd.	**PREPARED BY:** Simon Bloomberg	**CHECKED BY**: Glenn Davis

Investigation Summary Table

Address	Inspection and Sampling Date	HAIL Use	Asbestos Present on Site[1]	Indicative Landfill Disposal Cost[2]	Soil Samples Exceeding NES-CS Residential	Comments
33 Church	22/08/2018	No	Medium	$ 4,239.72	Yes	
33A Church	22/08/2018	No	Medium	$ 6,081.12	Yes	

Notes

[1] Based on site inspection and/or analysis of soil samples, refer individual property report

[2] Refer Landfill Summary Table

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

Objectives

The key objectives of the contamination assessments were to:

- Assess potential for HAIL land use, and contamination sources relating to old dwellings.
- Provide indicative costs for landfill disposal of contaminated topsoil based on testing of soil parameters associated with those land uses and sources on the redevelopment areas.

Scope of Works

The scope of work that was undertaken in order to meet the project objectives included:

- Reviewing selected publicly available historical and current aerial imagery, including aerial photographs purchased from Opus Aerial Photosales where necessary.
- Liaising with local councils (territorial and regional), to identify any potential Hazardous Activities and Industries List (HAIL) land use.
- Undertaking site inspections and shallow soil sampling.
- Submitting shallow soil samples for laboratory analysis.

Observations, data and photographs are provided with the individual site assessment forms (Appendix A).

Site Sampling

e3Scientific undertook soil sampling to inspect soils and obtain initial data on potential concentrations of key contaminants of concern in shallow soils. The investigation comprised the following at each address:

- Preparing a site-specific health and safety plan.
- Collection of four field composite soil sample from surface to 0.1 m below ground level (bgl), 1.0 m from the edge of the building/dwelling. Sample analysed at the laboratory for lead and arsenic.
- Collecting two discrete soil samples from surface to 0.1 m bgl centrally from the front and rear yards of each address. Both samples analysed for heavy metal suite at laboratory.
- At one of the discrete sample locations above, based on visual field observations of the most likely location of fill material/greatest topsoil thickness, advancing one hand excavated test pit no greater than 0.3 m bgl. Measuring topsoil depth and collecting one discrete subsoil sample to hold cold at laboratory.
- Inspecting the property grounds for presence of asbestos-containing materials (ACM).
- Comparison of reuslts against regional background and national environmental standards for contaminants in soil (NESCS).

Sample locations are plotted in Appendix B.

Investigation Results

A brief summary of the site assessment information is provided below:

Investigation Summary Table

Address	HAIL detail	Council information	Soil results summary
33 Church	N/A	N/A	Exceeds residential SCS
33A Church	N/A	N/A	Exceeds residential SCS

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

Soil Disposal Assessment

Based on the results of the laboratory analysis for each address, an assessment of indicative costs to dispose of topsoils from each address has been prepared below. The costs are indicative only and based on the following key assumptions:

- Two generic quotes from local transport contractors.
- Ready access to site, no clearance required, minimal green waste and inert material.
- Allow 1.8 tonnes / m^3.
- Up to 30 % of topsoil can be reused if it does not exceed SCS / BRANZ guidelines.
- No allowance for additional testing, assessment, any necessary resource consents.
- No allowance for project management, health and safety, environmental controls.

Landfill Summary Table

Landfill	Disposal / tonne	Haulage / tonne[1]	Address	Areas for disposal	Soil volume, m^3	Indicative cost estimate
Asbestos landfill	$273.00	$20.00	33 Church		0	$0.00
			33A Church		0	$0.00
Class A landfill	$41.00	$20.00	33 Church	Halo,	10	$1,098.00
			33A Church	Halo, Front,	43	$4,721.40
Class B landfill	$10.00	$20.00	33 Church	Front, Rear	58.18	$3,141.72
			33A Church	Rear	25.18	$1,359.72
Cleanfill	$10.00	$20.00	33 Church		0	$0.00
			33A Church		0	$0.00

Appendix A: Individual Site Assessment Form, Site Photos, Historic Aerials & Lab Data

INDIVIDUAL LOT/SITE ASSESSMENT SUMMARY				
TITLE	RHP2 – Contamination Assessments		PROJECT NUMBER **18059**	CLIENT DETAILS: **HOUSING NZ**
PREPARED BY	Duncan Keenan & Simon Bloomberg		VERSION: **1.0**	
	e3Scientific			
Site Information				
Address		2 Murray St, Fairfield, Mosgiel		
Redevelopment ID		30572		
Lot Area (m^2)		756		
HAIL based on desktop information?		No		
Dangers Onsite		Angry dog		
Site Description		Generally flat, tidy section. Car port on western side, plaster with tiled roof. Asbestos clad shed in backyard. Possible asbestos soffits.		
Building cladding		Plaster	ACM (good)	
ACM Observed	**Site Surface**	No		
	Test Pit	No		
Asbestos Presence [1]			Medium	
Topsoil Depth (m bgl)		0.15		
Soil Sample Results	**Halo**	Background	< NES SCS	> NES SCS
	Front Yard	Background	< NES SCS	> NES SCS
	Back Yard	Background	< NES SCS	> NES SCS
Contaminated Soil (exceeds background concentration and/or NES-CS)		**Halo**	Yes	14.25 m^3
		Front Yard	No	
		Back Yard	Yes	55.35 m^3

[1] **NOTE**: Qualitative assessment based on visual observations of buildings and surface/test pit soils.

Plate 1: Entrance way and front yard

Plate 2: Backyard and asbestos clad shed

Title:	**Appendix A – Site Photographs page 1 of 2**	**RevDev**	**30572-DE9**
		Date	22/8/18
Project name:	2 Murray Street, Mosgiel, Lot 35 DP 8961	Drawn	27/8/18
		Approved	DK

Plate 3: Asbestos clad shed

Title:	**Appendix A – Site Photographs page 2 of 2**	**RevDev**	**30572-DE9**
		Date	22/8/18
Project name:	2 Murray Street, Mosgiel, Lot 35 DP 8961	Drawn	27/8/18
		Approved	DK

INDIVIDUAL LOT/SITE ASSESSMENT SUMMARY				
TITLE	RHP2 – Contamination Assessments	PROJECT NUMBER **18059**	CLIENT DETAILS: **HOUSING NZ**	
PREPARED BY	Duncan Keenan & Simon Bloomberg	VERSION: **1.0**		
e3Scientific				
Site Information				
Address		31 Oban St, Fairfield, Mosgiel		
Redevelopment ID		30572		
Lot Area (m^2)		846		
HAIL based on desktop information?		No		
Dangers Onsite		Dog onsite but fine		
Site Description		Generally flat, tidy section. Car port on eastern side, brick with tiled roof. Asbestos clad shed in backyard.		
Building cladding		Brick	ACM (good)	
ACM Observed	**Site Surface**	No		
	Test Pit	No		
Asbestos Presence [1]			Medium	
Topsoil Depth (m bgl)		0.15		
Soil Sample Results	**Halo**	Background	< NES SCS	> NES SCS
	Front Yard	Background	< NES SCS	> NES SCS
	Back Yard	Background	< NES SCS	> NES SCS
Contaminated Soil (exceeds background concentration and/or NES-CS)	**Halo**	Yes	14.25 m^3	
	Front Yard	Yes	27.45 m^3	
	Back Yard	Yes	57 m^3	

[1] **NOTE**: Qualitative assessment based on visual observations of buildings and surface/test pit soils.

Plate 1: Front yard of dwelling

Plate 2: Backyard of dwelling

Title:	**Appendix A – Site Photographs page 1 of 2**	**RevDev**	**30752**
		Date	22/8/18
Project name:	31 Oban Street, Fairfield, Mosgiel Lot 36 DP 8961	Drawn	27/8/18
		Approved	DK

Plate 3: Asbestos clad shed

Title:	**Appendix A – Site Photographs page 2 of 2**	**RevDev**	**30752**
		Date	22/8/18
Project name:	31 Oban Street, Fairfield, Mosgiel Lot 36 DP 8961	Drawn	27/8/18
		Approved	DK

INDIVIDUAL LOT/SITE ASSESSMENT SUMMARY				
TITLE	RHP2 – Contamination Assessments	PROJECT NUMBER **18059**	CLIENT DETAILS: **HOUSING NZ**	
PREPARED BY	Duncan Keenan & Simon Bloomberg	VERSION: **1.0**		
e3Scientific				
Site Information				
Address		29 Oban St, Fairfield, Mosgiel		
Redevelopment ID		30572		
Lot Area (m^2)		810		
HAIL based on desktop information?		No		
Dangers Onsite		None		
Site Description		Generally flat, tidy section. Garage on southern side. Plaster with tiled roof. Asbestos clad shed in backyard.		
Building cladding		Plaster	ACM (good)	
ACM Observed	**Site Surface**	No		
	Test Pit	No		
Asbestos Presence [1]			Medium	
Topsoil Depth (m bgl)		0.15		
Soil Sample Results	**Halo**	Background	< NES SCS	> NES SCS
	Front Yard	Background	< NES SCS	> NES SCS
	Back Yard	Background	< NES SCS	> NES SCS
Contaminated Soil (exceeds background concentration and/or NES-CS)	**Halo**	Yes	12 m^3	
	Front Yard	Yes	22.8 m^3	
	Back Yard	Yes	66.15 m^3	

[1] **NOTE**: Qualitative assessment based on visual observations of buildings and surface/test pit soils.

Plate 1: Front yard

Plate 2: Backyard, garage and asbestos clad shed

Title:	**Appendix A – Site Photographs page 1 of 2**	**RevDev**	**30572-DE9**
		Date	22/8/18
Project name:	29 Oban Street, Fairfield, Mosgiel Lot 37 DP 8961	Drawn	27/8/18
		Approved	DK

Plate 3: Possible asbestos soffits

Plate 4: Asbestos clad garden shed

Title:	**Appendix A – Site Photographs page 2 of 2**	**RevDev**	**30572-DE9**
		Date	22/8/18
Project name:	29 Oban Street, Fairfield, Mosgiel Lot 37 DP 8961	Drawn	27/8/18
		Approved	DK

Aerial courtesy of LINZ c. 1947

Aerial courtesy of LINZ c. 1966

Hill Laboratories
TRIED, TESTED AND TRUSTED

Quote No 93913

Primary Contact

Submitted By

Client Name E3 Scientific Limited 141258

Address PO Box 2450, Wakatipu
Queenstown 9349

Phone 03 409 8664 Mobile 027 376 6588

Email glenn.davis@e3scientific.co.nz

Charge To E3 Scientific Limited 141258

Client Reference RHD 2

Order No

Results To

Please refer to the Quote for a list of the Default Report Recipients

☐ Email Other

☐ Other

ANALYSIS REQUEST

Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

Job No **203 6165**

Date Rec 23-Aug-18 08:11

T 0508 HILL LAB (44 555 2)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Received by: Emily Corfield

CHAIN OF CUSTODY INFORMATION

Sent to Hill Laboratories

☐ Tick if you require COC to be emailed back

Date & Time:

Name:

Signature:

Received at Hill Laboratories

Date & Time:

Name:

Signature

Condition

☐ Room Temp ☐ Chilled ☐ Frozen

Temp: 9.9

☐ Sample & Analyses details checked

Signature

ADDITIONAL INFORMATION

URGENT NEXT DAY TAT

SAMPLES MUST BE RECEIVED BY THE HAMILTON LABORATORY BY 7AM

Priority ☐ Low ☐ Normal ☐ High

☑ Urgent (ASAP, extra charge applies, please consult lab first)

Requested Reporting Date

Quoted Sample Types

Soil (Soil)

No	Sample Name	Sample Date/Time	Sample Type	Tests Required
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Job Information Summary

Client:	E3 Scientific Limited	**Lab No:**	2036165
Contact:	Duncan Keenan	**Date Registered:**	23-Aug-2018 10:54 am
	C/- E3 Scientific Limited	**Priority:**	Urgent
	PO Box 2450	**Quote No:**	94309
	Wakatipu	**Order No:**	
	Queenstown 9349	**Client Reference:**	RHD 2 with composites
		Add. Client Ref:	
		Submitted By:	Simon Bloomberg
		Charge To:	E3 Scientific Limited
		Target Date:	28-Aug-2018 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	O-31-H1 22-Aug-2018	Soil	PSoil250	Composite Environmental Solid Samples
2	O-31-H2 22-Aug-2018	Soil	PSoil250	Composite Environmental Solid Samples
3	O-31-H3 22-Aug-2018	Soil	PSoil250	Composite Environmental Solid Samples
4	O-31-H4 22-Aug-2018	Soil	PSoil250	Composite Environmental Solid Samples
5	O-31-FL (0-0.1) [A] 22-Aug-2018	Soil	PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
6	O-31-FL (0-0.1) [B] 22-Aug-2018	Soil	PSoil250	Hold Cold
7	O-31-BL (0-0.1) [A] 22-Aug-2018	Soil	PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
8	O-31-BL (0-0.1) [B] 22-Aug-2018	Soil	PSoil250	Hold Cold
9	O-31-BL (0.30) [A] 22-Aug-2018	Soil	PSoil250	Hold Cold
10	O-31-BL (0.30) [B] 22-Aug-2018	Soil	PSoil250	Hold Cold
11	Composite of O-31-H1, O-31-H2, O-31-H3 and O-31-H4	Soil	cGSoil	Environmental Solids Rapid Sample Preparation; Total Recoverable Arsenic; Total Recoverable Lead

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5, 7, 11
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5, 7
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	11
Composite Environmental Solid Samples	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	11
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	11

Hill Laboratories
TRIED, TESTED AND TRUSTED

ANALYSIS REQUEST

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand
T 0508 HILL LAB (44 555 22)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Job No 203 6166 Date Recv: 23-Aug-18 08:31

Received by: Emily Cotfield

Quote No ~~63948~~

Primary Contact

Submitted By

Client Name E3 Scientific Limited 141258

Address PO Box 2450, Wakatipu
Queenstown 9349

Phone 03 409 8664 Mobile 027 376 6588

Email glenn.davis@e3scientific.co.nz

Charge To E3 Scientific Limited 141258

Client Reference RHD 2

Order No

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories Date & Time:
Name:
Signature:

☐ Tick if you require COC to be emailed back

Received at Hill Laboratories Date & Time:
Name:
Signature:

Results To

Please refer to the Quote for a list of the Default Report Recipients

☐ Email Other

☐ Other

ADDITIONAL INFORMATION

URGENT NEXT DAY TAT

SAMPLES MUST BE RECEIVED BY THE HAMILTON LABORATORY BY 7AM.

Condition Temp: 9.9

☐ Room Temp ☐ Chilled ☐ Frozen

☐ Sample & Analysis details checked

Signature

Priority ☐ Low ☐ Normal ☐ High

☑ Urgent (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

Quoted Sample Types

Soil (Soil)

No.	Sample Name	Sample Date/Time	Sample Type	Tests Required
1	[illegible]			
2	[illegible]			[illegible]
3	[illegible]			
4	[illegible]			
5	[illegible]			[illegible]
6	[illegible]			hold cold
7	[illegible]			hold cold
8	[illegible]			hold cold
9	[illegible]			hold cold
10	[illegible]			hold cold

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Job Information Summary

Client:	E3 Scientific Limited	**Lab No:**	2036166
Contact:	Duncan Keenan	**Date Registered:**	23-Aug-2018 9:58 am
	C/- E3 Scientific Limited	**Priority:**	Urgent
	PO Box 2450	**Quote No:**	94309
	Wakatipu	**Order No:**	
	Queenstown 9349	**Client Reference:**	RHD 2 with composites
		Add. Client Ref:	
		Submitted By:	Simon Bloomberg
		Charge To:	E3 Scientific Limited
		Target Date:	28-Aug-2018 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	M-2-H1	Soil	PSoil250	Composite Environmental Solid Samples
2	M-2-H2	Soil	PSoil250	Composite Environmental Solid Samples
3	M-2-H3	Soil	PSoil250	Composite Environmental Solid Samples
4	M-2-H4	Soil	PSoil250	Composite Environmental Solid Samples
5	M-2-FL(0.01)	Soil	PSoil250, PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level; Hold Cold
6	M-2-BL(0.01)	Soil	PSoil250, PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level; Hold Cold
7	M-2-BL(0.3)	Soil	PSoil250, PSoil250	Hold Cold
8	Composite of M-2-H1, M-2-H2, M-2-H3 & M-2-H4	Soil	cGSoil	Environmental Solids Rapid Sample Preparation; Total Recoverable Arsenic; Total Recoverable Lead

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5-6, 8
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5-6
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	8
Composite Environmental Solid Samples	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	8
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	8

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Hamilton 3204
Private Bag 3205
Hamilton 3240, New Zealand

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

Job No. 203 6581 Date Rec 23-Aug-18 11:41

Received by Sachet Sharma

Quote No

Primary Contact

Submitted By

Client Name

Address

Phone *Mobile*

Email

Charge To

Client Reference

Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ Email Primary Contact ☐ Email Submitter ☐ Email Client

☐ Email Other

☐ Other

Sent to HILL Laboratories

Date & Time:

Name:

☐ *Tick if you require COC to be emailed back*

Signature:

Received at HILL Laboratories

Date & Time:

Name:

Signature:

Condition *Temp:*

☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*

☐ *Sample and Analysis details checked*

Signature:

Priority ☐ Low ☑ Normal ☐ High

☐ **Urgent** (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

No	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

Continued on next page

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Job Information Summary

Client:	E3 Scientific Limited	**Lab No:**	2036581
Contact:	Duncan Keenan	**Date Registered:**	23-Aug-2018 12:14 pm
	C/- E3 Scientific Limited	**Priority:**	Urgent
	PO Box 2450	**Quote No:**	94309
	Wakatipu	**Order No:**	
	Queenstown 9349	**Client Reference:**	RHD 2 with composites
		Add. Client Ref:	
		Submitted By:	Simon Bloomberg
		Charge To:	E3 Scientific Limited
		Target Date:	29-Aug-2018 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	O-29-H1	Soil	PSoil250	Composite Environmental Solid Samples
2	O-29-H2	Soil	PSoil250	Composite Environmental Solid Samples
3	O-29-H3	Soil	PSoil250	Composite Environmental Solid Samples
4	O-29-H4	Soil	PSoil250	Composite Environmental Solid Samples
5	O-29-FL (0-0.1) [A]	Soil	PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
6	O-29-FL (0-0.1) [B]	Soil	PSoil250	Hold Cold
7	O-29-BL (0-0.1) [A]	Soil	PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
8	O-29-BL (0-0.1) [B]	Soil	PSoil250	Hold Cold
9	O-29-BL (0.3) [A]	Soil	PSoil250	Hold Cold
10	O-29-BL (0.3) [B]	Soil	PSoil250	Hold Cold
11	Composite of O-29-H1, O-29-H2, O-29-H3 and O-29-H4	Soil	cGSoil	Environmental Solids Rapid Sample Preparation; Total Recoverable Arsenic; Total Recoverable Lead

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5, 7, 11
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5, 7
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	11
Composite Environmental Solid Samples	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	11
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	11

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Certificate of Analysis

Client:	E3 Scientific Limited	**Lab No:**	2036166	SPv1
Contact:	Duncan Keenan	**Date Received:**	23-Aug-2018	
	C/- E3 Scientific Limited	**Date Reported:**	27-Aug-2018	
	PO Box 2450	**Quote No:**	94309	
	Wakatipu	**Order No:**		
	Queenstown 9349	**Client Reference:**	RHD 2 with composites	
		Submitted By:	Simon Bloomberg	

Sample Type: Soil

Sample Name:		M-2-FL(0.01)	M-2-BL(0.01)	Composite of M-2-H1, M-2-H2, M-2-H3 & M-2-H4		
Lab Number:		2036166.5	2036166.6	2036166.8		
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	-	-	15	-	-
Total Recoverable Lead	mg/kg dry wt	-	-	75	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	10	11	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.13	0.32	-	-	-
Total Recoverable Chromium	mg/kg dry wt	17	18	-	-	-
Total Recoverable Copper	mg/kg dry wt	13	22	-	-	-
Total Recoverable Lead	mg/kg dry wt	27	93	-	-	-
Total Recoverable Nickel	mg/kg dry wt	13	13	-	-	-
Total Recoverable Zinc	mg/kg dry wt	54	112	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation*	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5-6, 8
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5-6
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	8
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	8
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	8

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Helena Bertram BSc
Client Services Manager - Environmental

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Certificate of Analysis

Client:	E3 Scientific Limited	**Lab No:**	2036581	SPv1
Contact:	Duncan Keenan	**Date Received:**	23-Aug-2018	
	C/- E3 Scientific Limited	**Date Reported:**	28-Aug-2018	
	PO Box 2450	**Quote No:**	94309	
	Wakatipu	**Order No:**		
	Queenstown 9349	**Client Reference:**	RHD 2 with composites	
		Submitted By:	Simon Bloomberg	

Sample Type: Soil

Sample Name:		O-29-FL (0-0.1) [A]	O-29-BL (0-0.1) [A]	Composite of O-29-H1, O-29-H2, O-29-H3 and O-29-H4		
Lab Number:		2036581.5	2036581.7	2036581.11		
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	-	-	17	-	-
Total Recoverable Lead	mg/kg dry wt	-	-	146	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	16	15	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.13	0.17	-	-	-
Total Recoverable Chromium	mg/kg dry wt	23	31	-	-	-
Total Recoverable Copper	mg/kg dry wt	17	18	-	-	-
Total Recoverable Lead	mg/kg dry wt	44	60	-	-	-
Total Recoverable Nickel	mg/kg dry wt	18	17	-	-	-
Total Recoverable Zinc	mg/kg dry wt	64	71	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation*	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5, 7, 11
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5, 7
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	11
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	11
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	11

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

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

Kim Harrison MSc
Client Services Manager - Environmental

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Certificate of Analysis

Client:	E3 Scientific Limited	**Lab No:**	2036165	SPv1
Contact:	Duncan Keenan	**Date Received:**	23-Aug-2018	
	C/- E3 Scientific Limited	**Date Reported:**	27-Aug-2018	
	PO Box 2450	**Quote No:**	94309	
	Wakatipu	**Order No:**		
	Queenstown 9349	**Client Reference:**	RHD 2 with composites	
		Submitted By:	Simon Bloomberg	

Sample Type: Soil

Sample Name:		O-31-FL (0-0.1) [A] 22-Aug-2018	O-31-BL (0-0.1) [A] 22-Aug-2018	Composite of O-31-H1, O-31-H2, O-31-H3 and O-31-H4		
Lab Number:		2036165.5	2036165.7	2036165.11		
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	-	-	12	-	-
Total Recoverable Lead	mg/kg dry wt	-	-	59	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	11	17	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.92	-	-	-
Total Recoverable Chromium	mg/kg dry wt	19	24	-	-	-
Total Recoverable Copper	mg/kg dry wt	14	43	-	-	-
Total Recoverable Lead	mg/kg dry wt	24	87	-	-	-
Total Recoverable Nickel	mg/kg dry wt	14	19	-	-	-
Total Recoverable Zinc	mg/kg dry wt	59	200	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation*	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5, 7, 11
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5, 7
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	11
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	11
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	11

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Carole Rodgers-Carroll BA, NZCS
Client Services Manager - Environmental

Appendix B: Site Sample Location Plan

Image Courtesy of LINZ

e3 Scientific	**Appendix B – Soil Sample Locations**	RevDev	**30572 – DE9**
		Date	22/08/2018
	2 Murray St & 29-31 Oban St, Fairfield, Mosgiel - Lot 35 DP 8961 /Lot 36 DP 8961/Lot 37 DP 8961	Drawn	27/08/2018
		Approved	SHB

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

TITLE:	RHP2 – Contamination Assessments	**REDEVELOPMENT ID :**	30568
ATTENTION:	Andrew Rose Senior Programme Manager	**CLIENT DETAILS:**	Housing New Zealand (HNZ)
CONSULTANT:	e3 Scientific Ltd.	**PREPARED BY:** Simon Bloomberg	**CHECKED BY**: Glenn Davis

Investigation Summary Table

Site Name	Inspection and Sampling Date	HAIL Use	Asbestos Present on Site[1]	Indicative Landfill Disposal Cost[2]	Soil Samples Exceeding NES-CS Residential	Comments
6 Sterling	22/08/2018	Yes	Medium	$ 1,481.76	No	Potential Sheep Dip area

Notes

[1] Based on site inspection and/or analysis of soil samples, refer individual property report

[2] Refer Landfill Summary Table

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

Objectives

The key objectives of the contamination assessments were to:

- Assess potential for HAIL land use, and contamination sources relating to old dwellings.
- Provide indicative costs for landfill disposal of contaminated topsoil based on testing of soil parameters associated with those land uses and sources on the redevelopment areas.

Scope of Works

The scope of work that was undertaken in order to meet the project objectives included:

- Reviewing selected publicly available historical and current aerial imagery, including aerial photographs purchased from Opus Aerial Photosales where necessary.
- Liaising with local councils (territorial and regional), to identify any potential Hazardous Activities and Industries List (HAIL) land use.
- Undertaking site inspections and shallow soil sampling.
- Submitting shallow soil samples for laboratory analysis.

Observations, data and photographs are provided with the individual site assessment forms (Appendix A).

Site Sampling

e3Scientific undertook soil sampling to inspect soils and obtain initial data on potential concentrations of key contaminants of concern in shallow soils. The investigation comprised the following at each address:

- Preparing a site-specific health and safety plan.
- Collection of four field composite soil sample from surface to 0.1 m below ground level (bgl), 1.0 m from the edge of the building/dwelling. Sample analysed at the laboratory for lead and arsenic.
- Collecting two discrete soil samples from surface to 0.1 m bgl centrally from the front and rear yards of each address. Both samples analysed for heavy metal suite at laboratory.
- At one of the discrete sample locations above, based on visual field observations of the most likely location of fill material/greatest topsoil thickness, advancing one hand excavated test pit no greater than 0.3 m bgl. Measuring topsoil depth and collecting one discrete subsoil sample to hold cold at laboratory.
- Inspecting the property grounds for presence of asbestos-containing materials (ACM).
- Comparison of reuslts against regional background and national environmental standards for contaminants in soil (NESCS).

Sample locations are plotted in Appendix B.

Investigation Results

A brief summary of the site assessment information is provided below:

Address	HAIL detail	Council information	Soil results summary
6 Sterling	A8. Livestock dip or spray race operations	II U	Exceeds regional background

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

Soil Disposal Assessment

Based on the results of the laboratory analysis for each address, an assessment of indicative costs to dispose of topsoils from each address has been prepared below. The costs are indicative only and based on the following key assumptions:

- Two generic quotes from local transport contractors.
- Ready access to site, no clearance required, minimal green waste and inert material.
- Allow 1.8 tonnes / m^3.
- Up to 30 % of topsoil can be reused if it does not exceed SCS / BRANZ guidelines.
- No allowance for additional testing, assessment, any necessary resource consents.
- No allowance for project management, health and safety, environmental controls.

Landfill Summary Table

Landfill	Disposal / tonne	Haulage / tonne[1]	Address	Areas for disposal	Soil volume, m^3	Indicative cost estimate
Asbestos landfill	$273.00		6 Sterling		0	$0.00
Class A landfill	$41.00		6 Sterling		0	$0.00
Class B landfill	$10.00		6 Sterling	Halo, Front, Rear	82.32	$1,481.76
Cleanfill	$10.00		6 Sterling		0	$0.00

Appendix A: Individual Site Assessment Form, Site Photos, Historic Aerials & Lab Data

INDIVIDUAL LOT/SITE ASSESSMENT SUMMARY				
TITLE	RHP2 – Contamination Assessments		PROJECT NUMBER **18059**	CLIENT DETAILS: **HOUSING NZ**
PREPARED BY	Duncan Keenan & Simon Bloomberg		VERSION: **1.0**	
e3Scientific				
Site Information				
Address		6 Sterling Cres, Fairfield, Mosgiel		
Redevelopment ID		30568		
Lot Area (m^2)		855		
HAIL based on desktop information?		Yes, Potential HAIL	A8. Livestock dip or spray race operations	
Dangers Onsite		None		
Site Description		Generally flat, tidy section. Car port on western side. Brick with tiled roof. Possible asbestos soffits and walls. Asbestos clad shed in backyard.		
Building cladding		Weatherboard	ACM (good)	
ACM Observed	**Site Surface**	No		
	Test Pit	No		
Asbestos Presence [1]			Medium	
Topsoil Depth (m bgl)		0.15		
Soil Sample Results	**Halo**	Background	< NES SCS	> NES SCS
	Front Yard	Background	< NES SCS	> NES SCS
	Back Yard	Background	< NES SCS	> NES SCS
Contaminated Soil (exceeds background concentration and/or NES-CS)	**Halo**	Yes	12 m^3	
	Front Yard	Yes	23.1 m^3	
	Back Yard	Yes	82.5 m^3	

[1] **NOTE**: Qualitative assessment based on visual observations of buildings and surface/test pit soils.

Plate 1: Entrance way and front yard

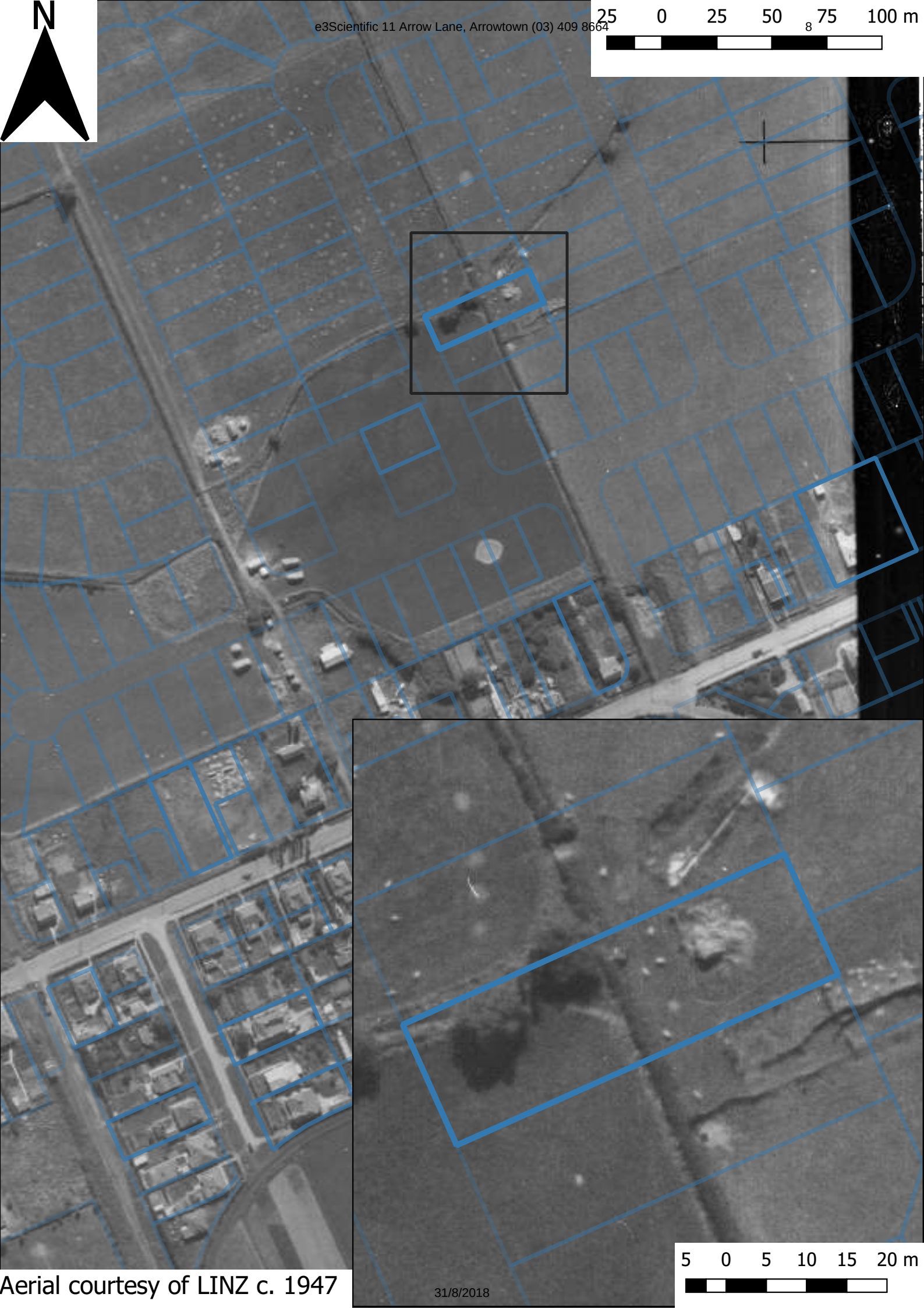
Plate 2: Backyard of dwelling

Title:	**Appendix A – Site Photographs page 1 of 2**	**RevDev**	**30568**
		Date	22/8/18
Project name:	6 Stirling Crescent, Mosgiel, Lot 243 DP 8962	Drawn	27/8/18
		Approved	

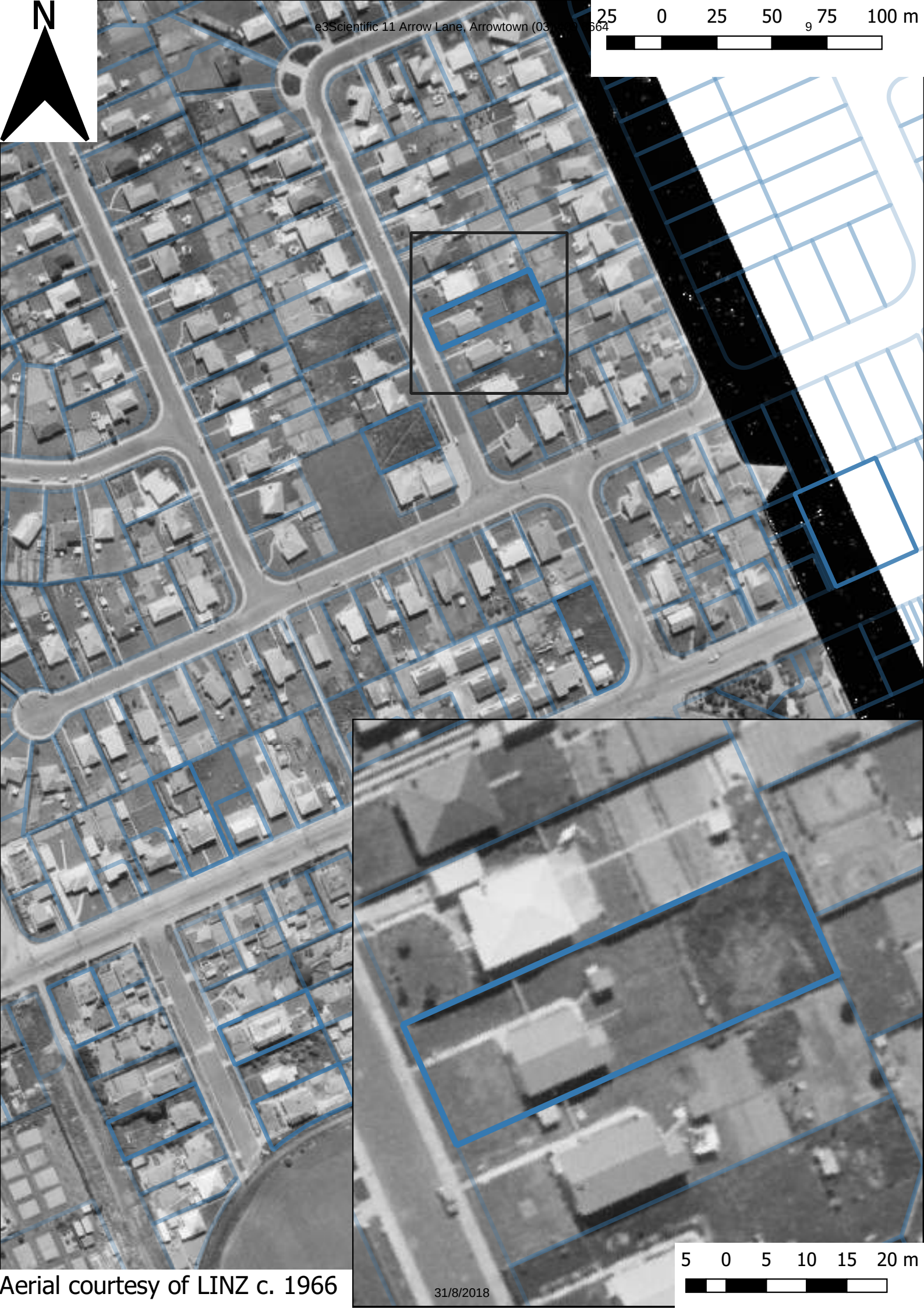
Plate 3: Asbestos clad shed

Plate 4: Possible asbestos cladding on dwelling

Title:	**Appendix A – Site Photographs page 2 of 2**	**RevDev**	**30568**
		Date	22/8/18
Project name:	6 Stirling Crescent, Mosgiel, Lot 243 DP 8962	Drawn	27/8/18
		Approved	DK



Aerial courtesy of LINZ c. 1947



Aerial courtesy of LINZ c. 1966

Hill Laboratories
TRIED, TESTED AND TRUSTED

ANALYSIS REQUEST

Job No: 203 6164
Date Rec: 23-Aug-18 16:31

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Received by: Emily Corfield

Quote No 93913
Primary Contact
Submitted By

Client Name E3 Scientific Limited 141258
Address PO Box 2450, Wakatipu
Queenstown 9349
Phone 03 409 8664 Mobile 027 376 6588
Email glenn.davis@e3scientific.co.nz
Charge To E3 Scientific Limited 141258
Client Reference RHD 2
Order No

Results To

Please refer to the Quote for a list of the Default Report Recipients

☐ Email Other
☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time:
Name:
☐ Tick if you require COC to be emailed back
Signature:

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ Room Temp ☐ Chilled ☐ Frozen
Temp. 9.9

☐ Sample & Analysis details checked
Signature:

ADDITIONAL INFORMATION

URGENT NEXT DAY TAT

SAMPLES MUST BE RECEIVED BY THE HAMILTON LABORATORY BY 7AM.

Priority ☐ Low ☐ Normal ☐ High
☑ **Urgent** (ASAP extra charge applies, please contact lab first)

Requested Reporting Date:

Quoted Sample Types

Soil (1-6)

No	Sample Name	Sample Date/Time	Sample Type	Tests Required
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Job Information Summary

Client:	E3 Scientific Limited	**Lab No:**	2036164
Contact:	Duncan Keenan	**Date Registered:**	23-Aug-2018 9:50 am
	C/- E3 Scientific Limited	**Priority:**	Urgent
	PO Box 2450	**Quote No:**	94309
	Wakatipu	**Order No:**	
	Queenstown 9349	**Client Reference:**	RHD 2 with composites
		Add. Client Ref:	
		Submitted By:	Simon Bloomberg
		Charge To:	E3 Scientific Limited
		Target Date:	28-Aug-2018 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	ST-6-H1	Soil	PSoil250	Composite Environmental Solid Samples
2	ST-6-H2	Soil	PSoil250	Composite Environmental Solid Samples
3	ST-6-H3	Soil	PSoil250	Composite Environmental Solid Samples
4	ST-6-H4	Soil	PSoil250	Composite Environmental Solid Samples
5	ST-6-FL(0.01)	Soil	PSoil250, PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level; Hold Cold
6	ST-6-BL(0.01)	Soil	PSoil250, PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level; Hold Cold
7	ST-6-BL(0.3)	Soil	PSoil250, PSoil250	Hold Cold
8	Composite of ST-6-H1, ST-6-H2, ST-6-H3 & ST-6-H4	Soil	cGSoil	Environmental Solids Rapid Sample Preparation; Total Recoverable Arsenic; Total Recoverable Lead

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5-6, 8
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5-6
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	8
Composite Environmental Solid Samples	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	8
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	8

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Certificate of Analysis

Client:	E3 Scientific Limited	**Lab No:**	2036164 SPv1
Contact:	Duncan Keenan	**Date Received:**	23-Aug-2018
	C/- E3 Scientific Limited	**Date Reported:**	27-Aug-2018
	PO Box 2450	**Quote No:**	94309
	Wakatipu	**Order No:**	
	Queenstown 9349	**Client Reference:**	RHD 2 with composites
		Submitted By:	Simon Bloomberg

Sample Type: Soil

Sample Name:		ST-6-FL(0.01)	ST-6-BL(0.01)	Composite of ST-6-H1, ST-6-H2, ST-6-H3 & ST-6-H4		
Lab Number:		2036164.5	2036164.6	2036164.8		
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	-	-	16	-	-
Total Recoverable Lead	mg/kg dry wt	-	-	112	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	15	15	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.11	0.24	-	-	-
Total Recoverable Chromium	mg/kg dry wt	21	19	-	-	-
Total Recoverable Copper	mg/kg dry wt	15	51	-	-	-
Total Recoverable Lead	mg/kg dry wt	36	38	-	-	-
Total Recoverable Nickel	mg/kg dry wt	15	17	-	-	-
Total Recoverable Zinc	mg/kg dry wt	65	124	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation*	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5-6, 8
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5-6
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	8
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	8
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	8

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Helena Bertram BSc
Client Services Manager - Environmental

Appendix B: Site Sample Location Plan

Image Courtesy of LINZ

e3 Scientific	**Appendix B – Soil Sample Locations**	RevDev	**30568 – DE2**
		Date	22/08/2018
	6 Sterling Cres, Fairfield, Mosgiel - Lot 243 DP 8962	Drawn	27/08/2018
		Approved	SHB

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

TITLE:	RHP2 – Contamination Assessments	**REDEVELOPMENT ID :**	DE21
ATTENTION:	Andrew Rose Senior Programme Manager	**CLIENT DETAILS:**	Housing New Zealand (HNZ)
CONSULTANT:	e3 Scientific Ltd.	**PREPARED BY:** Simon Bloomberg	**CHECKED BY**: Glenn Davis

Investigation Summary Table

Site Name	Inspection and Sampling Date	HAIL Use	Asbestos Present on Site[1]	Indicative Landfill Disposal Cost[2]	Soil Samples Exceeding NES-CS Residential	Comments
143 Helensburgh	20/08/2018	No	Medium	$ 3,345.30	No	

Notes

[1] Based on site inspection and/or analysis of soil samples, refer individual property report

[2] Refer Landfill Summary Table

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

Objectives

The key objectives of the contamination assessments were to:

- Assess potential for HAIL land use, and contamination sources relating to old dwellings.
- Provide indicative costs for landfill disposal of contaminated topsoil based on testing of soil parameters associated with those land uses and sources on the redevelopment areas.

Scope of Works

The scope of work that was undertaken in order to meet the project objectives included:

- Reviewing selected publicly available historical and current aerial imagery, including aerial photographs purchased from Opus Aerial Photosales where necessary.
- Liaising with local councils (territorial and regional), to identify any potential Hazardous Activities and Industries List (HAIL) land use.
- Undertaking site inspections and shallow soil sampling.
- Submitting shallow soil samples for laboratory analysis.

Observations, data and photographs are provided with the individual site assessment forms (Appendix A).

Site Sampling

e3Scientific undertook soil sampling to inspect soils and obtain initial data on potential concentrations of key contaminants of concern in shallow soils. The investigation comprised the following at each address:

- Preparing a site-specific health and safety plan.
- Collection of four field composite soil sample from surface to 0.1 m below ground level (bgl), 1.0 m from the edge of the building/dwelling. Sample analysed at the laboratory for lead and arsenic.
- Collecting two discrete soil samples from surface to 0.1 m bgl centrally from the front and rear yards of each address. Both samples analysed for heavy metal suite at laboratory.
- At one of the discrete sample locations above, based on visual field observations of the most likely location of fill material/greatest topsoil thickness, advancing one hand excavated test pit no greater than 0.3 m bgl. Measuring topsoil depth and collecting one discrete subsoil sample to hold cold at laboratory.
- Inspecting the property grounds for presence of asbestos-containing materials (ACM).
- Comparison of results against regional background and national environmental standards for contaminants in soil (NESCS).

Sample locations are plotted in Appendix B.

Investigation Results

A brief summary of the site assessment information is provided below:

Investigation Summary Table

Site Name	HAIL detail	Council information	Soil results summary
143 Helensburgh	N/A	N/A	Exceeds regional background

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

Soil Disposal Assessment

Based on the results of the laboratory analysis for each address, an assessment of indicative costs to dispose of topsoils from each address has been prepared below. The costs are indicative only and based on the following key assumptions:

- Two generic quotes from local transport contractors.
- Ready access to site, no clearance required, minimal green waste and inert material.
- Allow1.8 tonnes / m^3.
- Up to 30 % of topsoil can be reused if it does not exceed SCS / BRANZ guidelines.
- No allowance for additional testing, assessment, any necessary resource consents.
- No allowance for project management, health and safety, environmental controls.

Landfill Summary Table

Landfill	Disposal / tonne	Haulage / tonne[1]	Site Name	Areas for disposal	Soil volume, m^3	Indicative cost estimate
Asbestos landfill	$273.00	$20.00	143 Helensburgh		0	$0.00
Class A landfill	$41.00	$20.00	143 Helensburgh		0	$0.00
Class B landfill	$10.00	$20.00	143 Helensburgh	Halo, Front,	54.75	$2,956.50
Cleanfill	$10.00	$20.00	143 Helensburgh	Rear	7.2	$388.80

Appendix A: Individual Site Assessment Form, Site Photos, Historic Aerials & Lab Data

INDIVIDUAL LOT/SITE ASSESSMENT SUMMARY				
TITLE	RHP2 – Contamination Assessments		PROJECT NUMBER **18059**	CLIENT DETAILS: **HOUSING NZ**
PREPARED BY	Duncan Keenan & Simon Bloomberg		VERSION: **1.0**	
	e3Scientific			
Site Information				
Address		143D Helensburgh Rd, Wakari, Dunedin		
Redevelopment ID		DE21		
Lot Area (m^2)		951		
HAIL based on desktop information?		No		
Dangers Onsite		None		
Site Description		Generally flat, tidy section. Brick and tiled roof. Possible asbestos soffits.		
Building cladding		Brick	ACM (good)	
ACM Observed	**Site Surface**	No		
	Test Pit	No		
Asbestos Presence [1]			Medium	
Topsoil Depth (m bgl)		0.15		
Soil Sample Results	**Halo**	Background	< NES SCS	> NES SCS
	Front Yard	Background	< NES SCS	> NES SCS
	Back Yard	Background	< NES SCS	> NES SCS
Contaminated Soil (exceeds background concentration and/or NES-CS)		**Halo**	Yes	21 m^3
		Front Yard	Yes	33.75 m^3
		Back Yard	No	

[1] **NOTE**: Qualitative assessment based on visual observations of buildings and surface/test pit soils.

Plate 1: Front yard of dwellings

Plate 2: Southern wall of dwelling

Title:	**Appendix A – Site Photographs page 1 of 2**	**RevDev**	**DE21**
		Date	20/8/18
Project name:	143D Helensburgh Road, Waikari, Dunedin	Drawn	27/8/18
		Approved	DK

Plate 3: Northern wall of dwelling

Plate 4: Patched up soffits

Title:	**Appendix A – Site Photographs page 2 of 2**	**RevDev**	**DE21**
		Date	20/8/18
Project name:	143D Helensburgh Road, Waikari, Dunedin	Drawn	27/8/18
		Approved	DK

Aerial courtesy of LINZ c. 1942

Aerial courtesy of LINZ c. 1985

Hill Laboratories
TRIED, TESTED AND TRUSTED

ANALYSIS REQUEST

R J Hill Laboratories Limited
28 Duke Street Hamilton
Private Bag 3205
Hamilton 3240 New Zealand

T 0508 HILL LAB (0508 455 522)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.co

Lab No **203 6156**
Date Rec 28-Aug-18 09:30
Received by: Emily Corfield

Quote No ~~99813~~
Primary Contact
Submitted By
Client Name E3 Scientific Limited 141258
Address PO Box 2450, Wakatipu
Queenstown 9349
Phone 03 409 8664 Mobile 027 376 6588
Email glenn.davis@e3scientific.co.nz
Charge To E3 Scientific Limited 141258
Client Reference RHD 2
Order No
Results To
Please refer to the Quote for a list of the Default Report Recipients
☐ Email Other
☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time
☐ Tick if you require COC to be emailed back
Name:
Signature:

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition
☐ Room Temp ☐ Chilled ☐ Frozen Temp. 10.6
☐ Sample & Analysis details checked
Signature:

ADDITIONAL INFORMATION

URGENT NEXT DAY TAT

SAMPLES MUST BE RECEIVED BY THE HAMILTON LABORATORY BY 7AM.

Priority ☐ Low ☐ Normal ☐ High
☑ Urgent (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date

Quoted Sample Types
Soil (Soil)

No	Sample Name	Sample Date/Time	Sample Type	Tests Required
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Job Information Summary

Client:	E3 Scientific Limited	**Lab No:**	2036156
Contact:	G Davis	**Date Registered:**	23-Aug-2018 9:15 am
	C/- E3 Scientific Limited	**Priority:**	Urgent
	PO Box 2450	**Quote No:**	94309
	Wakatipu	**Order No:**	
	Queenstown 9349	**Client Reference:**	RHD 2 with composites
		Add. Client Ref:	
		Submitted By:	Duncan Keenan
		Charge To:	E3 Scientific Limited
		Target Date:	28-Aug-2018 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	143- H1 20-Aug-2018	Soil	cPSoil	Composite Environmental Solid Samples
2	143- H2 20-Aug-2018	Soil	cPSoil	Composite Environmental Solid Samples
3	143- H3 20-Aug-2018	Soil	cPSoil	Composite Environmental Solid Samples
4	143- H4 20-Aug-2018	Soil	cPSoil	Composite Environmental Solid Samples
5	143- FL (0.1) [A] 20-Aug-2018	Soil	cPSoil	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
6	143- FL (0.1) [B] 20-Aug-2018	Soil	cPSoil	Hold Cold
7	143- BL (0.1) [A] 20-Aug-2018	Soil	cPSoil	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
8	143- BL (0.1) [B] 20-Aug-2018	Soil	cPSoil	Hold Cold
9	143- BL (0.30) [A] 20-Aug-2018	Soil	cPSoil	Hold Cold
10	143- BL (0.30) [B] 20-Aug-2018	Soil	cPSoil	Hold Cold
11	Composite Of 143- H1, 143- H2, 143- H3 & 143- H4	Soil	cGSoil	Environmental Solids Rapid Sample Preparation; Total Recoverable Arsenic; Total Recoverable Lead

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5, 7, 11
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5, 7
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	11
Composite Environmental Solid Samples	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	11
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	11

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Certificate of Analysis

Client:	E3 Scientific Limited	**Lab No:**	2036156	SPv1
Contact:	Simon Bloomberg	**Date Received:**	23-Aug-2018	
	C/- E3 Scientific Limited	**Date Reported:**	27-Aug-2018	
	PO Box 2450	**Quote No:**	94309	
	Wakatipu	**Order No:**		
	Queenstown 9349	**Client Reference:**	RHD 2 with composites	
		Submitted By:	Duncan Keenan	

Sample Type: Soil

Sample Name:		143- FL (0.1) [A] 20-Aug-2018	143- BL (0.1) [A] 20-Aug-2018	Composite Of 143- H1, 143- H2, 143- H3 & 143- H4		
Lab Number:		2036156.5	2036156.7	2036156.11		
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	-	-	8	-	-
Total Recoverable Lead	mg/kg dry wt	-	-	94	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	4	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.18	< 0.10	-	-	-
Total Recoverable Chromium	mg/kg dry wt	33	45	-	-	-
Total Recoverable Copper	mg/kg dry wt	22	27	-	-	-
Total Recoverable Lead	mg/kg dry wt	74	33	-	-	-
Total Recoverable Nickel	mg/kg dry wt	14	18	-	-	-
Total Recoverable Zinc	mg/kg dry wt	118	86	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation*	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5, 7, 11
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5, 7
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	11
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	11
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	11

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Helena Bertram BSc
Client Services Manager - Environmental

Appendix B: Site Sample Location Plan

Image Courtesy of LINZ

e3 Scientific	**Appendix B – Soil Sample Locations**	RevDev	**DE21**
		Date	20/08/2018
	143D Helensburgh Rd, Wakari, Dunedin - LOT 2 DP 20438	Drawn	27/08/2018
		Approved	SHB

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

TITLE:	RHP2 – Contamination Assessments	**REDEVELOPMENT ID :**	30492
ATTENTION:	Andrew Rose Senior Programme Manager	**CLIENT DETAILS:**	Housing New Zealand (HNZ)
CONSULTANT:	e3 Scientific Ltd.	**PREPARED BY:** Simon Bloomberg	**CHECKED BY**: Glenn Davis

Investigation Summary Table

Address	Inspection and Sampling Date	HAIL Use	Asbestos Present on Site[1]	Indicative Landfill Disposal Cost[2]	Soil Samples Exceeding NES-CS Residential	Comments
33 Church	22/08/2018	No	Medium	$ 4,239.72	Yes	
33A Church	22/08/2018	No	Medium	$ 6,081.12	Yes	

Notes

[1] Based on site inspection and/or analysis of soil samples, refer individual property report

[2] Refer Landfill Summary Table

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

Objectives

The key objectives of the contamination assessments were to:

- Assess potential for HAIL land use, and contamination sources relating to old dwellings.
- Provide indicative costs for landfill disposal of contaminated topsoil based on testing of soil parameters associated with those land uses and sources on the redevelopment areas.

Scope of Works

The scope of work that was undertaken in order to meet the project objectives included:

- Reviewing selected publicly available historical and current aerial imagery, including aerial photographs purchased from Opus Aerial Photosales where necessary.
- Liaising with local councils (territorial and regional), to identify any potential Hazardous Activities and Industries List (HAIL) land use.
- Undertaking site inspections and shallow soil sampling.
- Submitting shallow soil samples for laboratory analysis.

Observations, data and photographs are provided with the individual site assessment forms (Appendix A).

Site Sampling

e3Scientific undertook soil sampling to inspect soils and obtain initial data on potential concentrations of key contaminants of concern in shallow soils. The investigation comprised the following at each address:

- Preparing a site-specific health and safety plan.
- Collection of four field composite soil sample from surface to 0.1 m below ground level (bgl), 1.0 m from the edge of the building/dwelling. Sample analysed at the laboratory for lead and arsenic.
- Collecting two discrete soil samples from surface to 0.1 m bgl centrally from the front and rear yards of each address. Both samples analysed for heavy metal suite at laboratory.
- At one of the discrete sample locations above, based on visual field observations of the most likely location of fill material/greatest topsoil thickness, advancing one hand excavated test pit no greater than 0.3 m bgl. Measuring topsoil depth and collecting one discrete subsoil sample to hold cold at laboratory.
- Inspecting the property grounds for presence of asbestos-containing materials (ACM).
- Comparison of results against regional background and national environmental standards for contaminants in soil (NESCS).

Sample locations are plotted in Appendix B.

Investigation Results

A brief summary of the site assessment information is provided below:

Investigation Summary Table

Address	HAIL detail	Council information	Soil results summary
33 Church	N/A	N/A	Exceeds residential SCS
33A Church	N/A	N/A	Exceeds residential SCS

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

Soil Disposal Assessment

Based on the results of the laboratory analysis for each address, an assessment of indicative costs to dispose of topsoils from each address has been prepared below. The costs are indicative only and based on the following key assumptions:

- Two generic quotes from local transport contractors.
- Ready access to site, no clearance required, minimal green waste and inert material.
- Allow 1.8 tonnes / m^3.
- Up to 30 % of topsoil can be reused if it does not exceed SCS / BRANZ guidelines.
- No allowance for additional testing, assessment, any necessary resource consents.
- No allowance for project management, health and safety, environmental controls.

Landfill Summary Table

Landfill	Disposal / tonne	Haulage / tonne[1]	Address	Areas for disposal	Soil volume, m^3	Indicative cost estimate
Asbestos landfill	$273.00	$20.00	33 Church		0	$0.00
			33A Church		0	$0.00
Class A landfill	$41.00	$20.00	33 Church	Halo,	10	$1,098.00
			33A Church	Halo, Front,	43	$4,721.40
Class B landfill	$10.00	$20.00	33 Church	Front, Rear	58.18	$3,141.72
			33A Church	Rear	25.18	$1,359.72
Cleanfill	$10.00	$20.00	33 Church		0	$0.00
			33A Church		0	$0.00

Appendix A: Individual Site Assessment Form, Site Photos, Historic Aerials & Lab Data

INDIVIDUAL LOT/SITE ASSESSMENT SUMMARY				
TITLE	RHP2 – Contamination Assessments		PROJECT NUMBER **18059**	CLIENT DETAILS: **HOUSING NZ**
PREPARED BY	Duncan Keenan & Simon Bloomberg		VERSION: **1.0**	
	e3Scientific			
Site Information				
Address		33 Church Street, Fairfield, Mosgiel		
Redevelopment ID		30492		
Lot Area (m^2)		581		
HAIL based on desktop information?		No		
Dangers Onsite		None		
Site Description		Generally flat, tidy section. Single garage on southern side, brick with tiled roof. Asbestos roofing material on shed in backyard. Potential asbestos soffits.		
Building cladding		Brick	ACM (good)	
ACM Observed	**Site Surface**	No		
	Test Pit	No		
Asbestos Presence [1]			Medium	
Topsoil Depth (m bgl)		0.2		
Soil Sample Results	**Halo**	Background	< NES SCS	> NES SCS
	Front Yard	Background	< NES SCS	> NES SCS
	Back Yard	Background	< NES SCS	> NES SCS
Contaminated Soil (exceeds background concentration and/or NES-CS)		**Halo**	Yes	10 m^3
		Front Yard	Yes	33 m^3
		Back Yard	Yes	54.4 m^3

[1] **NOTE**: Qualitative assessment based on visual observations of buildings and surface/test pit soils.

Plate 1: Entrance and front yard of dwelling

Plate 2: Back door and eastern end of dwelling

Title:	**Appendix A – Site Photographs page 1 of 2**	**RevDev**	**30492**
		Date	22/8/18
Project name:	33 Church Street – Mosgiel	Drawn	27/8/18
		Approved	DK

Plate 3: Asbestos clad and roofed shed

Plate 4: Backyard of dwelling

Title:	**Appendix A – Site Photographs page 2 of 2**	**RevDev**	**30492**
		Date	22/8/18
Project name:	33 Church Street – Mosgiel	Drawn	27/8/18
		Approved	DK

INDIVIDUAL LOT/SITE ASSESSMENT SUMMARY				
TITLE	RHP2 – Contamination Assessments		PROJECT NUMBER **18059**	CLIENT DETAILS: **HOUSING NZ**
PREPARED BY	Duncan Keenan & Simon Bloomberg		VERSION: **1.0**	
	e3Scientific			
Site Information				
Address		33A Church Street, Fairfield, Mosgiel		
Redevelopment ID		30492		
Lot Area (m^2)		523		
HAIL based on desktop information?		No		
Dangers Onsite		None		
Site Description		Generally flat, tidy section. Single garage on southern side, brick with tiled roof. Asbestos roofing material on shed in backyard. Potential asbestos soffits.		
Building cladding		Brick	ACM (good)	
ACM Observed	**Site Surface**	No		
	Test Pit	No		
Asbestos Presence [1]			Medium	
Topsoil Depth (m bgl)		0.2		
Soil Sample Results	**Halo**	Background	< NES SCS	> NES SCS
	Front Yard	Background	< NES SCS	> NES SCS
	Back Yard	Background	< NES SCS	> NES SCS
Contaminated Soil (exceeds background concentration and/or NES-CS)		**Halo**	Yes	10 m^3
		Front Yard	Yes	33 m^3
		Back Yard	Yes	54.4 m^3

[1] **NOTE**: Qualitative assessment based on visual observations of buildings and surface/test pit soils.

Plate 1: Front yard of dwelling

Plate 2: Southern wall of dwelling

Title:	**Appendix A – Site Photographs page 1 of 2**	**RevDev**	**30492**
		Date	22/8/18
Project name:	33A Church – Mosgiel	Drawn	27/8/18
		Approved	DK

Plate 3: Backyard of dwelling

Plate 4: Asbestos roofed garden shed

Title:	**Appendix A – Site Photographs page 2 of 2**	**RevDev**	**30492**
		Date	22/8/18
Project name:	33A Church – Mosgiel	Drawn	27/8/18
		Approved	DK

Aerial courtesy of LINZ c. 1947

Aerial courtesy of LINZ c. 1966

Hill Laboratories
TRIED, TESTED AND TRUSTED

Quote No 93913

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand
T 0508 HILL LAB (44 555 2
T +64 7 856 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Job No **203 6167**

Date Rec 23-Aug-18 09:31

Received by: Emily Corfield

Primary Contact

Submitted By

Client Name E3 Scientific Limited 141258

Address PO Box 2450, Wakatipu

Queenstown 9349

Phone 03 409 8664 Mobile 027 376 6588

Email glenn.davis@e3scientific.co.nz

Charge To E3 Scientific Limited 141259

Client Reference RHD 2

Order No

Results To

Please refer to the Quote for a list of the Default Report Recipients

☐ Email Other

☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time:

Name:

Signature:

☐ Tick if you require COC to be emailed back

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition

☐ Room Temp ☐ Chilled ☐ Frozen

Temp 9.9

☐ Sample & Analyses details checked

Signature

ADDITIONAL INFORMATION

URGENT NEXT DAY TAT

SAMPLES MUST BE RECEIVED BY THE HAMILTON LABORATORY BY 7AM

Priority ☐ Low ☐ Normal ☐ High

☑ **Urgent** (ASAP, extra charge applies - please call to confirm)

Requested Reporting Date

Quoted Sample Types

Soil - 6mm

No.	Sample Name	Sample Date/Time	Sample Type	Tests Required
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Job Information Summary

Client:	E3 Scientific Limited	**Lab No:**	2036167
Contact:	Duncan Keenan	**Date Registered:**	23-Aug-2018 11:00 am
	C/- E3 Scientific Limited	**Priority:**	Urgent
	PO Box 2450	**Quote No:**	94309
	Wakatipu	**Order No:**	
	Queenstown 9349	**Client Reference:**	RHD 2 with composites
		Add. Client Ref:	
		Submitted By:	Simon Bloomberg
		Charge To:	E3 Scientific Limited
		Target Date:	28-Aug-2018 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	C-33-H1	Soil	PSoil250	Composite Environmental Solid Samples
2	C-33-H2	Soil	PSoil250	Composite Environmental Solid Samples
3	C-33-H3	Soil	cPSoil	Composite Environmental Solid Samples
4	C-33-FL (0-0.1) [A]	Soil	cPSoil	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
5	C-33-FL (0-0.1) [B]	Soil	cPSoil	Hold Cold
6	C-33-FL (0.30) [A]	Soil	PSoil250	Hold Cold
7	C-33-FL (0.30) [B]	Soil	PSoil250	Hold Cold
8	C-33-FL (0-0.1) [A]	Soil	PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
9	C-33-FL (0-0.1) [B]	Soil	PSoil250	Hold Cold
10	Composite of C-33-H1, C-33-H2 and C-33-H3	Soil	cGSoil	Environmental Solids Rapid Sample Preparation; Total Recoverable Arsenic; Total Recoverable Lead

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	4, 8, 10
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	4, 8
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	10
Composite Environmental Solid Samples	Individual sample fractions mixed together to form a composite fraction.	-	1-3
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	10
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	10

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Hamilton 3204
Private Bag 3205
Hamilton 3240, New Zealand

T 0508 HILL LAB (44 955 22)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Job No 203 6573 Date Recv 23-Aug-18 11:34

Received by: Sachet Sharma

Quote No

Primary Contact

Submitted By

Client Name

Address

Purchase

Phone Mobile

Email

Charge To

Client Reference

Order No

Results To Reports will be emailed to Primary Contact by default. Analytical Reports will be sent as specified below

☑ Email Primary Contact ☐ Email Submitter ☐ Email Client

☐ Email Other

☐ Other

Sent to Hill Laboratories Date & Time:

Name:

☐ Tick if you require COC to be emailed back Signature:

Received at Hill Laboratories Date & Time:

Name

Signature:

Condition Temp:

☐ Room Temp ☐ Chilled ☐ Frozen

☐ Sample and Analysis details checked

Signature

Priority ☐ Low ☑ Normal ☐ High

☐ Urgent (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date

No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

Continued on next page

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Job Information Summary

Client:	E3 Scientific Limited	**Lab No:**	2036573
Contact:	Duncan Keenan	**Date Registered:**	23-Aug-2018 12:11 pm
	C/- E3 Scientific Limited	**Priority:**	Urgent
	PO Box 2450	**Quote No:**	94309
	Wakatipu	**Order No:**	
	Queenstown 9349	**Client Reference:**	RHD 2 with composites
		Add. Client Ref:	
		Submitted By:	Simon Bloomberg
		Charge To:	E3 Scientific Limited
		Target Date:	29-Aug-2018 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	C-33A-H1	Soil	cPSoil	Composite Environmental Solid Samples
2	C-33A-H2	Soil	PSoil250	Composite Environmental Solid Samples
3	C-33A-H3	Soil	PSoil250	Composite Environmental Solid Samples
4	C-33A-FL (0-0.1) [A]	Soil	PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
5	C-33A-FL (0-0.1) [B]	Soil	PSoil250	Hold Cold
6	C-33A-BL (0.30) [A]	Soil	PSoil250	Hold Cold
7	C-33A-BL (0.30) [B]	Soil	PSoil250	Hold Cold
8	C-33A-BL (0-0.1) [A]	Soil	PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
9	C-33A-BL (0-0.1) [B]	Soil	PSoil250	Hold Cold
10	Composite of C-33A-H1, C-33A-H2 and C-33A-H3	Soil	cGSoil	Environmental Solids Rapid Sample Preparation; Total Recoverable Arsenic; Total Recoverable Lead

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	4, 8, 10
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	4, 8
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	10
Composite Environmental Solid Samples	Individual sample fractions mixed together to form a composite fraction.	-	1-3
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	10
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	10

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Certificate of Analysis

Client:	E3 Scientific Limited	**Lab No:**	2036167	SPv1
Contact:	Duncan Keenan	**Date Received:**	23-Aug-2018	
	C/- E3 Scientific Limited	**Date Reported:**	27-Aug-2018	
	PO Box 2450	**Quote No:**	94309	
	Wakatipu	**Order No:**		
	Queenstown 9349	**Client Reference:**	RHD 2 with composites	
		Submitted By:	Simon Bloomberg	

Sample Type: Soil

Sample Name:		C-33-FL (0-0.1) [A]	C-33-FL (0-0.1) [A]	Composite of C-33-H1, C-33-H2 and C-33-H3		
Lab Number:		2036167.4	2036167.8	2036167.10		
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	-	-	11	-	-
Total Recoverable Lead	mg/kg dry wt	-	-	340	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	14	13	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.22	0.35	-	-	-
Total Recoverable Chromium	mg/kg dry wt	22	20	-	-	-
Total Recoverable Copper	mg/kg dry wt	22	30	-	-	-
Total Recoverable Lead	mg/kg dry wt	173	153	-	-	-
Total Recoverable Nickel	mg/kg dry wt	17	18	-	-	-
Total Recoverable Zinc	mg/kg dry wt	129	186	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation*	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	4, 8, 10
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	4, 8
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	10
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-3
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	10
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	10

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Carole Rodgers-Carroll BA, NZCS
Client Services Manager - Environmental

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Certificate of Analysis

Client:	E3 Scientific Limited	**Lab No:**	2036573	SPv1
Contact:	Duncan Keenan	**Date Received:**	23-Aug-2018	
	C/- E3 Scientific Limited	**Date Reported:**	28-Aug-2018	
	PO Box 2450	**Quote No:**	94309	
	Wakatipu	**Order No:**		
	Queenstown 9349	**Client Reference:**	RHD 2 with composites	
		Submitted By:	Simon Bloomberg	

Sample Type: Soil

Sample Name:		C-33A-FL (0-0.1) [A]	C-33A-BL (0-0.1) [A]	Composite of C-33A-H1, C-33A-H2 and C-33A-H3		
Lab Number:		2036573.4	2036573.8	2036573.10		
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	-	-	17	-	-
Total Recoverable Lead	mg/kg dry wt	-	-	460	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	12	15	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.17	0.36	-	-	-
Total Recoverable Chromium	mg/kg dry wt	23	26	-	-	-
Total Recoverable Copper	mg/kg dry wt	20	30	-	-	-
Total Recoverable Lead	mg/kg dry wt	260	116	-	-	-
Total Recoverable Nickel	mg/kg dry wt	18	28	-	-	-
Total Recoverable Zinc	mg/kg dry wt	108	139	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation*	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	4, 8, 10
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	4, 8
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	10
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-3
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	10
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	10

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

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

Kim Harrison MSc
Client Services Manager - Environmental

Appendix B: Site Sample Location Plan

Image Courtesy of LINZ

e3 Scientific	**Appendix B – Soil Sample Locations**	RevDev	**30492 – DE8**
		Date	22/08/2018
	33-33A Church St, Fairfield, Mosgiel - Lot 1 DP 27259/Lot 2 DP 27259	Drawn	27/08/2018
		Approved	SHB

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

TITLE:	RHP2 – Contamination Assessments	**REDEVELOPMENT ID:**	30482
ATTENTION:	Andrew Rose Senior Programme Manager	**CLIENT DETAILS:**	Housing New Zealand (HNZ)
CONSULTANT:	e3 Scientific Ltd.	**PREPARED BY:** Simon Bloomberg	**CHECKED BY**: Glenn Davis

Investigation Summary Table

Address	Inspection and Sampling Date	HAIL Use	Asbestos Present on Site[1]	Indicative Landfill Disposal Cost[2]	Soil Samples Exceeding NES-CS Residential	Comments
16 Forfar	22/08/2018	No	Medium	$ 9,907.20	Yes	

Notes

[1] Based on site inspection and/or analysis of soil samples, refer individual property report

[2] Refer Landfill Summary Table below

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

Objectives

The key objectives of the contamination assessments were to:

- Assess potential for HAIL land use, and contamination sources relating to old dwellings.
- Provide indicative costs for landfill disposal of contaminated topsoil based on testing of soil parameters associated with those land uses and sources on the redevelopment areas.

Scope of Works

The scope of work that was undertaken in order to meet the project objectives included:

- Reviewing selected publicly available historical and current aerial imagery, including aerial photographs purchased from Opus Aerial Photosales where necessary.
- Liaising with local councils (territorial and regional), to identify any potential Hazardous Activities and Industries List (HAIL) land use.
- Undertaking site inspections and shallow soil sampling.
- Submitting shallow soil samples for laboratory analysis.

Observations, data and photographs are provided with the individual site assessment forms (Appendix A).

Site Sampling

e3Scientific undertook soil sampling to inspect soils and obtain initial data on potential concentrations of key contaminants of concern in shallow soils. The investigation comprised the following at each address:

- Preparing a site-specific health and safety plan.
- Collection of four field composite soil sample from surface to 0.1 m below ground level (bgl), 1.0 m from the edge of the building/dwelling. Sample analysed at the laboratory for lead and arsenic.
- Collecting two discrete soil samples from surface to 0.1 m bgl centrally from the front and rear yards of each address. Both samples analysed for heavy metal suite at laboratory.
- At one of the discrete sample locations above, based on visual field observations of the most likely location of fill material/greatest topsoil thickness, advancing one hand excavated test pit no greater than 0.3 m bgl. Measuring topsoil depth and collecting one discrete subsoil sample to hold cold at laboratory.
- Inspecting the property grounds for presence of asbestos-containing materials (ACM).
- Comparison of results against regional background and national environmental standards for contaminants in soil (NESCS).

Sample locations are plotted in Appendix B.

Investigation Results

A brief summary of the site assessment information is provided below:

Investigation Summary Table

Address	HAIL detail	Council information	Soil results summary
16 Forfar	N/A	N/A	Exceeds residential SCS

RHP2 SUMMARY REPORT FOR DEVELOPMENT AREA DUNEDIN

Soil Disposal Assessment

Based on the results of the laboratory analysis for each address, an assessment of indicative costs to dispose of topsoils from each address has been prepared below. The costs are indicative only and based on the following key assumptions:

- Two generic quotes from local transport contractors
- Ready access to site, no clearance required, minimal green waste and inert material
- Allow 1.8 tonnes / m^3
- Up to 30 % of topsoil can be reused if it does not exceed SCS / BRANZ guidelines.
- No allowance for additional testing, assessment, any necessary resource consents
- No allowance for project management, health and safety, environmental controls

Landfill Summary Table

Landfill	Disposal / tonne	Haulage / tonne[1]	Address	Areas for disposal	Soil volume, m^3	Indicative cost estimate
Asbestos landfill	$273.00	$20.00	16 Forfar		0	$0.00
Class A landfill	$41.00	$20.00	16 Forfar	Halo, Rear	80	$8,784.00
Class B landfill	$10.00	$20.00	16 Forfar	Front,	20.8	$1,123.20
Cleanfill	$10.00	$20.00	16 Forfar		0	$0.00

Appendix A: Individual Site Assessment Form, Site Photos, Historic Aerials & Lab Data

INDIVIDUAL LOT/SITE ASSESSMENT SUMMARY				
TITLE	RHP2 – Contamination Assessments	PROJECT NUMBER	CLIENT DETAILS:	
		18059	**HOUSING NZ**	
PREPARED BY	Duncan Keenan & Simon Bloomberg	VERSION:		
		1.0		
	e3Scientific			
Site Information				
Address		16 Forfar St, Fairfield, Mosgiel		
Redevelopment ID		30482		
Lot Area (m^2)		809		
HAIL based on desktop information?		No		
Dangers Onsite		None		
Site Description		Generally flat, tidy section . Brick with tiled roof. Asbestos clad shed in backyard.		
Building cladding		Brick	ACM (good)	
ACM Observed	**Site Surface**	No		
	Test Pit	No		
Asbestos Presence [1]			Medium	
Topsoil Depth (m bgl)		0.2		
Soil Sample Results	**Halo**	Background	< NES SCS	> NES SCS
	Front Yard	Background	< NES SCS	> NES SCS
	Back Yard	Background	< NES SCS	> NES SCS
Contaminated Soil (exceeds background concentration and/or NES-CS)	**Halo**	Yes	20 m^3	
	Front Yard	Yes	64 m^3	
	Back Yard	Yes	60 m^3	

[1] **NOTE**: Qualitative assessment based on visual observations of buildings and surface/test pit soils.

Plate 1: Front yard of dwelling

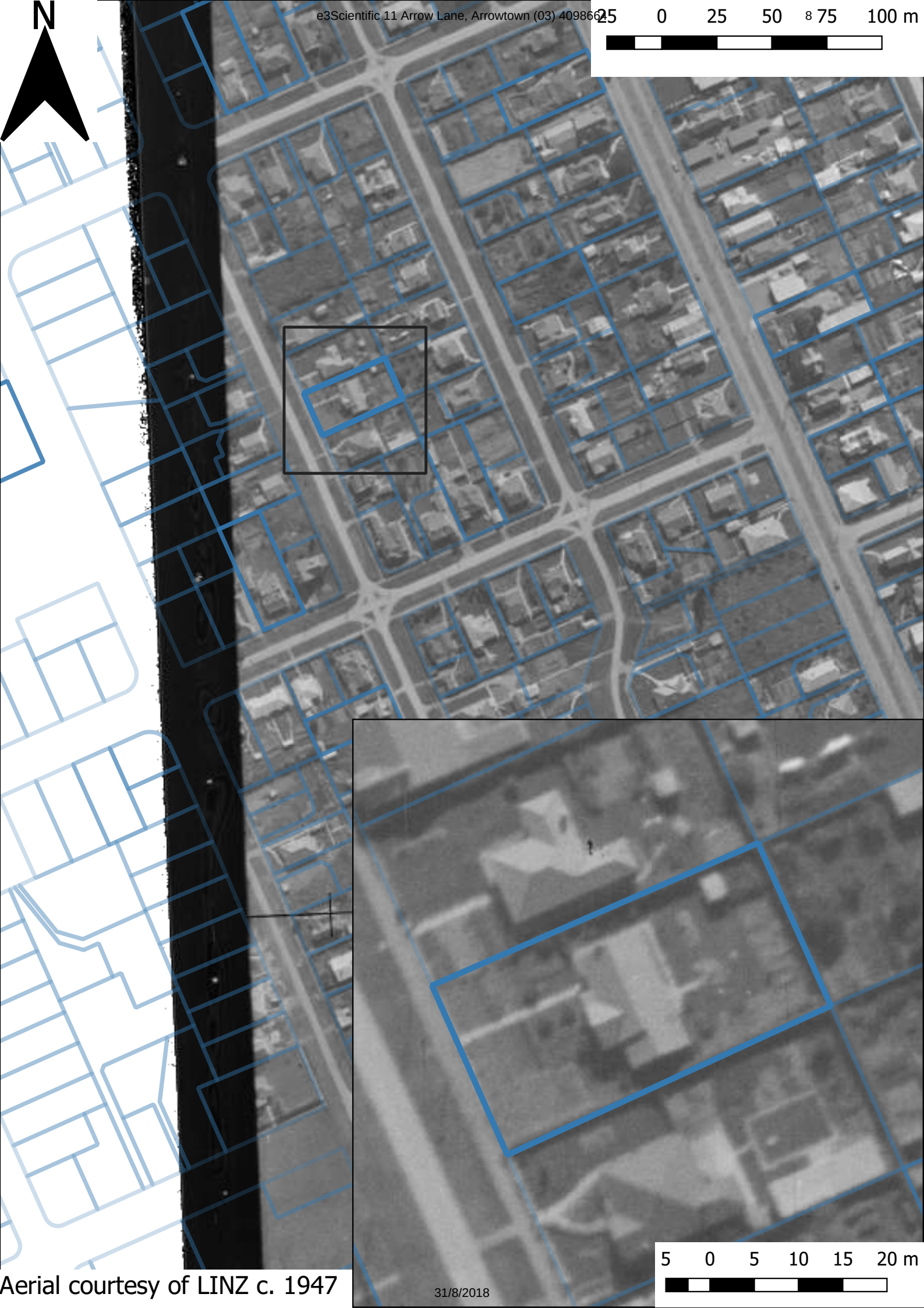
Plate 2: Backyard and garden shed

Title:	**Appendix A – Site Photographs page 1 of 2**	**RevDev**	**30482**
		Date	22/8/18
Project name:	16 Forfar Street – Mosgiel	Drawn	27/8/18
		Approved	DK

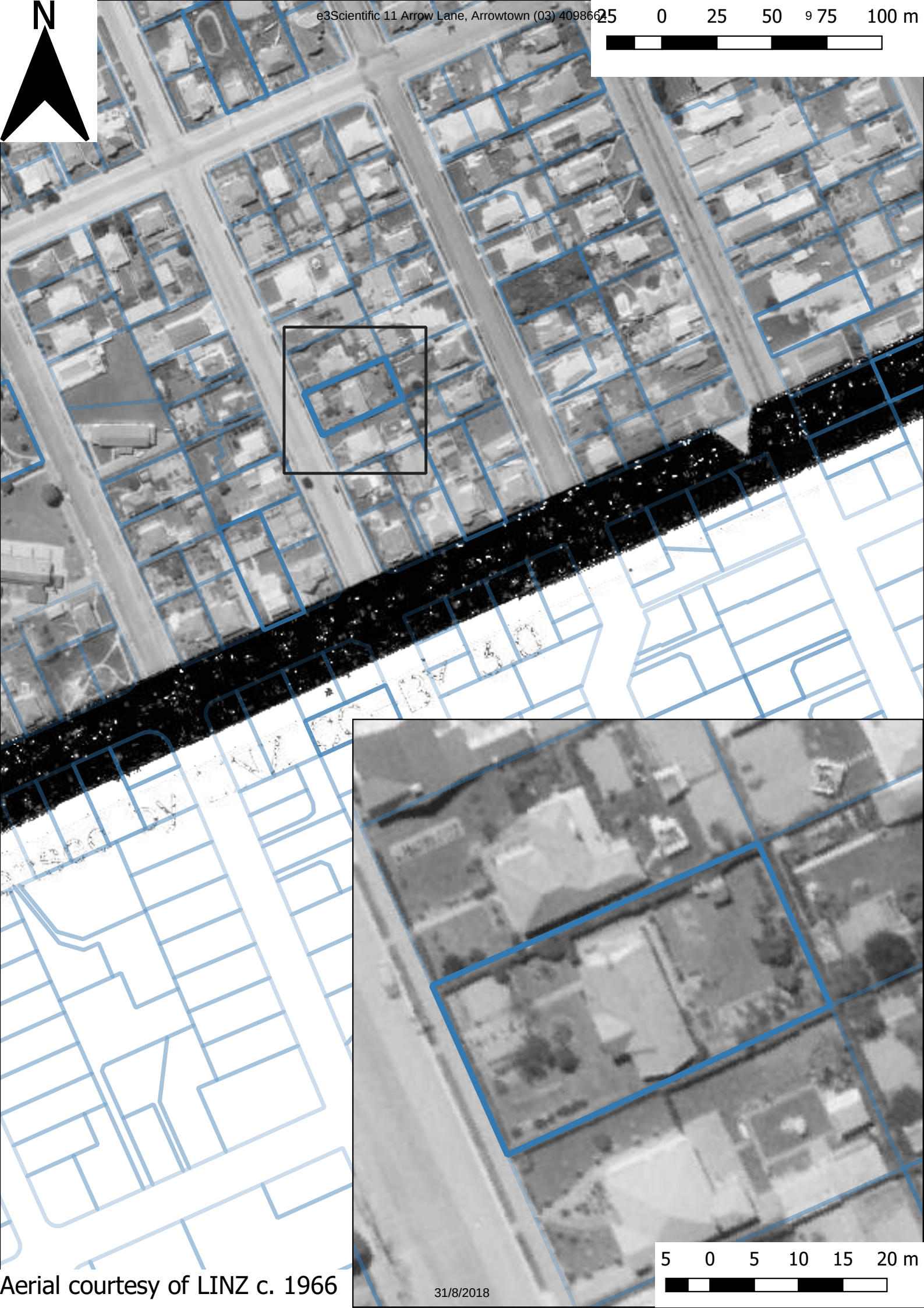
Plate 3: Southern wall of dwelling

Plate 4: Northern wall of dwelling

Title:	**Appendix A – Site Photographs page 2 of 2**	**RevDev**	**30482**
		Date	22/8/18
Project name:	16 Forfar Street – Mosgiel	Drawn	27/8/18
		Approved	DK



Aerial courtesy of LINZ c. 1947



Aerial courtesy of LINZ c. 1966

Hill Laboratories
TRIED, TESTED AND TRUSTED

Quote No 93913

Primary Contact

Submitted By

Client Name E3 Scientific Limited 141258

Address PO Box 2450, Wakatipu

Queenstown 9349

Phone 03 409 8664 Mobile 027 376 6588

Email glenn.davis@e3scientific.co.nz

Charge To E3 Scientific Limited 141258

Client Reference RHD 2

Order No

Results To

Please refer to the Quote for a list of the Default Report Recipients

☐ Email Other

☐ Other

ANALYSIS REQUEST

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Job No: **203 6185** Date Rec: 29-Aug-18 06:35

Received by: Emily Corfield

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time
Name:
Signature:
☐ Tick if you require COC to be emailed back

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ Room Temp ☐ Chilled ☐ Frozen Temp:

☐ Sample & Analysis details checked

Signature:

Priority ☐ Low ☐ Normal ☐ High
☑ Urgent (ASAP, extra charges apply, please contact lab first)

ADDITIONAL INFORMATION

URGENT NEXT DAY TAT

SAMPLES MUST BE RECEIVED BY THE HAMILTON LABORATORY BY 7AM.

Requested Reporting Date

Quoted Sample Types

Soil (per)

No	Sample Name	Sample Date/Time	Sample Type	Tests Required
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Job Information Summary

Client:	E3 Scientific Limited	**Lab No:**	2036185
Contact:	Duncan Keenan	**Date Registered:**	23-Aug-2018 10:31 am
	C/- E3 Scientific Limited	**Priority:**	Urgent
	PO Box 2450	**Quote No:**	94309
	Wakatipu	**Order No:**	
	Queenstown 9349	**Client Reference:**	RHD 2 with composites
		Add. Client Ref:	
		Submitted By:	Simon Bloomberg
		Charge To:	E3 Scientific Limited
		Target Date:	28-Aug-2018 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	F-16-H1 22-Aug-2018	Soil	PSoil250	Composite Environmental Solid Samples
2	F-16-H2 22-Aug-2018	Soil	PSoil250	Composite Environmental Solid Samples
3	F-16-H3 22-Aug-2018	Soil	PSoil250	Composite Environmental Solid Samples
4	F-16-H4 22-Aug-2018	Soil	PSoil250	Composite Environmental Solid Samples
5	F-16-FL (0-0.1) 22-Aug-2018	Soil	PSoil250, PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
6	F-16-BL (0-0.1) 22-Aug-2018	Soil	PSoil250, PSoil250	Environmental Solids Rapid Sample Preparation; Heavy Metals, Screen Level
7	F-16-BL (0.3) 22-Aug-2018	Soil	PSoil250, cPSoil	Hold Cold
8	Composite of F-16-H1, F-16-H2, F-16-H3 & F-16-H4	Soil	cGSoil	Environmental Solids Rapid Sample Preparation; Total Recoverable Arsenic; Total Recoverable Lead

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5-6, 8
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5-6
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	8
Composite Environmental Solid Samples	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	8
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	8

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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

Certificate of Analysis

Client:	E3 Scientific Limited	**Lab No:**	2036185	SPv1
Contact:	Duncan Keenan	**Date Received:**	23-Aug-2018	
	C/- E3 Scientific Limited	**Date Reported:**	27-Aug-2018	
	PO Box 2450	**Quote No:**	94309	
	Wakatipu	**Order No:**		
	Queenstown 9349	**Client Reference:**	RHD 2 with composites	
		Submitted By:	Simon Bloomberg	

Sample Type: Soil

Sample Name:		F-16-FL (0-0.1) 22-Aug-2018	F-16-BL (0-0.1) 22-Aug-2018	Composite of F-16-H1, F-16-H2, F-16-H3 & F-16-H4		
Lab Number:		2036185.5	2036185.6	2036185.8		
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	-	-	15	-	-
Total Recoverable Lead	mg/kg dry wt	-	-	310	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	15	13	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.88	4.6	-	-	-
Total Recoverable Chromium	mg/kg dry wt	28	24	-	-	-
Total Recoverable Copper	mg/kg dry wt	56	20	-	-	-
Total Recoverable Lead	mg/kg dry wt	102	66	-	-	-
Total Recoverable Nickel	mg/kg dry wt	20	20	-	-	-
Total Recoverable Zinc	mg/kg dry wt	260	162	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Rapid Sample Preparation*	Dried at 104°C (removes 3-5% more water than air dry) for 4hr, gravimetry. Replaces Environmental Solids Sample Prep under certain circumstances.	-	5-6, 8
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	5-6
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	8
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-4
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	8
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	8

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

Carole Rodgers-Carroll BA, NZCS
Client Services Manager - Environmental

Appendix B: Site Sample Location Plan

Image Courtesy of LINZ

e3 Scientific	**Appendix B – Soil Sample Locations**	RevDev	**30482 – DE3**
		Date	22/08/2018
	16 Forfar St, Fairfield, Mosgiel - Lot 32 Block VII DP 471	Drawn	27/08/2018
		Approved	SHB

Appendix Three: Ground Contamination Site Management Plan (GCSMP) April 2020.

REPORT

Tonkin+Taylor

Ground Contamination Site Management Plan

Redevelopment of sites in Dunedin and Mosgiel

Prepared for
Housing New Zealand Corporation (Kāinga Ora)
Prepared by
Tonkin & Taylor Ltd
Date
April 2020
Job Number
1011895.v2

Exceptional thinking together
www.tonkintaylor.co.nz

Document Control

Title: Ground Contamination Site Management Plan					
Date	**Version**	**Description**	**Prepared by:**	**Reviewed by:**	**Authorised by:**
November 2019	1	To support application for resource consent	Lewis Black	Mark Morley	Anna Sleight
April 2020	2	Updates to Section 5.3	Lewis Black	Mark Morley	Anna Sleight

This report has been prepared for the exclusive use of our client Housing New Zealand Corporation (operating as Kāinga Ora), 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.

We understand and agree that our client will submit this report as part of an application for resource consent and that Dunedin City Council (DCC) as the consenting authority will use this report for the purpose of assessing that application.

We understand and agree that this report will be used by DCC in undertaking its regulatory functions in connection with the subdivision and redevelopment.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

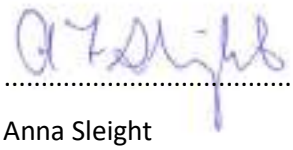
Report prepared by:

.....

Lewis Black

Environmental Scientist

Authorised for Tonkin & Taylor Ltd by:



.....

Anna Sleight

Project Director

Report certified under the NES Soil[1] by suitably qualified and experienced practitioner (SQEP)[2]:

.....

Mark Morley

Environmental Geologist

mddm/lebl
\\ttgroup.local\corporate\christchurch\tt projects\1011895\issueddocuments\contaminated land\1011895_kainga ora_global gcsmp_dunedin_v2_april 2020.docx

[1] Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

[2] Users' Guide - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health – Ministry of the Environment (MfE) (April 2012).

Distribution:

Housing New Zealand Corporation (Kāinga Ora)	1 electronic copy
Tonkin & Taylor Ltd (FILE)	1 electronic copy

Table of contents

1 Introduction

Tonkin & Taylor Ltd (T+T) has been commissioned by Housing New Zealand Corporation (operating as Kāinga Ora) to complete a ground contamination site management plan (GCSMP) for sites across Dunedin and Mosgiel, where ground disturbance at existing dwellings is required, associated with their site clearance and then redevelopment into new housing units.

This GCSMP has been prepared in general accordance with the requirements for a site management plan as referred to in the Ministry for the Environment (MfE) CLMG #1[3].

The GCSMP shall be implemented by the Contractor during the works involving disturbance of soil.

The persons undertaking, managing, reviewing and certifying the preparation of this GCSMP are SQEPs as defined in the NES Soil Users' Guide (2012). This GCSMP has been prepared in accordance with our Kāinga Ora short form agreement dated 25th September 2019 and our agreed scope of works dated 1st October 2019.

This document provides controls and procedures to protect human health and the environment during site redevelopment and use thereafter. Redevelopment works on a site shall not commence until the site has been suitably investigated and assessed (see Section 3).

1.1 Site identification (at time of writing)

At the time of writing the following addresses are proposed to be redeveloped by Kāinga Ora:

- 143 Helensburgh Road, Dunedin;
- 52-52 Mayfield Avenue, Dunedin;
- 58-60 Mayfield Avenue, Dunedin;
- 2 Murray Street & 29-31 Oban Street, Dunedin;
- 3-3A Queen Street, Dunedin;
- 32-36 Statham Street & 93-97 Wray Street, Dunedin;
- 7-17 Turnbull Street, Dunedin;
- 33-33A Church Street, Mosgiel;
- 16 Forfar Street, Mosgiel;
- 43 Perth Street, Mosgiel; and
- 6 Stirling Crescent, Mosgiel.

Kāinga Ora's redevelopment programme over the next five to ten years may include further sites/addresses to the above. The roles and responsibilities, controls and procedures of this GCSMP shall apply to all of the redevelopments named or otherwise.

1.2 Background and development details

Redevelopment project brief documentation for each site has been provided to T+T. These documents show the redevelopment of sites (including existing dwelling clearance and construction of new dwellings (several per site)), general intensification of land use and creation of higher density living in existing areas of Dunedin and Mosgiel. Development will include construction of the dwellings themselves, associated driveways and services/infrastructure etc.

[3] MfE - Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand (revised 2011).

It is expected that materials will be excavated for construction of foundations, pavements, and installation of services, and will be removed from site and disposed of appropriately. Imported granular materials will be placed to form pavement layers, backfill service trenches, and potentially to form hardfill platforms under building footprints (subject to foundation type which is yet to be confirmed)

The redevelopment sites may not necessarily be recorded on DCC or Otago Regional Council (ORC) databases of potential contaminated sites or where HAIL[4] activities are taking or have taken place. The sites are generally occupied by existing dwellings and therefore the likely contaminants of concern are metals and asbestos (from use of historic building products). Owing to their history and land use, contamination by polycyclic aromatic hydrocarbons (PAH) and/or other hydrocarbon contamination is considered less likely.

Ground contamination investigation works by others[5] (where completed) identified these sites have varying levels of chemical contamination of soil, ranging from below predicted background concentrations to concentrations of some metals above the NES Soil Contaminant Standard (SCS) for residential (10% produce) land use. T+T is supplementing these works with asbestos in soil investigations; at the time of writing, low levels of asbestos in soil have been recorded at some sites.

1.3 Regulatory compliance

This GCSMP has been prepared in general accordance with the MfE CLMG #1. Sampling procedures provided generally comply with the MfE CLMG #5[6].

This GCSMP is also prepared in general accordance with the soil disturbance-related controls referred to in the NES Soil Regulations and Asbestos in Soil Guidelines[7].

[4] MfE - Hazardous Activities and Industries List (revised 2011).
[5] e3Scientific Ltd have completed 'Contamination Assessments' for the sites for Kāinga Ora including a brief site history review, site walkover and surficial soil sampling for heavy metals around existing dwellings and in garden areas.
[6] MfE - Contaminated Land Management Guidelines No. 5- Site Investigation and Analysis of Soils (revised 2011).
[7] BRANZ - New Zealand Guidelines for Assessing and Managing Asbestos in Soil – 2017.

2 Roles and Responsibilities

This GCSMP has been prepared to document the expected ground contamination related earthworks procedures, monitoring, management and health and safety requirements during soil disturbance associated with the sites' redevelopment. The roles and responsibilities of the various participants in the redevelopment are described below, along with the management processes for this GCSMP.

2.1 Description of roles and responsibilities

Tabulated below are the roles and responsibilities for the parties undertaking the redevelopment ground works on the sites:

Company/organisation	Role and responsibilities
Kāinga Ora	Owner of the sites and operator responsible for providing the work environment within which this GCSMP shall be implemented.
Project Manager for Kāinga Ora	Project Manager responsible for ensuring that the GCSMP is implemented appropriately.
Contractor	Responsible for the operational (day to day) implementation of this GCSMP and appointment of Site Manager and Environmental Health and Safety Officer.
Site Manager	Responsible for monitoring: • Compliance with this GCSMP; • Compliance of all subcontractors with the requirements of this GCSMP; • Appropriate implementation and maintenance of erosion and sediment and dust control measures; and • Permitting of any soil disposal.
Environmental Health and Safety Officer (EHSO)	Responsible for overseeing implementation of the Health and Safety Plan for site works (which includes the soil contamination-related aspects) and ensuring that the contaminated land-related health and safety procedures are adhered to if unexpected contamination is encountered.
Subcontractor to Contractor	Responsible for undertaking works in accordance with requirements of this GCSMP.
Contaminated Land Specialist	Responsible for undertaking soil testing, water sampling, validation reporting and provision of general ground contamination advice during the works. Assess ground investigation data to determine offsite disposal options for soils displaced by site redevelopment. Can work as an independent competent person under the Asbestos Regulations[8] (Regulation 3(1)).
Licensed Asbestos Removal Works Supervisor (if required)	Responsible for preparing asbestos removal management plans or other documentation

[8] Health and Safety at Work (Asbestos) Regulation 2016.

Company/organisation	Role and responsibilities
	prepared additional to this GCSMP and providing advice for asbestos removal works (if required). The Licensed Asbestos Removal Supervisor shall be responsible for ensuring all asbestos removal works are carried out in accordance with the Asbestos Regulations and ACoP[9]. The Licensed Asbestos Removal Supervisor shall liaise with the Contaminated Land Specialist and WorkSafe New Zealand (WorkSafe) prior to works commencement and during works, as required.
Licensed Asbestos Assessor (if required)	Responsible for providing clearance of any asbestos removed under Class A or Class B asbestos removal works. In accordance with the Asbestos Regulations Section 41(2)(A) this person must be independent of the works. This person may also be the Contaminated Land Specialist in regards to asbestos-in-soils removal, as a competent person/Licensed Asbestos Assessor for Class B and Class A works respectively.
Otago Regional Council/ Dunedin City Council	Responsible for monitoring of compliance with consent conditions.
WorkSafe New Zealand	Responsible for overseeing compliance with Health and Safety at Work Act 2015 and Asbestos Regulations 2016.

2.2 Distribution

Responsibility for distribution of this GCSMP to the personnel carrying out works at the sites lies with Kāinga Ora. A copy of the latest version of this GCSMP shall be kept on site at all times. A copy of the latest version of this GCSMP shall be provided to DCC and/or ORC as necessary for consenting purposes.

2.3 Review and update

This GCSMP is a live document and updates may be required from time to time to include changes in the understanding of ground contamination at different sites (i.e. when future investigations are complete) and/or accepted best operational practise and/or regulations. Any proposed variations to the GCSMP by the Contractor must be approved by Kāinga Ora prior to works commencing, or the variation being implemented if the works have already commenced. Substantive changes may require a copy of the latest version of the GCSMP to be provided to DCC and/or ORC prior to implementation.

It is the responsibility of Kāinga Ora to distribute any changes to the GCSMP to the relevant parties involved in site works, and update the site copy.

If site specific ground contamination investigations encounter levels of contamination not covered in this GCSMP, either the GCSMP will require updating to reflect the appropriate level of controls when/if necessary or a method statement for site clearance works specific to that site (i.e. address) shall be prepared and implemented.

[9] WorkSafe New Zealand Approved Code of Practice – Management of Asbestos, November 2016.

2.4 Implementation and ground contamination related incident notification

Responsibility for the implementation of this GCSMP lies with Kāinga Ora. For any ground contamination related advice required during site works, the Project Manager shall be contacted and the advice of the Contaminated Land Specialist sought.

In the event of a contamination incident, the following shall be implemented:

- Contractor (Site Manager or EHSO) shall inform the Contaminated Land Specialist of the incident within 6 hours of the incident occurring; and
- Contaminated Land Specialist shall inform DCC/ORC/WorkSafe New Zealand as appropriate.

Further information regarding first response is provided in Section 4.2.

3 Ground Contamination Conditions

All redevelopment sites will be suitably investigated before clearance and/or redevelopment construction commences. Ground contamination investigation works shall be completed in accordance with the requirements of CLMG #1 and CLMG #5 and certified by a SQEP. This shall include a search of DCC and/or ORC contaminated site/activities registers.

The findings of each investigation programme shall be used to determine which of the controls and procedures shall apply to that particular redevelopment site.

In principle the expected conditions are:

- Residential land use historically;
- Topsoil, overlying natural strata. Locally some small quantities of man-made materials may be mixed with these strata; and
- No extensive deposits of uncontrolled fill, including construction and demolition materials.

Based on these conditions and history, ground contamination by metals, asbestos (as fibres and/or ACM) is considered plausible. If materials like ash are present on a site, contamination by PAHs and TPH cannot be discounted.

Redevelopment works, i.e. ground disturbance and offsite disposal of soils shall not commence until an appropriate ground contamination investigation has been completed.

4 Managing Unexpected Contamination

4.1 Overview

Typical indicators for other ground contamination conditions that shall require assessment by the Contaminated Land Specialist include:

- Degraded or friable (i.e. broken by hand pressure) asbestos, fragments of ACM etc.;
- Odour (e.g. petroleum hydrocarbons, oil);
- Oily sheen on soil or water is an indicator of the presence of separate phase hydrocarbons;
- Black staining coupled with an odour may indicate heavy oil/hydrocarbon contamination such as coal tar; and
- Blue to pale blue silty material could be "blue billy" – a cyanide-containing former gasworks waste product.

The following procedures shall be followed during ground disturbance activities.

4.2 First response procedures

The following is a "first response" checklist for the Contractor to follow should visual or olfactory evidence of contamination be encountered during the works onsite.

The first response procedures are to ensure contamination is appropriately contained while decisions about its management are being undertaken.

If additional controls to those set out in this document are required, DCC and/or ORC/WorkSafe must be notified and provide approval before the works are undertaken.

First Response Checklist:	
(During open excavation) **Stop work** within 10 m of the contamination discovery and **isolate the area** by taping, coning or fencing off.	☐
Advise the Site Manager. Site Manager shall inform Kāinga Ora and the Contaminated Land Specialist.	☐
Contaminated Land Specialist shall inspect and assess the appropriateness of controls.	☐
Update the site Hazard Board and prevent access to the area by unnecessary personnel.	☐
If ACM is observed provide P2 dust masks (see Section 6) to all staff entering the isolation area while it is being secured. Relevant procedures in Section 5.8 (asbestos specific controls and procedures) shall be implemented.	☐
If odours are present cover the material with non-odorous soil or hay/straw and lime to prevent nuisance odour.	☐
The Contaminated Land Specialist to attend site and observe and advise of specific controls, if appropriate.	☐
Implement dust controls as per Section 5.4.	☐
Contain surface water/sediment as per Section 5.3.	☐
Implement monitoring measures if contaminated soil or groundwater is identified (Section 5.10).	☐

5 Controls and Procedures

The following procedures shall be adopted for all groundworks including surficial scraping and excavations for foundations and buried services etc.

The procedures in this section have been prepared to ensure that site establishment is correctly implemented and contaminated material is handled, contained or disposed of appropriately and that potential off-site discharges are mitigated during soil disturbance. The procedures are soil-related earthworks controls for managing the effects of dust, sediment, soil stockpiling and water (surface and ground).

These controls and procedures are based on the soils being contaminated with metals and asbestos at concentrations identified in previous investigations (refer to individual ground contamination reports prepared for each site). If other concentrations or types of contamination are encountered during the redevelopment works, the Contractor shall implement the unexpected contamination controls detailed in Section 4.2.

Additionally, if sites investigated in the future have greater levels of contamination (particularly asbestos in soil contamination), the controls applicable in this GCSMP may not provide an appropriate level of control/management, and this GCSMP will require updating to an appropriate level.

Soils generally below 150-200 mm depth (i.e. not topsoil) should be suitable for disposal as cleanfill. Prior acceptance from the proposed receiving fill operator shall be sought prior to any material leaving site.

5.1 Site establishment

During site establishment, the Contractor shall ensure the following:

- The installation of security fencing, where suitable boundary fencing does not exist, to prevent unauthorised access to the works area;
- Signage and a site hazard board shall be placed at the entrance point(s) to the works area;
- The site hazard board shall include summary information on site works and notification processes for encountering unexpected contaminated soil, including health and safety actions;
- Details on health and safety requirements relating to contamination hazards are addressed in Section 6. Prior to ground disturbance works commencing, the Contractor shall put in place the following health and safety facilities relating to the potential for handling contaminated materials on the site:
  - Personal protection equipment (PPE) stores; and
  - First aid point(s).
- The Contractor shall ensure that health and safety inductions are completed prior to allowing workers to undertake ground disturbance works onsite, including for works required as part of the site establishment;
- The Contractor shall ensure the appropriate disposal permits and temporary consents for discharges are in place prior to ground disturbance works commencing;
- The Contractor shall ensure erosion and sediment control measures are installed in accordance with their erosion and sediment control plan and requirements of Section 5.3 below; and
- Where there is asbestos in soil in soils on a site, additional controls and monitoring to manage this shall be established as per Section 5.8 below. Not least, this shall include segregating the

'asbestos works area' from the balance of site activities. A schematic site layout is shown in Figure 5.1 below.

The Contractor shall induct all workers on actions required in respect of encountering unexpected contamination prior to the works commencing (Section 4).

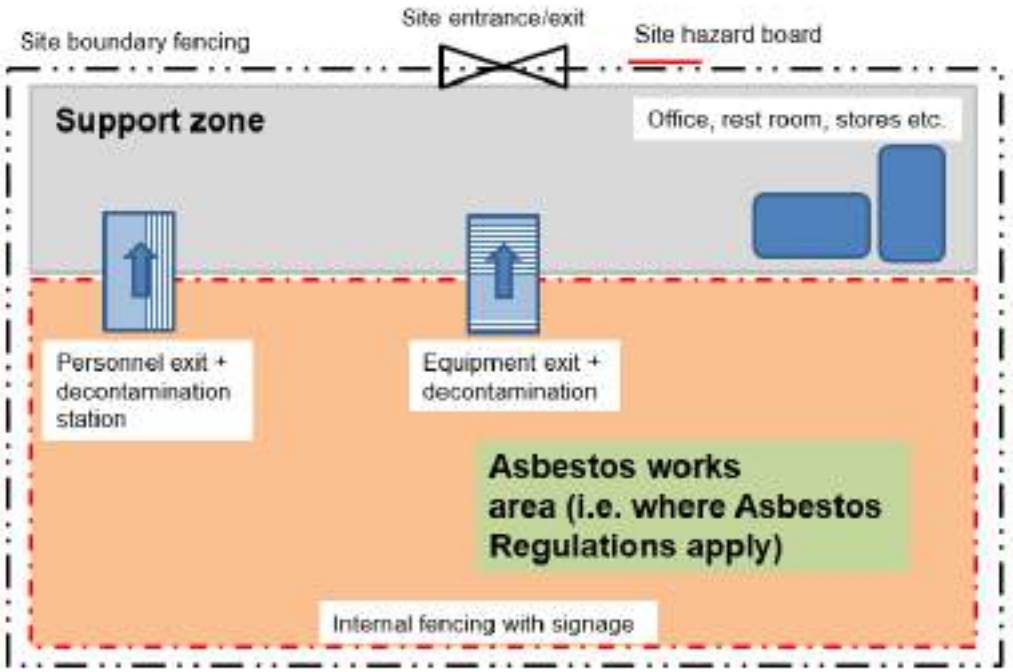


Figure 5.1: Indicative site layout including asbestos works area.

5.2 General excavation and transportation procedures

The groundworks will be carried out using an excavator and other suitable/required plant, including hand tools. Excavated surplus material will generally be loaded into trucks alongside the excavation for removal (be it stockpiling and reuse on site or offsite disposal). The following shall be adhered to during excavation and transportation of excavated soils:

- Trucks shall be loaded within the site where runoff and possible spills during loading can be controlled and contained;
- Trucks transporting soil away from the site (if leaving the site and onto adjoin roads etc.) shall have their wheels cleaned of debris. There shall be no tracking of material onto roads or footpaths beyond the works area;
- The Contractor shall ensure that contaminated soil being disposed offsite is transported in trucks and covered by tarpaulins (additional controls for asbestos in soil apply too – see Section 5.8); and
- For material disposed to a managed fill or licensed landfill facility, weighbridge summaries will be kept for disposal tracking purposes (see Section 5.6).

5.3 Erosion and sediment control

Erosion and sediment control during construction shall be in accordance with DCC's guidelines[10] and any other regionally-specific documents. Erosion and sediment control measures shall include as a minimum:

- Avoid work in heavy rain;
- Keeping the site clean;
- Stockpiling shall be in avoided, if possible. When required, stockpiles shall be placed in an area where runoff can be controlled and covered if left overnight;
- A stabilised entry/exit point shall be established so sediment is not tracked on and off the site;
- Silt fences and runoff diversion bunds shall be utilised where appropriate to capture sediment in surface water runoff;
- Proprietary filters shall be installed in the stormwater drain covers on the roadside adjacent to the site/site entrance (e.g. installing 'witches hats' sediment traps in nearest stormwater drains on either side of the site entrance); and
- Erosion and sediment controls shall be checked regularly (including after a rainfall event) by the Site Manager and maintained in good working condition.

To ensure good practise:

- The entry/exit point shall be reapplied with aggregate if excessive sediment build up occurs;
- Erosion and sediment control measures shall be upgraded/modified where necessary. Sediment fences will be replaced if the fabric is ripped or otherwise damaged. They shall be retrenched if needed; and
- The weather conditions along with the performance of the erosion and sediment control measures shall be monitored, and improvements made to respond to changing conditions.

Erosion and sediment control measures shall remain in place until the earthworks are complete and soil is stabilised (e.g. under building slabs or asphalt/concrete driveways).

5.4 Dust control

From a human health perspective, there will be some situations (e.g. during excavation, truck loading) where any dust generated may have the potential to contain contamination. Dust control measures shall comply with the Good Practice Guide for Assessing and Managing Dust, MfE (2016).

To avoid dust generation and to mitigate against dust created by vehicular movement, the following control system shall be put in place by the Contractor at all times:

- The Site Manager shall review the condition of all exposed soil at the commencement and completion of each day; additional regular inspections will be made when strong winds are forecast;
- Frequent spraying of water over the work area, particularly excavation and truck loading areas to ensure the working surfaces remain damp;
- Dampening of loaded material once placed on the truck for offsite disposal;
- Use of a water truck or portable water sprays in trafficked areas to dampen dust; and
- Stockpiles (if used) shall be:
  - Dampened (and then maintained in a damp state); or

[10] DCC - Silt and Sediment Control for Smaller Sites August 2013 - https://www.dunedin.govt.nz/__data/assets/pdf_file/0005/337217/Silt-and-Sediment-August-2013.pdf

- Covered (with polythene, geotextile or similar) and sandbagged to prevent wind disturbance.

For areas that are required to be left open for more than three consecutive days, a polymer, surfactant or other adhesive spay shall be used.

5.5 Stockpiling

Stockpiled material shall be placed in an area where runoff can be controlled.

Material (both fill and natural) shall be placed on plastic sheeting to prevent contamination of clean ground beneath the stockpiled material, or the footprint of a stockpile area shall be over-excavated by 50 mm following its removal if contaminated material is placed on unsealed ground (i.e. sacrificial material).

Stockpiles shall be covered whenever the site is not active (e.g. each night, over weekends). The method of covering shall be adequate to prevent the generation of dusts and/or odours from the stockpiled materials.

Segregation of stockpiles of clean material (natural soils) and fill/topsoil materials shall be observed so that there is no cross contamination of fill/topsoil material to the natural material (i.e. natural materials are stockpiled in a different part of the site from stockpiles of contaminated material).

5.6 Offsite disposal of soils

Soils displaced by site redevelopment and surplus to the works shall be disposed of to an appropriate licensed facility. The Contaminated Land Specialist shall assess site specific ground investigation data to identify the options for offsite disposal and the Contractor shall provide the disposal site operator with the pertinent information for the operator's consideration and approval to accept the materials. No offsite disposal shall commence until approval(s) are obtained.

Table 5.1 below summarises the key disposal criteria for the contaminants of concern at some of the cleanfill and managed fill sites in the Dunedin City area.

Table 5.1: Key disposal criteria for contaminants of concern for sites in the Dunedin City area

Contaminants of concern	Green Island Landfill (Class B landfill)	Other example Dunedin fill facility (Nash & Ross Ltd/Burnside Landfill- Class A landfill)	Cleanfill[11]
Metals and PAHs	Comparison of total contaminant concentrations to MfE Class A landfill screening criteria[12]. If material passes this test, classified as non-contaminated. If a contaminant(s) fails this test, comparison of Toxicity Characteristic Leaching Procedure TCLP) data against MfE Class B TCLP limits. If material passes the Class B TCLP screen, it is classified as low level contaminated fill. If a contaminant(s) fails the Class B TCLP test, material defined as "special waste" and will require treatment to meet TCLP requirements before disposal.	Total concentration screening criteria are generally half the MfE Class A landfill criteria.	Below predicted published background concentrations within the disposal area[13].
TPH	• TPH <200 mg/kg consider non-contaminated. • TPH 200-1,000 mg/kg consider low-level contaminated fill. • TPH >1,000 mg/kg will not be accepted.	TPH screening criteria: • C7-C9: 500 mg/kg. • C10-C14: 2,000 mg/kg. • C16-C36: 8,000 mg/kg. • C7-C36 (total): 10,000 mg/kg.	Not detected.
Asbestos as ACM Asbestos as AF/FA	• <0.001 w/w % AF/FA- classified as non-contaminated and used depending on its material characteristic (cleanfill, cover, rubble). • >0.001 w/w % AF/FA- categorised as asbestos containing and requires special handling/treatment. • Building materials containing asbestos (ACM) are by definition immediately classified as such and received and charged accordingly.	Accepted.	Not accepted.

[11] Information sourced from ORC: https://www.orc.govt.nz/managing-our-environment/waste-and-hazardous-substances/cleanfill.
[12] https://www.mfe.govt.nz/publications/waste/module-2-%E2%80%93-hazardous-waste-guidelines-landfill-waste-acceptance-criteria-and.
[13] https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/.

5.7 Imported materials

Hardfill sourced directly from a quarry can be imported to a site.

Hardfill sourced from recycled materials and/or cleanfill must be verified by a Contaminated Land Specialist (i.e. laboratory transcripts are available and show the material shall meet published predicted background contaminant concentrations[14] at the redevelopment site). Material imported to the site from a non-quarry source shall be sampled at a rate of one sample for every 500 m^3 and tested for (at a minimum) metals, PAHs and organochlorine pesticides (OCPs). Depending on the land use at the source of the imported material, testing for other parameters may also be required (e.g. asbestos in soil for recycled construction demolition materials). Sampling will follow the procedures detailed in Section 5.9.

It is preferable that the material is tested at its source prior to transport to site. However, if not, then the Contractor shall separately stockpile the material on the site until test results are available and the materials verified suitable for use (with respect to contamination) by the Contaminated Land Specialist.

5.8 Asbestos in soil – specific controls and procedures

The following controls are additional to those in Sections 5.1 to 5.5 (inclusive) and relate to disturbing asbestos in soil and compliance with the Asbestos Regulations and/or NES Soil. These do not cover circumstances when friable/degraded asbestos is encountered (see Section 4).

The following additional controls relate to *unlicensed asbestos work* and *asbestos related work* categories under the Asbestos Regulations; for Class A or B asbestos works a site/task specific asbestos removal control plan (ARCP) is required. The ARCP shall be prepared by a licensed asbestos removalist in accordance with the ACoP.

The following additional controls and procedures are based on the ACoP and Asbestos in Soil Guidelines.

- All personnel engaged in activities on site where asbestos in soil is being disturbed shall complete the site induction including the nature and extent of the soil contamination and the asbestos specific controls including provision and appropriate use of PPE and decontamination;
- Air monitoring by an independent competent person shall be undertaken during (at least) the first three days of earthworks to confirm earthworks controls and procedures are effective and that airborne asbestos concentrations are below the human health threshold of 0.01 fibres per millilitre in air. Details relating to air monitoring are presented in Section 5.9.3;
- Water used for dust suppression and/or decontamination purposes will be low pressure (i.e. <350 kPa – Asbestos Regulation (Regulation 3(1)); and
- When taken offsite, soils containing asbestos (fibres and/or ACM) shall be suitably wrapped (i.e. in lined trucks) and covered.

[14] Landcare Research Ltd- PBC- Predicted Background Soil Concentrations, New Zealand. https://lris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/.

Table 5.2: Controls and procedures (within red box) for unlicensed and asbestos related works

Scenario	PPE	Respiratory protective equipment (RPE)*	Dust/asbestos fibre suppression	Decontamination facilities
Class A: friable >1% w/w FA and/or AF in soil	Disposable coveralls rated type 5, category 3, nitrile gloves, steel toe capped gumboots or safety footwear with disposable overshoes.	Full-face P3 respirator with particulate filter. Consider increasing to power-assisted if required.	Water and asbestos-encapsulating polymer emulsion product applied before starting work and during as required. Consider adding a surfactant to water for amphibole fibres (brown and blue).	Sonic disposable wet decontamination tent or trailer. Consider powered and plumbed decontamination unit if project scale warrants.
Class B: non-friable >0.01% w/w FA and/or AF in soil >1% w/w ACM		Half-face P3 respirator with particulate filter. Consider increasing to full-face if friable ACM present.		Sonic disposable decontamination tent and foot wash.
Asbestos-related work >0.001% w/w FA and/or AF in soil >0.01% w/w ACM		Disposable P2 dust mask.	Water via localised points. Addition of surfactants and polymers where the location is sensitive (such as adjacent to busy centres, schools). Temporary cover of contaminated area awaiting remediation.	
Unlicensed asbestos work >0.001% w/w FA and/or AF in soil ≤0.01% w/w ACM	No asbestos-specific PPE if air monitoring confirms asbestos below 0.01 f/ml.	No asbestos-specific RPE if SQEP confirms unlikely to exceed trace levels in air monitoring (0.01 f/ml) and/or if air monitoring confirms asbestos below 0.01 f/ml.		Foot wash and used PPE collection area.

*Refer to Part C section 14 of the ACOP and AS/NZS 1715:2009 for more information on RPE selection.

Scenario	Vehicle assessment before demobilisation from site	Vehicle assessment completed by	Vehicle (truck) protection	Truck/excavator air conditioning
Class A: friable >1% w/w FA and/or AF in soil	Visual plus swab samples, air sampling should be undertaken inside the cab.	Independent assessor or independent competent person.*	200 µm heavy-gauge polythene wrapped soil/lined trays and truck covered.	HEPA filter system fitted for all occupied vehicles, filter replaced or clean down with HEPA vacuum cleaner post work.
Class B: non-friable >0.01% w/w FA and/or AF in soil >1% w/w ACM	Visual (plus swab samples if friable ACM is elsewhere on site – lagging, insulation, etc).	Independent assessor or independent competent person.*		HEPA filter system fitted for all occupied vehicles where friable ACM on site (lagging, insulation, etc).
Asbestos-related work >0.001% w/w FA and/or AF in soil >0.01% w/w ACM Unlicensed asbestos work >0.001% w/w FA and/or AF in soil ≤0.01% w/w ACM	Visual assessment.	Competent person or SQEP.	Truck lining/soil wrapping depends on the receiving landfill. All trucks should be covered.	Standard air conditioning.

*An independent competent person must meet the requirements of regulation 41(3) under the Asbestos Regulations.

Reproduced from Asbestos in Soil Guidelines – Table 6 and 7.

5.9 Sampling

For soil and water testing, e.g. if required as a result of an accidental discovery, the following procedures set out the sampling, testing and evaluation requirements.

5.9.1 Soil

Soil sampling shall be undertaken by the Contaminated Land Specialist in general accordance with MfE's CLMG #5 and the Asbestos in Soil Guidelines. Soil samples shall be collected according to the following procedure:

- Samples shall be collected at a rate of one sample for every 500 m^3 or part thereof. The sample shall be made up of a composite of three sub samples collected from stockpiled soil, or discrete samples directly from an excavation face;
- Soils to be taken for asbestos in soil content shall be collected and tested according to the semi-quantitative method set out in the Asbestos in Soil Guidelines;
- The materials encountered shall be described in general accordance with the New Zealand Geotechnical Society "Guidelines for the classification and field description of soils and rocks for engineering purposes" (2005);
- Freshly gloved hands shall be used to collect soil samples and shall be placed immediately into 500 ml glass jars;
- Any equipment used to collect the samples shall be decontaminated between sample locations using clean water and Decon 90 (i.e. a phosphate-free detergent); and
- Samples shall be shipped in chilled containers to an IANZ[15] certified laboratory under chain of custody documentation.

5.9.2 Water

Ground or surface water shall be collected according to the following procedure:

- A laboratory supplied sample bottle shall be lowered into the water or, collected from a tap on a holding tank after turning to clear stagnant water, using a gloved hand;
- The water sample shall be labelled with the date and chilled;
- Samples shall be sent to an IANZ accredited laboratory under chain of custody documentation; and
- Testing shall be as a minimum for total suspended solids, metals and PAH. Based on observations by the Contaminated Land Specialist, analysis for other parameters (e.g. TPH) may be required also.

5.9.3 Air (asbestos) monitoring

Air (asbestos) monitoring shall be undertaken at the commencement of the works (soil disturbance works) as described below, to demonstrate the effectiveness of the procedures of this GCSMP to manage asbestos in soil (see Section 5.8). The monitoring will provide information about potential asbestos fibres in air generated by the groundworks.

The air monitoring shall be conducted following Section 30 of the ACoP and samples shall be analysed by an accredited laboratory under the Asbestos Regulations (Regulation 3 (1) (a) to (c) inclusive).

[15] International Accreditation New Zealand.

Air monitoring shall be undertaken for the first three days of soil disturbance works, with:

- Boundary monitoring relative to the works area at the time of monitoring shall comprise one upwind and two downwind locations (positions to be determined on the prevailing weather conditions at the time of monitoring); and
- Activity based monitoring where the sampling equipment is either:
  - Worn by personnel undertaking soil disturbance (e.g. a labourer working in trenches); or
  - Mounted on plant actively undertaking soil disturbance (e.g. mounted on side excavator).

The results of the air monitoring shall be assessed by the Contaminated Land Specialist/competent person on receipt from the laboratory and compared with the trace level in air criterion of <0.01 fibres mL (Asbestos Regulations, Regulation 3 (1)). If a sample result is recorded above trace level in air, then works shall temporarily cease while the circumstances are investigated by the Contractor and the Contaminated Land Specialist/competent person. Based on the findings of the investigation that includes a review of the weather conditions, as well as site activities and materials being disturbed during the sample collection period, additional controls will be implemented as required and documented. This information will be circulated to the Contractor, Kāinga Ora, WorkSafe, DCC and ORC as an addendum to this GCSMP.

Additional air monitoring events shall be undertaken at the request of Kāinga Ora and/or based on changes in site circumstances/conditions (e.g. first response procedure, using different plant and equipment for earthworks).

5.9.4 Data evaluation and reporting

The Contaminated Land Specialist shall report the results of any testing to the Project Manager, Kāinga Ora and the Contractor. It is appropriate to evaluate the results with respect to:

- NES Soil SCS for a commercial land use with respect to construction worker protection;
- NES Soil SCS for a high-density residential land use with respect to future site users protection;
- Soil asbestos guidelines as presented in the Asbestos in Soil Guidelines for all site uses for asbestos fibres and fibrous asbestos and high density residential land use for ACM (bonded);
- Published background concentrations; and
- Applicable landfill acceptance criteria (refer to Section 5.6).

5.10 Monitoring and controls

Monitoring undertaken by the Contractor's Site Manager shall involve regular inspections of groundwork areas for:

- Sediment control and compliance;
- Water accumulation; and
- Dust generation.

The Contractor shall also visually inspect excavations for significant odours or discolouration and notify the Project Manager/Kāinga Ora and the Contaminated Land Specialist if any are observed.

Generally, inspections shall be carried out at least once daily, however, the frequency will be dependent on the nature of the works being undertaken and area of works. The frequency shall be determined by Contaminated Land Specialist.

The Contractor shall carry out all maintenance requirements to ensure the effectiveness of the control measures if the inspections show that this is required.

5.11 Complaints

A written record of all ground contamination related complaints received shall be maintained by the Contractor. The Contractor shall initiate an investigation as soon as practicable on receipt of a complaint, and must notify the Project Manager/Kāinga Ora and DCC/ORC (if applicable) as soon as practicable, including providing details of any corrective actions taken.

The Contractor shall provide appropriate feedback to the complainant, such as the response made and any corrective actions taken, in response to the complaint.

6 Health and Safety Procedures

6.1 Introduction

The person(s) responsible for undertaking the ground disturbance activity (generally a Contractor and their Subcontractor, if applicable) shall implement a risk assessment in compliance with the Health and Safety at Work Act (2015) and other applicable legislation, regulations, codes and guidelines. This is likely to comprise a Job Safety Environmental Analysis (JSEA) or similar document. The JSEA shall also cover measures related to the presence of potentially contaminated material.

The protocols within this GCSMP are not intended to relieve the PCBU[16] of either their responsibility for the health and safety of their workers, contractors and the public, or their responsibility for protection of the environment.

The purpose of these contaminated land-related health and safety procedures are to:

- Provide and maintain a safe working environment for workers dealing with fill and/or if contaminated soils are exposed;
- Document safety facilities and procedures to prevent exposure to contaminated soil by workers and the general public;
- Identify and ensure awareness of potential contaminated land-related hazards; and
- Describe emergency procedures.

The contaminated land-related health and safety procedures shall be implemented for the full duration of the groundworks.

The Contractor shall include hazard identification signage to warn workers that contaminants are potentially present.

The Contractor is responsible for the implementation of these health and safety procedures.

6.2 Identification of hazards and management

The following potential contaminated land-related hazards may be encountered:

- Inhalation of contaminated dust and/or vapours during ground breaking activities;
- Dermal contact with contaminated soil or water; and
- Ingestion of contaminated soil or water.

Unspecified further hazards may occur during the course of the works.

The contractor is responsible for reviewing any new work element and assessing whether there are any new associated hazards, and whether these can be eliminated, isolated or minimised. The Contractor shall advise the Project Manager/Kāinga Ora and seek review by the Contaminated Land Specialist if necessary. The Contractor shall then instruct all staff on the health and safety procedures associated with the new hazard.

The hazards identified above shall be managed through the wearing of appropriate PPE and minimisation procedures set out in Section 6.4. The primary hazard management method is minimising exposure to contaminated soils during disturbance and/or removal. Maintenance of groundworks controls (Section 5) is a key component of contaminated soil hazard management.

[16] Person conducting a business or undertaking.

6.3 General safety requirements and training

All relevant staff shall be required to undergo a contaminated soil safety induction before commencing work. The purpose of the safety induction is to make sure the worker is aware of the hazards related to the contaminated soil, what to look for when carrying out soil disturbance works, safe working procedures, safety equipment and requirements, and the action plan in case of an emergency.

The EHSO is responsible for ensuring the contaminated land-related health and safety procedures are adhered to, alongside of those required under the Contractor's Health and Safety Plans and JSEA documents.

The EHSO shall ensure that all relevant personnel are familiar with the application and use of the PPE and procedures specified in this GCSMP before commencement of site work.

The following general safety procedures shall be followed by all staff entering and/or working on the site:

- Any incidents shall be reported to the EHSO who will document the incident and advise the Project Manager/Kāinga Ora immediately; and
- Site workers shall avoid unnecessary contact with contaminated materials (soils and/or waters) or suspect contaminated materials.

6.4 Hazard minimisation

6.4.1 Inhalation of dust

Dust controls shall be in place throughout the groundworks regardless of the presence, or not, of contaminated soil. Dust shall be managed according to procedures set out in Section 5.4.

6.4.2 Dermal contact and ingestion

Contact by construction workers is expected to be minimal as it is expected that the groundworks are to be undertaken by mechanical methods. However, as a precautionary measure, any worker who is required to manually handle soil shall be required to wear disposable gloves. Furthermore, no eating, drinking or smoking shall occur in the works area. Hands shall be washed before eating, drinking, smoking etc.

7 Works Verification Procedures

Works completion reporting and verification is the process of confirming the objectives of the works have been achieved, confirming works were undertaken according to agreed procedures, and reporting on any incidents.

Verification observations shall be conducted by the Contaminated Land Specialist at regular intervals during redevelopment earthworks. A works completion report shall be prepared for each site by the Contaminated Land Specialist on completion of the earthworks at every redevelopment site and upon receipt of all necessary documentation from the Contractor.

7.1 Information required from the Contractor

Information is required from the Contractor for inclusion in a works completion report, including:

- Copies of documentation confirming the source and quality of materials imported to site;
- Copies of weighbridge summaries from receiving facilities of materials disposed offsite and acceptance details for any licensed disposal facilities;
- Photographic records and drawings recording the extent of capping works (if any contaminated material is retained on site);
- Records of visits by Council and/or WorkSafe New Zealand representatives;
- Details of unexpected contamination encounters;
- Details of any complaints; and
- Details of any health and safety related incidents related to the contamination and how they were resolved.

The Contractor shall provide the required information within one month of completion of the works to which the information relates, at each completed site.

7.2 Reporting

A works completion report shall be prepared on completion of the earthworks at each redevelopment site by the Contaminated Land Specialist including:

- Confirmation that ground disturbance works were completed according to this GCSMP and any variations (if applicable) during the works;
- Volumes of materials removed from the site, associated analytical laboratory test results (if any), disposal destination of surplus soils and waste disposal acceptance receipts;
- Location of any contaminated materials materials remaining onsite and details of the capping to contain them; and
- Confirmation that there were no environmental incidents during the works. If there was an environmental incident then the letter shall detail the nature of the incident and the measures taken to mitigate effects.

The works completion reports shall be provided to DCC and/or ORC within three months of completion of the ground disturbance works.

7.3 Long term site management plan (LTSMP)

If soils containing contaminant concentrations above high-density residential land use criteria (see Section 5.9.4) remain on site after redevelopment (e.g. encapsulation under paving areas), a long term site management plan (LTSMP) shall be prepared. The LTSMP, prepared by the Contaminated Land Specialist, will be for the use of future site owners and users, including and not limited to contractors undertaking future ground disturbance works (e.g. repair to buried services). The LTSMP shall include summary information on the ground conditions at the site, extent and type of soil contamination and the likely controls and procedures to be employed if disturbing the remaining fill/soil below lining/capping materials. These will include the future offsite disposal of any materials and provision of appropriate PPE to comply with the Asbestos Regulations (operative at the time of the plan's preparation).

The LTSMP (if required) shall be provided to DCC and/or ORC before occupation of any of the units on the site. The content of the report shall comply with the MfE CLMG #1 and Asbestos in Soil Guidelines

www.tonkintaylor.co.nz