

**REPORT PREPARED FOR:
Fulton Hogan Land Development Ltd**

**PRELIMINARY SITE INVESTIGATION
TE KOROWAI O MARAEARIKI
WAINUI**

**Prepared by:
Groundwater and Environmental Services
PO Box 190
Cambridge
7 August 2026**

EXECUTIVE SUMMARY

This investigation was carried out on behalf of FHLD to determine whether any potentially hazardous activities had occurred on, or around, Te Korowai o Maraeariki that could have resulted in contamination of the ground within the site.

A previous PSI that included the site and identified potential contamination issues, including:

- Use/disposal of asbestos-containing materials in and around buildings.
- Fill or rubbish areas.
- Use of lead-based paints on current or former buildings.

A review of aerial photographs identified specific areas requiring further investigation, which were targeted in the walkover inspection. Potential contamination issues that required further investigation were identified at 231 Upper Orewa Road, Allot 210 SO 836, and 173 Upper Orewa Road as follows:

231 Upper Orewa Road

- Likely asbestos-cement sheet pieces in track surface above stream in south of site.
- Buried and stockpiled demolition material and likely asbestos-cement sheet pieces above pond in south of site.

Allot 210 SO 836

- Asbestos-cement pipe stockpile near former dwelling location
- Demolition material, asbestos-cement pipe sections, and household rubbish stockpiles around former dwelling location.
- Potential for soil contamination due to past use of lead paint on buildings.

173 Upper Orewa Road

- Asbestos cement sheet and pipe fragments on the track on the west and east approaches to the stream crossing in the south-west corner of the property.
- Potential for soil contamination due to past use of lead paint on buildings.

There were no visible issues identified at Allot 549 SO 41565, Lot 6 DP 198205, or Lot 7 DP 198205s. There were no issues identified in surrounding properties area that would be likely to have resulted in contamination of the ground within the site.

Actual or possible HAIL activities identified across the site included:

- Asbestos products manufacture or disposal (ACM in tracks and demolition material).
- Landfill sites (demolition material burial).

Groundwater and Environmental Services

- Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment (lead paint use on former buildings).

The preliminary conceptual site model identified that source, pathway, receptor linkages were potentially complete, and that assessment of the presence of contamination within the limited areas of identified HAIL activities was required.

No soil sampling has been undertaken within Te Korowai o Maraeariki.

The presence of asbestos-containing material in soil in isolated areas at Allot 210 SO 836, 173 Upper Orewa Road, and 231 Upper Orewa Road presents a potential risk to human health if the material is disturbed.

This report makes the following recommendations:

1. Prepare a soil sampling and analysis plan to evaluate the identified actual and potential issues.
2. Prepare a detailed site investigation (DSI) report detailing the results of the sampling and analysis.
3. Prepare a site management and remedial action plan (SMP/RAP) plan.
4. Obtain appropriate consents the NES and Auckland Unitary Plan as required to allow for management and remediation of contamination.
5. Remediate asbestos-containing materials and contamination at levels above the NES recreational or outdoor worker protection guideline levels, and/or the permitted activity criteria for environmental protection.
6. Manage contamination at levels below the NES recreational or outdoor worker protection guideline levels, and/or the permitted activity criteria for environmental protection. Contaminated material left on site will require appropriate long-term management and will be recorded on affected property titles.

As with any assessment of this nature, there is always the possibility that additional items not visible during the investigation may be revealed during subsequent investigations or during redevelopment of the site. Any such items should be evaluated by a suitably qualified environmental consultant in accordance with the requirements of Auckland Council.

TABLE OF CONTENTS

1	Introduction	1
1.1	Purpose and Scope of this Report	1
1.2	Site Description	1
1.3	Description of the Proposal	5
1.4	Reason for Investigation	5
1.5	Background	6
1.6	Geology	6
1.7	Hydrology & Hydrogeology.....	6
2	Site History.....	7
2.1	Previous Environmental Reports	7
2.1.1	231 Upper Orewa Road	7
2.1.2	Allot 210 SO 836, Upper Orewa Road.....	8
2.1.3	Allot 549 SO 41565, Upper Orewa Road.....	8
2.1.4	173 Upper Orewa Road	8
2.1.5	Lot 6 DP198205 Gervin Road	8
2.1.6	Lot 7 DP198205 Gervin Road	9
2.1.7	Summary of PSI Findings.....	9
2.2	Dangerous Goods Licences	9
2.3	Additional Review of Aerial Photographs.....	9
2.4	Information from Property Owners.....	10
3	Site Walkover Inspection Results.....	11
3.1	Nature and Extent of Anticipated Contamination.....	11
3.2	Walkover Observations.....	11
4	HAIL Activities	13
4.1	Preliminary Conceptual Site Model	14
4.2	Potential Contamination Areas.....	14
5	Sampling.....	16
5.1	Discussion of Analytical Results	16
6	Summary	18
6.1	Recommendations	19
6.2	Consent Requirements	19
6.3	Conclusions	20
7	PSI Certifying Statement	21

LIST OF FIGURES

Figure 1: Site Location & Layout

Figure 2: Walkover Inspection Locations 173 & 231 Upper Orewa Road, Allot 210 SO 836, and Allot 549 SO 41565

Figure 3: Walkover Inspection Locations Lots 6-7 DP 198205

Figure 4: Potential Contamination Areas

LIST OF TABLES

Table 1	Property Information – Milldale Te Korowai o Maraeariki.....	4
Table 2	Previous PSI Key Results.....	9
Table 3	Items Identified in Aerial Photographs	10
Table 4	Items Identified by Inspection	12

Groundwater and Environmental Services

Table 5 Potential HAIL Activities	13
Table 6 Preliminary Conceptual Site Model	14
Table 7 Actual or Potential Contamination Areas	15
Table 8 Analytical Results - Asbestos in Building Material Results.....	17

LIST OF APPENDICES

Appendix A	Aerial Photo Review & Walkover Inspection Results
Appendix B	Laboratory Analytical Reports
Appendix C	Statement of Qualification

LIMITATIONS

No liability is assumed for misrepresentation of data or for items not visible, accessible or present at the time of the site investigations conducted by Groundwater and Environmental Services that may affect the validity and/or accuracy of the interpretation of environmental data.

Interpretations and conclusions presented herein are based on data presented in this report, information from others and experience on similar projects. The available data does not preclude the presence of materials at other locations at the site, which presently or in the future may be considered hazardous. Services in respect of this investigation have been performed in accordance with professional standards for investigations of contamination assessment. No guarantees are either expressed or implied.

This document and the information contained herein have been prepared for the use of Fulton Hogan Land Development Ltd in relation to proposed Milldale Te Korowai o Maraeariki project and should not be used or relied upon by any other person or entity for any other project, with the exception that the relevant territorial authority can rely on it for the purpose of processing those consent applications for which this report has been prepared. Any reliance on this report by any other parties shall be at such party's sole risk.

This document has been prepared by a suitably qualified and experienced practitioner as required by the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (2011).

Report Version: **Revision A**

Report prepared on: 7 August 2026

Report prepared by:



Andrew MacDonald, MSc(Hons), Principal

Statement of Qualifications and Experience

My full name is **Andrew James MacDonald**

I am principal at **Groundwater and Environmental Services (GES)**. I hold the qualifications of Bachelor of Science, and Master of Science (Honours) from Auckland University and have 35 years' professional experience in the field of ground and groundwater contamination assessment, management and remediation. My experience includes:

- Preliminary and detailed environmental site investigations at a wide range of potentially contaminated sites.
- Remedial action and site management plans for contaminated sites.
- Organisation and supervision of remediation at contaminated sites.
- Validation of remediation at contaminated sites and preparation of site validation reports.
- Long-term contaminated site monitoring and management plans.
- Resource consents for site remediation and ongoing discharges of contaminants to ground at contaminated sites.
- Provision of expert evidence related to contamination issues.
- Peer review of contaminated site investigations.

I have worked extensively on earlier stages of the Milldale development as well as the nearby Millwater development. I have provided consulting services to private, commercial/industrial, local government, and central government clients.

I have been engaged by Fulton Hogan Land Development Limited (FHLD) (the Applicant) to undertake an assessment of land contamination issues associated with the Milldale Te Korowai o Maraeariki project and to prepare this report in support of the substantive application under the Fast-track Approvals Act 2024 (FTAA).

While this is not an Environment Court proceeding, I confirm that I have prepared this assessment in accordance with the applicable professional and ethical obligations of my profession and that the opinions expressed are within my area of expertise.

1 Introduction

This report has been prepared in support of the substantive application for the Milldale Stages 14-17 Project under the Fast-track Approvals Act 2024 (FTAA).

The Project relates to approximately 231ha of land centred around Wainui Road in Wainui, Auckland. The proposal provides for a comprehensively planned urban development including residential neighbourhoods, a supporting commercial node, transport and servicing infrastructure, open space, wetland and ecological restoration, and associated enabling works.

The application seeks approvals necessary to facilitate the staged development of the Project, including a suite of resource consents required under the FTAA framework.

The substantive application is supported by a comprehensive set of technical assessments and plans addressing the environmental, servicing and infrastructure matters associated with the proposal. This report should be read alongside the Planning Report and the appended technical reports and drawings lodged in support of the substantive application.

1.1 Purpose and Scope of this Report

This report addresses matters relating to potential land contamination associated with the Project proposal. It seeks to assess the nature and extent of contamination resulting from historic or current land use activities on, and around, the properties located north of Orewa Awa collectively known as Te Korowai o Maraeariki. The future urban zoned properties south of Orewa Awa are considered in a separate detailed site investigation report (DSI).

Significant activities undertaken for this report included:

- Review of relevant previous environmental reports;
- Review of aerial photographs of the investigation area and surrounding land;
- Walkover inspection of the site to check for indicators of potential contamination; and
- Preparation of this report in accordance with the requirements of the MFE guidelines for reporting on contaminated sites, the NES and the relevant sections of the AUP.

This report has been prepared having regard to the relevant statutory and technical framework applicable to the proposal, including the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES), and the contaminated land provisions of the Auckland Unitary Plan (AUP).

1.2 Site Description

The site comprises approximately 231ha of land located to the north of the existing Milldale development. The site comprises two distinct areas:

Groundwater and Environmental Services

- Residential subdivision area to the south of the Ōrewa river (shown in red in Figure 1); and
- Te Korowai o Maraeariki to the north of the Ōrewa river (shown in orange in Figure 1).

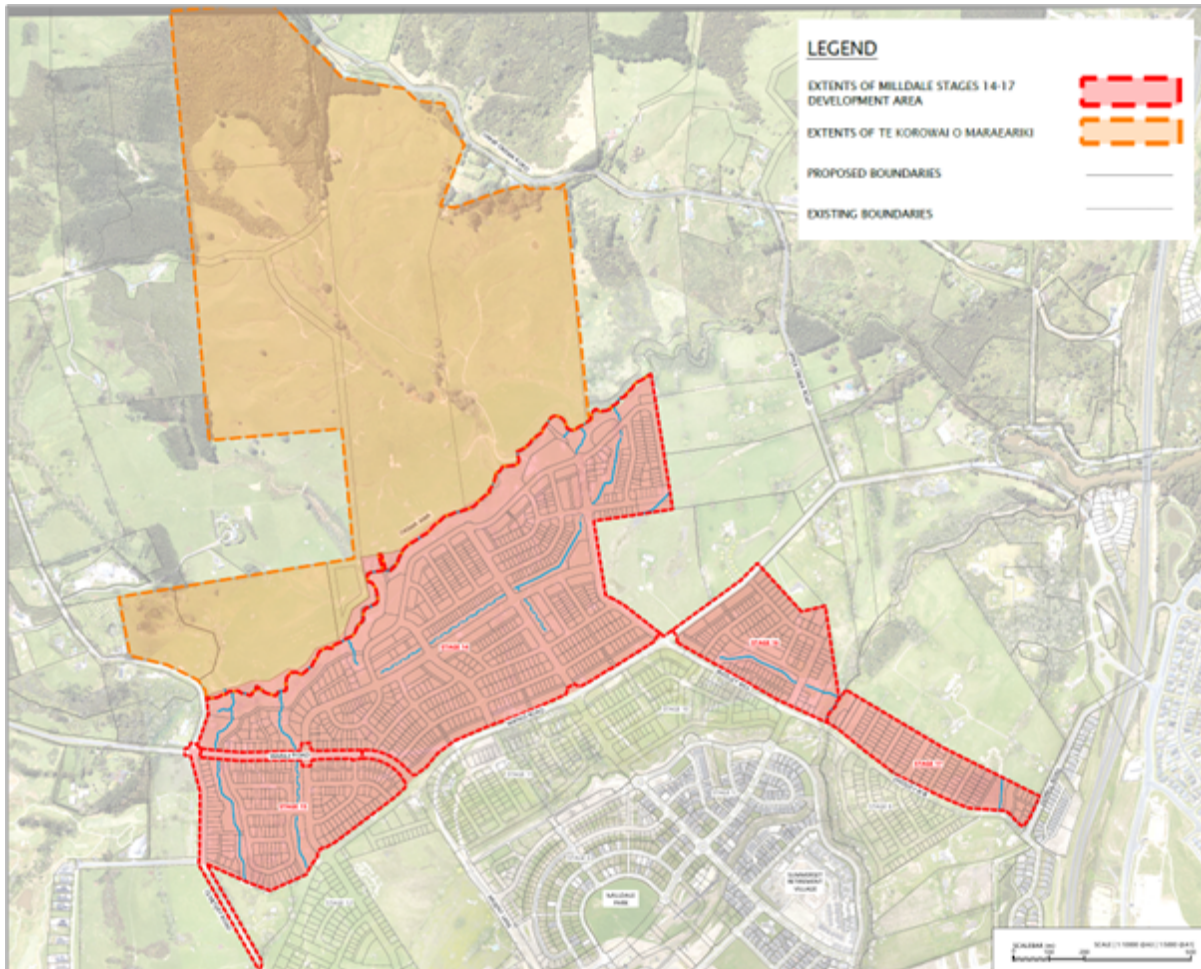


Figure 1: Site Location Plan

The proposed residential subdivision area is located within the Future Urban Zone under the Auckland Unitary Plan (AUP). This part of the site is characterised by gently undulating to rolling pasture, with several streams, natural wetlands, constructed ponds and artificial drains traversing the area.

Te Korowai o Maraeariki is located to the north of the Ōrewa river and is zoned Rural Production under the AUP. This area is characterised by more undulating to steep terrain, with a series of ridgelines separated by incised gullies extending from the Ōrewa River. The land is predominantly managed pasture interspersed with streams and natural wetlands, together with pine plantations, exotic vegetation and gorse scrub. Relatively large areas of indigenous vegetation are also present, including a Significant Ecological Area – Terrestrial Overlay in the north-western portion of the site.

Groundwater and Environmental Services

There is existing water, stormwater and wastewater infrastructure surrounding the site as a result of the extensive development within previous Milldale Stages. However, the site itself is not currently serviced in terms of supply and infrastructure. The surrounding roading network has been progressively developed in accordance with the staging of the Milldale development.

Further detail regarding the site, surrounding environment and planning framework is provided within the Planning Report and technical reports appended to the application.

Property information for Te Korowai o Maraeariki (the subject properties covered by this investigation) is summarised in **Table 1**.

Groundwater and Environmental Services

Table 1 Property Information – Milldale Te Korowai o Maraeariki

Property Reference Number	Address	Legal description	Current Zoning	Site Area Hectares
1	231 Upper Orewa Road	Pt Allot 74 Psh Of Waiwera SO 1693B, Pt Allot 182 Psh Of Waiwera SO 836	Rural Production	56.92
2	Allot 210 SO 836, Upper Orewa Road	Allot 210 Psh Of Waiwera SO 836, Allot 216 Psh Of Waiwera SO 836	Rural Production	24.28
3	Allot 549 SO 41565, Upper Orewa Road	Allot 549 Psh Of Waiwera SO 41565	Rural Production	4.272
4	173 Upper Orewa Road	Pt Allot 74 Psh Of Waiwera SO 1693B	Rural Production	28.5857
5	Lot 6 DP 198205, Gervin Road	Lot 6 DP 198205	Rural Production	4.364
6	Lot 7 DP 198205, Gervin Road	Lot 7 DP 198205, Lot 14 DP 198205	Rural Production	11.5205

1.3 Description of the Proposal

The Milldale Stages 14-17 project seeks approvals for an urban development on the site. The proposal provides for up to 1,425 dwellings across a range of housing typologies and densities. In addition, the proposal includes provision for a small commercial area, transport infrastructure, servicing and stormwater infrastructure, subdivision, earthworks, stream works, and neighbourhood parks.

To the north of the Ōrewa river within Te Korowai o Maraeariki, the project includes private water and wastewater infrastructure if required, ecological restoration, as well as walking and cycling trails to enhance recreation and amenity.

Development of the Project will require a suite of approvals under the FTAA, including resource consents associated with subdivision, land use activities, bulk earthworks, infrastructure works, stream works, water take, diversion and discharge; along with NES for contamination and freshwater.

The aspects of the proposal relevant to this report include:

1. Change of land use. The NES requires assessment of the nature and extent of contamination on site that could present a potential risk to future site users.
2. Bulk earthworks, infrastructure works and stream works. The NES requires assessment of nature and extent of contamination on site that could present a potential risk to site workers or of discharges to the environment.

A site management and remedial action plan will be developed to provide procedures to deal with known contamination as part of site works. The plan will include procedures for dealing with unexpected contamination that could be encountered during those works.

A long-term management plan will be developed following the completion of works to provide measures for dealing with any remaining contamination on site.

A full description of the proposal is provided in the Planning Report and technical reports and drawings appended to the substantive application and should be read in conjunction with this report.

1.4 Reason for Investigation

This investigation has been carried out on behalf of FHLD to determine whether any potentially hazardous activities had been carried out on, or around, the site that could have resulted in contamination of the ground within the site.

1.5 Background

The site is located within land that has historically been predominantly used for rural grazing as part of farms and lifestyle blocks. Much of the site has historically been either in pasture or covered in vegetation.

Significant earthworks have already been carried out to the south of the site as part of the Milldale development.

There do not appear to be any significant potentially contaminating activities currently being carried out across the site.

1.6 Geology

The geology of the site is dominated by the Mangakahia Complex¹, described as closely fractured to sheared, light or dark coloured, siliceous and locally calcareous mudstone with micaceous sandstone, siltstone, green and brown shale, and some muddy limestone.

The Mangakahia Complex commonly occurs as a melange of mixed lithologies, with a sheared mudstone matrix.

Low-lying areas around watercourses at the Site may include Tauranga Group Alluvium/Colluvium (described as Pleistocene-aged clays and silts along with swamp and colluvium deposits).

1.7 Hydrology & Hydrogeology

The most significant potentially sensitive receiving environments for any contamination within the site would be surface water and underlying groundwater.

Orewa Awa runs from southwest to northeast along the southern boundary of the six rural production zoned properties. The Awa separates the rural production zone properties from the future urban zoned properties to the south of the river. Surface water from the properties north of Wainui Road drains to Orewa Awa.

Orewa Awa discharges to Whangaparaoa Bay through a tidal estuary located immediately south of Orewa.

Groundwater beneath the site is similarly expected to eventually discharge to Orewa Awa.

Groundwater beneath the site is likely to be perched above Northland Allochthon rock.

¹ Edbrooke, S.W. (2001). Geology of the Auckland Area. Institute of Geological and Nuclear Sciences 1:250,000 Geological Map 3.

2 Site History

The available site history has been gathered from several sources and is set out in the following sections.

2.1 Previous Environmental Reports

A preliminary site investigation (PSI) for the Proposed Wainui East Future Urban Zone Structure Plan, Milldale North Plan Change, and Wainui Plan Change Areas included the properties making up Te Korowai o Maraeariki. The PSI was carried out by Environmental Management Solutions (EMS)². Potential contamination issues were identified, mainly relating to:

- Use/disposal of asbestos-containing materials in and around buildings.
- Possible fill or rubbish areas.
- Use of lead-based paints on current or former buildings.

Allot 210 SO 836, Allot 549 SO 41565, and 173 Upper Orewa Road were unable to be inspected during the previous PSI due to access issues. 231 Upper Orewa Road was only viewed from outside the boundary. It was noted that walkover inspections would be required for those properties to get a complete picture of potential contamination issues.

Walkover inspections were carried out for Lot 6 DP198205 and Lot 7 DP 198205 as part of the previous PSI.

Information gathered for each of the properties within Te Korowai o Maraeariki is outlined in the following sections.

2.1.1 231 Upper Orewa Road

The site was described as predominantly steep to undulating and in vacant pastoral use. A stand of pines and bush was located on the north-eastern portion of the property. A dwelling constructed in 1981 was located centrally in the northern portion of the site. Several tributaries of Orewa Awa traversed the property, generally running north-west to south-east. No items of concern were noted during the inspection from the boundary.

The council property file contained a 1981 building consent for a 131 m² dwelling, and a 2000 subdivision and title amalgamation consent. No other records of note were held by Council.

Auckland Council did not identify any HAIL activities on this site.

The PSI did not identify any HAIL activities on the land. It recommended that prior to the demolition of any buildings on the site constructed prior to 1984, an asbestos survey be carried out by a suitably qualified professional.

² Environmental Management Solutions (October 2023). Preliminary Site Investigation, Proposed Wainui East Future Urban Zone Structure Plan, Milldale North Plan Change and Wainui Plan Change Areas. Report prepared for Fulton Hogan Land Development.

Groundwater and Environmental Services

2.1.2 Allot 210 SO 836, Upper Orewa Road

The site was described from aerial photographs as vacant pastoral land and was fenced into paddocks with water troughs for stock. No inspection was carried out.

The council property file contained a cancelled 1985 building consent for an 87 m² dwelling. No other records of note were held by Council.

Auckland Council did not identify any HAIL activities on this site.

The PSI did not identify any HAIL activities on the land.

2.1.3 Allot 549 SO 41565, Upper Orewa Road

The site was described from aerial photographs as vacant pastoral land with two gullies traversing it. A small shed was located immediately to the north of the property. No inspection was carried out.

There was no information of note in the council property file.

Auckland Council did not identify any HAIL activities on this site.

The PSI did not identify any HAIL activities on the land.

2.1.4 173 Upper Orewa Road

The site was described as having a dwelling and shed on the north-western boundary amongst a row of established trees. The northern side of the valley was steep and there was a farm track running from north to south. It is considered that further investigation would be required if development were to occur.

The council property file contained a 1974 building consent for a single storey dwelling, and a 2000 resource consent application for a cleanfill that was declined. No other records of note were held by Council.

Auckland Council did not identify any HAIL activities on this site.

The PSI identified unverified HAIL category I in relation to potential leaching of lead from leaded paint given the age of the buildings on site. Storage of materials of unknown type and origin also noted surrounding buildings. It recommended that a leaded paint survey and an asbestos survey be carried out prior to demolition and soil sampling be carried out if lead or asbestos were detected. It also noted that the storage of materials may require consideration.

2.1.5 Lot 6 DP198205 Gervin Road

The site was described vacant and pastoral, with established trees scattered across this site. Nil of concern noted. Southern boundary was on Gervin Road.

The council property file contained a 1994 subdivision consent to create 7 lots (including Lot 6 from 3 larger lots. No other records of note were held by Council.

Groundwater and Environmental Services

Auckland Council did not identify any HAIL activities on this site.

The PSI did not identify any HAIL activities on the land.

2.1.6 Lot 7 DP198205 Gervin Road

The site was described undulating, vacant and pastoral.

The council property file contained a 1994 subdivision consent to create 7 lots (including Lot & from 3 larger lots. No other records of note were held by Council.

Auckland Council did not identify any HAIL activities on this site.

The PSI did not identify any HAIL activities on the land.

2.1.7 Summary of PSI Findings

A table summarising the result of the PSI (adapted from the EMS report) is provided below.

Table 2 Previous PSI Key Results

Property Reference number	Address	Land Use	Identified Unverified HAIL Activities/ Potential contaminants of concern	Future actions
1	231 Upper Orewa Road	Rural Production	No HAIL identified	Asbestos survey required prior to demolition
2	Allot 210 SO 836, Upper Orewa Road	Rural Production	No HAIL identified	
3	Allot 549 SO 41565, Upper Orewa Road	Rural Production	No HAIL identified	
4	173 Upper Orewa Road	Rural Production	Unverified HAIL I Asbestos & Lead	Lead & asbestos surveys prior to demolition DSI may be required
5	Lot 6 DP198205 Gervin Road	Rural Production	No HAIL identified	
6	Lot 7 DP198205 Gervin Road	Rural Production	No HAIL identified	

2.2 Dangerous Goods Licences

No known dangerous goods licences are known to have been held for properties within the site.

2.3 Additional Review of Aerial Photographs

A detailed review of aerial photographs was carried out as part of this investigation to augment the data supplied by the earlier PSI. The most significant potential contamination issues inferred from the aerial photographs included:

Groundwater and Environmental Services

- Use/disposal of asbestos-containing materials or lead-based paints in, and around, current or former site buildings.
- Possible fill or rubbish in areas of disturbed ground.

Areas that were thought to be likely to require additional investigation are listed in the table below for each of the properties making up Te Korowai o Maraeariki . Specific points of interest identified in the aerial photographs are listed in more detail in the table in Appendix A, and the proposed investigation areas are shown on Figures 2 to 5.

Table 3 Items Identified in Aerial Photographs

Property	Observation (date observed)
231 Upper Orewa Road	Dwelling in west (1980s) Tracks, stream crossings and areas of disturbed ground (1970s-2006)
Allot 210 SO 836 & Allot 549 SO 41565	Dwelling in northeast (1980s) Tracks and stream crossings (1940s to 1980s)
173 Upper Orewa Road	Dwelling in NW corner (1950s) Tracks and stream crossings (1940s to 1970s)
Lot 6 DP 198205	Stream crossings (1970s)
Lot 7 DP 198205	Stream crossings (1940s-1960s) Pond (1970s)

2.4 Information from Property Owners

The current property owner for the site (Fulton Hogan Land Development Ltd) is not aware of any actual or potential contamination issues within the investigation area other than those flagged by the previous investigation

The farm manager for the bulk of the site was interviewed regarding potential issues. A summary of the key results of the interview is provided below:

- Demolition of dwellings/structures on 173 Upper Orewa Road, 231 Upper Orewa Road, and Allot 210 SO 836 was carried out by the farm manager.
- The asbestos-cement pipes stacked near the former dwelling location at Allot 210 SO 836 had been brought to site and left there by a former tenant. They did not originate on site and had not been buried on site.
- As far as the farm manager was aware, no potentially hazardous materials had been dumped on site over the time that he had been involved.

Previous owners of the properties were unable to be interviewed as part of this investigation.

3 Site Walkover Inspection Results

Walkover inspection of site was carried out on 15 and 16 February 2026. Observations from the walkover are discussed below.

3.1 *Nature and Extent of Anticipated Contamination*

At the time of the inspection, available information suggested that there were some potential sources of historic or recent contamination within site. The bulk of the potential contamination issues related general farming activities, and the former presence and demolition of site buildings. They included:

- Former dwelling and shed locations.
- Possible farm rubbish or demolition material dumping areas.
- Tracks and stream crossings.

3.2 *Walkover Observations*

Potential contamination areas identified during the walkover inspection are outlined in **Table 4**.

A more detailed record is provided in Appendix A, which includes selected photographs taken during the inspections. Numbered locations for the walkover inspection observations are shown on Figures 2 and 3.

Potential contamination issues that required further investigation were identified at 231 Upper Orewa Road, Allot 210 SO 836, and 173 Upper Orewa Road.

There were no visible issues identified at Allot 549 SO 41565, Lot 6 DP 198205, or Lot 7 DP 198205.

There were no issues identified in surrounding properties area that would be likely to have resulted in contamination of the ground within the site.

Potential contamination issues identified by the aerial photograph review and walkover inspection are likely to require sampling and analysis to determine the nature and extent of any contamination.

Table 4 Items Identified by Inspection

Property	Observation (date observed)
231 Upper Orewa Road	A water tank and concrete slab remained at the former dwelling location. Asbestos-cement sheet pieces in track surface above stream in south of site. Demolition material above pond in south of site – possible asbestos-containing materials.
Allot 210 SO 836	Soil, demolition material, Asbestos-cement pipe sections, and household rubbish stockpiles around former dwelling location (no asbestos found in the stockpiles) Tracks and stream crossings (1940s to 1980s)
Allot 549 SO 41565	No visible indications of potential contamination
173 Upper Orewa Road	Remaining garage slab and footing plus concrete demolition material in former dwelling area. Isolated and dispersed asbestos cement sheet and pipe fragments on the track on the west and east approaches to the stream crossing in the west of the property.
Lot 6 DP 198205	No visible indications of potential contamination
Lot 7 DP 198205	No visible indications of potential contamination

4 HAIL Activities

The Ministry for the Environment's Hazardous Activities and Industries List (HAIL) specifies activities/industries that have the potential to result in contamination. Where current or former HAIL activities are identified on a property, intrusive investigation is generally required prior to a change in land use or redevelopment of those areas. Actual and potential HAIL activities for the site are evaluated in Table 5 using the information gathered for this investigation. The selection of potential HAIL activities was based on information gathered about the site and experience on sites with similar history.

Table 5 Potential HAIL Activities

HAIL ID	Description	Assessment
A.8	Livestock dip or spray race operations	Unlikely No evidence for the presence of livestock dip, spray race structures, or stock handling yards.
A.10	Persistent pesticide bulk storage or use	Unlikely No evidence of commercial-scale horticulture.
A.17	Storage tanks or drums for fuel, chemicals or liquid-based	Possible No visual evidence of significant fuel/chemical storage within, or around, the site. Storage of fuel for farm use is however possible.
E.1	Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition	Confirmed Actual and potential asbestos-containing materials at specific locations on 173 & 231 Upper Orewa Road & Allot 210 SO 836. Former use of asbestos-containing materials possible at other locations on those properties.
G.3	Landfill sites	Confirmed Demolition material in bank above pond in south of 231 Upper Orewa Road.
G.5	Waste disposal to land (excluding where biosolids have been used as soil conditioners)	Unlikely No indications for any waste disposal to land within the site other than noted in G.3.
H	Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment	Highly Unlikely No potentially hazardous substances that would be likely to affect the site are likely to be present on other adjacent land.
I	Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment	Possible Potential for soil contamination due to past use of lead paint on structures. No evidence to suggest that there would have been any other significant releases of hazardous substances to land within the site.

4.1 Preliminary Conceptual Site Model

The information gathered for this PSI has been used to prepare a preliminary conceptual site model (CSM) for the investigation area to aid in determining whether intrusive investigation is required. The CSM provided in Table 6 evaluates contaminant source, pathway, and receptor linkages for potential items of concern during redevelopment or under future residential, or recreational land use.

Table 6 Preliminary Conceptual Site Model

Potential Source	Potential Pathways	Potential Receptors	Assessment
Contaminated Soil due to HAIL Activities	Dermal contact with contaminated soils	Human Health - residential and outdoor worker	Potentially complete: HAIL Activities identified within limited parts of 173 & 231 Upper Orewa Road, & Allot 210 SO 836
	Ingestion of contaminated soils	Human Health - residential and outdoor worker	
	Inhalation of vapours	Human Health - residential and outdoor worker	
	Surface water run-off	Ecological receptors – Waterloo Stream	
	Migration of groundwater	Ecological receptors – Waterloo Stream	

The preliminary conceptual site model identifies that the source, pathway, receptor linkages as potentially complete as HAIL activities were identified within specific parts of 173 Upper Orewa Road, 231 Upper Orewa Road, and Allot 210 SO 836.

Assessment of the presence of contamination within the identified areas of the HAIL activities is required prior to any land disturbance activities in these areas.

4.2 Potential Contamination Areas

This assessment has identified several areas of actual or potential contamination, comprising approximately 0.5 hectares out of the total site area of 129.9 hectares.

The contamination areas are summarised in the following table which includes descriptions of the actual/potential contamination and the contaminants of concern.

The locations and extents of the areas are indicated on Figure 4.

Table 7 Actual or Potential Contamination Areas

Location	Description (Location)	Contaminants of Concern
231 Upper Ōrewa Road	Asbestos-cement sheet pieces in track surface above stream in south of site (A)	Asbestos in soil
	Buried and stockpiled demolition material with likely asbestos-cement sheet pieces above pond in south of site (B)	Asbestos in soil Heavy metals
Allot 210 SO 836	Asbestos-cement pipe stockpile near former dwelling location (C)	Asbestos in soil
	Demolition material and household rubbish stockpiles around former dwelling location (D)	Heavy metals
	Potential for soil contamination due to past use of lead paint on dwelling (E)	Heavy metals
173 Upper Ōrewa Road	Asbestos cement sheet and pipe fragments in the track on the west and east approaches to the stream crossing in the south-west corner of the property (F)	Asbestos in soil
	Potential for soil contamination due to past use of lead paint on dwelling/garage (G)	Heavy metals

5 Sampling

No soil sampling has been undertaken on the properties making up the site.

During the walkover inspection, three samples of potential asbestos-containing fibrolite sheet fragments (samples MN26003, 004 & 005) were collected from stockpiles of demolition material and soil around the former dwelling location at Allot 210 SO 836. A fragment of likely asbestos-cement pipe (sample MN26006) was also collected from the pipe stockpile on Allot 210 SO 836.

The samples for asbestos analysis were picked up using clean gloved hands and placed into a labelled zip-lock bag. The zip-lock bag was placed inside another zip-lock bag in accordance with sample receipt requirements at Hill Laboratories.

The sample jars and zip-lock bags were supplied by Hill Laboratories.

Each sample was given a unique identification number as follows:

Site Identifier/Year Reference/Sample Number

The client identifier was “MN”, the year reference was “26”, and the sample number was a 3-digit number starting from 003.

The samples were placed into a chilly bin for delivery to Hill Laboratories under chain of custody documentation.

The samples were analysed for asbestos, and the results are presented in **Table 8**.

The sample descriptions are included in the walkover inspection notes and Appendix A to this report. The laboratory analytical report is attached in Appendix B.

5.1 Discussion of Analytical Results

The three samples of fibrolite sheet did not contain any detectable asbestos.

The pipe fragment samples contained three types of asbestos (amosite, chrysotile, and crocidolite). The pipes generally appeared to be in good condition, were not highly weathered, and showed no indications of having been previously buried. If the pipes are not disturbed, the risk of significant asbestos contamination of the underlying soil is relatively low.

Fibrolite sheet fragments noted elsewhere on site were considered highly likely to contain asbestos due to their appearance.

Table 8 Analytical Results - Asbestos in Building Material Results

Sample Name	Amosite	Chrysotile	Crocidolite	Organic Fibres	Synthetic Mineral Fibres	Unknown Asbestos	Sample Category	Asbestos Presence / Absence
MN26003	ND	ND	ND	Detected	ND	ND	Fibre Cement	Asbestos ND. Organic fibres detected.
MN26004	ND	ND	ND	Detected	ND	ND	Fibre Cement	Asbestos ND. Organic fibres detected.
MN26005	ND	ND	ND	Detected	ND	ND	Fibre Cement	Asbestos ND. Organic fibres detected.
MN26006	Detected	Detected	Detected	ND	ND	ND	Fibre Cement	Amosite (Brown Asbestos) detected. Chrysotile (White Asbestos) detected. Crocidolite (Blue Asbestos) detected.

Notes: ND denotes "Not Detected"

6 Summary

This investigation was carried out on behalf of FHLD to determine whether any potentially hazardous activities had occurred on, or around, the site that could have resulted in contamination of the ground within the site.

A 2023 PSI for the Proposed Wainui East Future Urban Zone Structure Plan, Milldale North Plan Change and Wainui Plan Change Areas included the site and identified potential contamination issues, including:

- Use/disposal of asbestos-containing materials in and around buildings.
- Fill or rubbish areas.
- Use of lead-based paints on current or former buildings.

A review of aerial photographs identified specific areas across the site that required further investigation and these were targeted in the walkover inspection. Potential contamination issues that required further investigation were identified at 231 Upper Orewa Road, Allot 210 SO 836, and 173 Upper Orewa Road as follows:

231 Upper Orewa Road

- Likely asbestos-cement sheet pieces in track surface above stream in south of site.
- Buried and stockpiled demolition material and likely asbestos-cement sheet pieces above pond in south of site.

Allot 210 SO 836

- Asbestos-cement pipe stockpile near former dwelling location
- Demolition material and household rubbish stockpiles around former dwelling location.
- Potential for soil contamination due to past use of lead paint on buildings.

173 Upper Orewa Road

- Asbestos cement sheet and pipe fragments on the track on the west and east approaches to the stream crossing in the south-west corner of the property.
- Potential for soil contamination due to past use of lead paint on buildings.

There were no visible issues identified at Allot 549 SO 41565, Lot 6 DP 198205, or Lot 7 DP 198205.

There were no issues identified in surrounding properties area that would be likely to have resulted in contamination of the ground within the site.

Actual or possible HAIL activities identified across the site included:

- Asbestos products manufacture or disposal (ACM in tracks and demolition material).
- Landfill sites (demolition material burial).

- Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment (lead paint use on former buildings).

A preliminary conceptual site model identified that source, pathway, receptor linkages were potentially complete, and that assessment of the presence of contamination within the limited areas of identified HAIL activities was required.

No soil sampling has been undertaken within Te Korowai o Maraeariki.

The presence of asbestos-containing material in soil in isolated areas at Allot 210 SO 836, 173 Upper Orewa Road, and 231 Upper Orewa Road presents a potential risk to human health if the material is disturbed. Remediation of asbestos contamination by excavation and off-site disposal is recommended prior to any earthworks in the identified areas, or prior to allowing access to the public.

6.1 Recommendations

Based on the assessment undertaken in this report, the following recommendations are made to avoid, remedy or mitigate potential adverse effects associated with the proposal and to support the appropriate implementation of the development:

1. Prepare a soil sampling and analysis plan to evaluate the nature and extent of contamination resulting from the actual and potential issues identified at 231 Upper Orewa Road, Allot 210 SO 836, and 173 Upper Orewa Road.
2. Prepare a detailed site investigation (DSI) report detailing the results of the sampling and analysis.
3. Prepare a site management and remedial action plan (SMP/RAP) plan that details the actions to be taken prior to or during future site works to avoid, remedy or mitigate any adverse effects on human health or the environment.
4. Obtain appropriate consents the NES and Auckland Unitary Plan as required to allow for management and remediation of contamination.
5. Remediate contamination at levels above the NES recreational or outdoor worker protection guideline levels, and/or the permitted activity criteria for environmental protection. Remediation of asbestos-containing materials is also recommended.
6. Manage contamination at levels below the NES recreational or outdoor worker protection guideline levels, and/or the permitted activity criteria for environmental protection. Contaminated material left on site will require appropriate long-term management and will be recorded on affected property titles.

6.2 Consent Requirements

The assessment undertaken for this report has determined that there is actual and potential contamination in limited parts of the site. Consents for the management or remediation of contamination at the site are therefore required under the National Environmental Standard

for Assessing and Managing Contaminants in Soil to Protect Human Health (NES), and the contaminated land provisions of the Auckland Unitary Plan (AUP).

In the absence of an intrusive investigation and sampling of potential contamination areas, the required consents include:

- Discretionary activity consent under regulation 11 of the NES
- Discretionary activity consent under the contaminated land provisions of the Auckland Unitary Plan (without a detailed site investigation, the site does not meet the controlled activity standards (particularly 30.6.2.1 (1)) and AUP activity table E30.4.1 indicates that the activity would therefore be discretionary).

6.3 Conclusions

The assessment undertaken in this report, has identified isolated areas of actual or potential contamination relating to use and disposal of asbestos-cement products, on-site burial of demolition material and household/farm rubbish, and the historical use of lead paint on site buildings. The potential area impacted by contamination is approximately 0.5 hectares of the total site area of 129.9 hectares. No soil sampling has been undertaken within Te Korowai o Maraeariki.

This report has provided recommendations for the further assessment and remediation/management of contamination to control potential risks to human health and the environment.

As with any assessment of this nature, there is always the possibility that additional items not visible during the investigation may be revealed during subsequent investigations or during redevelopment of the site. Any such items should be evaluated by a suitably qualified environmental consultant in accordance with the requirements of Auckland Council.

7 PSI Certifying Statement

I **Andrew James MacDonald** of Groundwater and Environmental Services certify that:

This Preliminary Site investigation report meets the requirements of the Resource Management (National Environmental Standard for assessing and managing contaminants in soil to protect human health) Regulations 2011 because it has been:

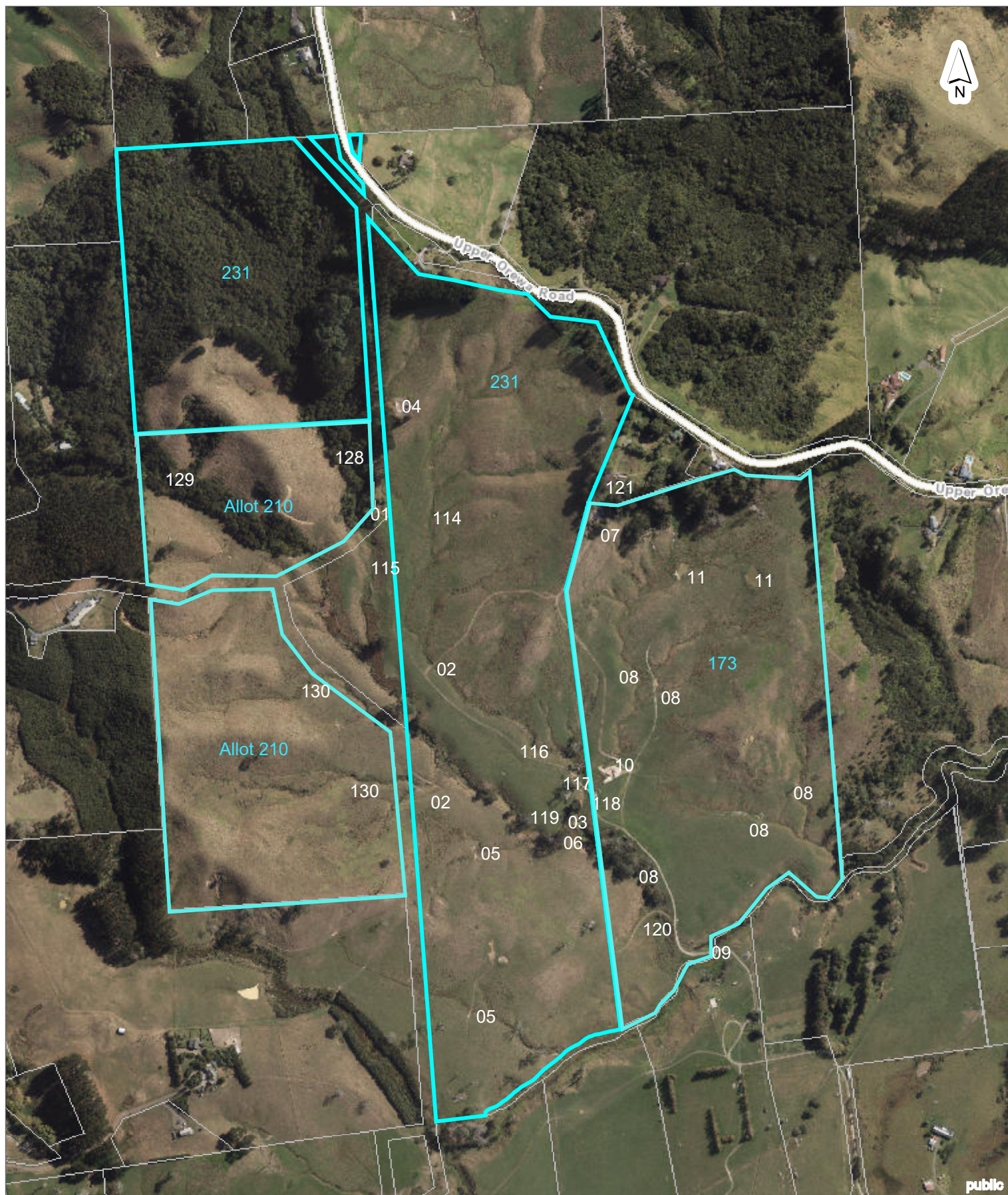
- Carried out by a suitably qualified and experienced practitioner;
- Reported on in accordance with the current edition of Contaminant Land Management Guidelines No 1 – Reporting on Contaminated Sites in New Zealand (June 2021); and
- Certified by a suitably qualified and experienced practitioner.

Evidence of the qualifications and experience of the suitably qualified and experienced practitioner who has carried out this investigation and has certified this report is appended to this report in Appendix G.

Signed and dated:



7 August 2026



DISCLAIMER:

This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: NZVD 2016.

Figure 2
Walkover Inspection Locations
173 & 231 Upper Orewa Road
Allot 210 SO 836 Upper Orewa

0 40 80 120
Meters

Scale @ A4
= 1:8,000

Date Printed:
14/02/2026



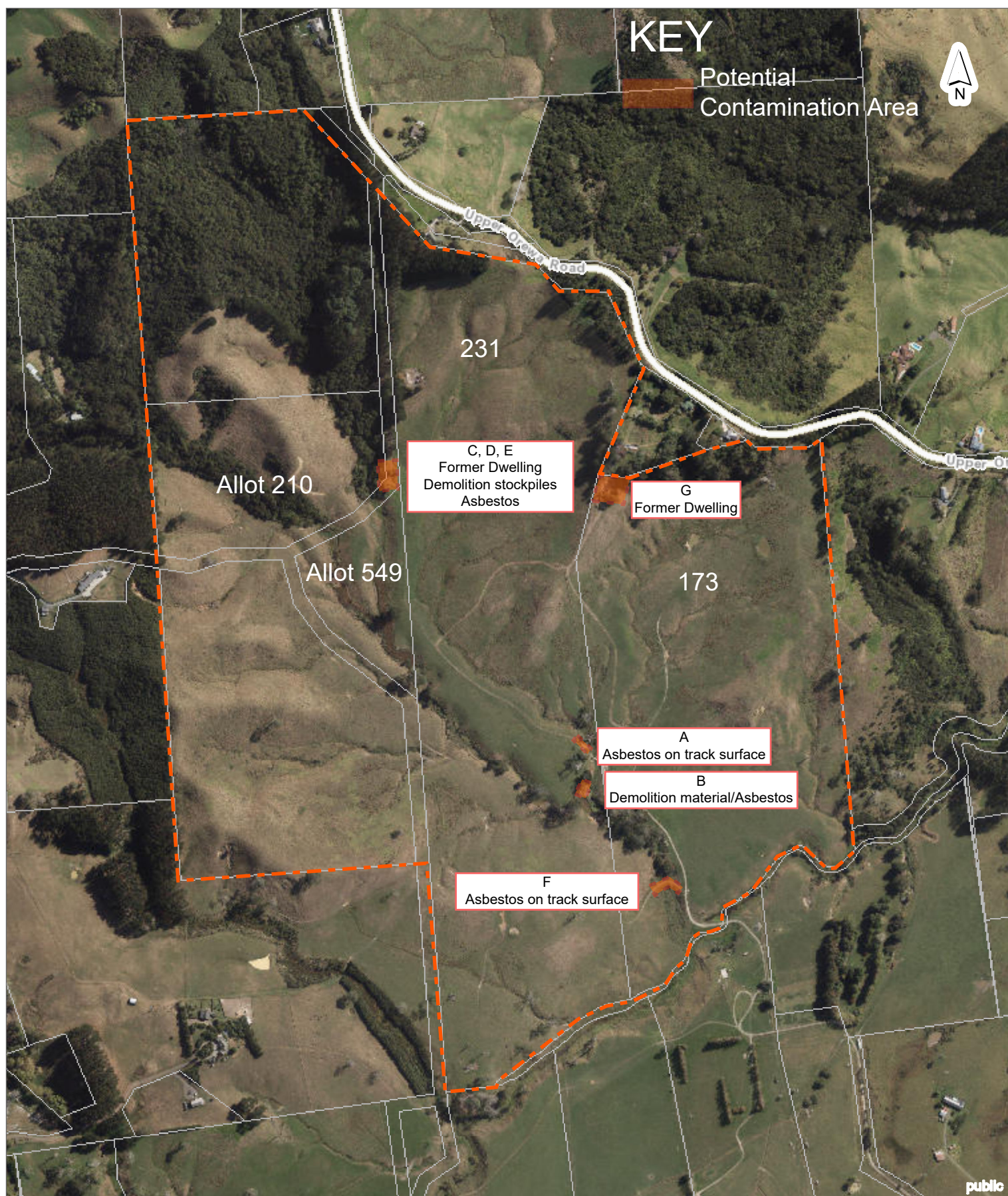
DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action.
Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: NZVD 2016.

Figure 3
Walkover Inspection Locations
Lots 6-7 DP 198205

0 10 20 30
Meters

Scale @ A4
= 1:2,500

Date Printed:
14/02/2026



DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: NZVD 2016.

Figure 4
Potential Contamination Areas

0 40 80 120
Meters

Scale @ A4
= 1:8,000

Date Printed:
14/02/2026

Appendix A

Aerial Photo Review & Walkover Inspection Results

Aerial Observations

Location	Aerial Observations
	231 Upper Orewa Road
2	Stream crossings (x 2)
3	Disturbed ground by stream near the eastern boundary - 2006
4	Dwelling in west – 1980s with driveway from Upper Orewa Road. Removed by 2024
5	Stream crossing – 1970s
6	Pond and disturbed ground near track in southeast - 2006
114	Pond on drainage gully – 1980s
116	Track – 1970s
117	Track – 1970s
118	Stream crossing – 1970s
	Allot 210 SO836
1	Former dwelling/shed location by east boundary in north – 1980. Removed by 2024. (Partly on paper road and 231 Upper Orewa Road)
128	Track in NE corner 1940s
129	Scrub cleared. Track in northwest -1960s
130	Stream crossings in south. -1960s
	Allot 549 SO 41565
115	Stream crossing - 1970s
	173 Upper Orewa Road
7	Dwelling in NW corner (south of sheds/glasshouses on property to the north) – 1950s Dwelling removed by 2024 and most sheds on property to north removed by 1980s
8	Stream crossings – 1950s
9	Stream crossing and disturbed ground at South end of property – 1950s
10	Disturbed ground – 2024
11	Ponds – 2024
120	Stream crossing – 1960s
121	Sheds on 163 Upper Orewa Road – 1970s
	Lot 6 DP 198205
44	Stream crossings on gullies in northwest of property (x 2) – 1970s
	Lot 7 DP 198205
45	Stream crossing – 1940s
46	Pond – 1970s
47	Stream crossing – 1960s
48	Pond – 1980s

Combined Aerial & Walkover Observations

Location	Aerial Observations	Walkover Observations
Lot 6 DP 198205		
44	Stream crossings on gullies in northwest of property (x 2) – 1970s	No visible indications of potential contamination
Lot 7 DP 198205		
45	Stream crossing – 1940s	No visible indications of potential contamination
46	Pond – 1970s	No visible indications of potential contamination
47	Stream crossing – 1960s	Rock and concrete fill on west side of stream crossing
48	Pond – 1980s	Soil pile and possible former shallow pond location
Allot 210 SO836		
1	Former dwelling/shed location by east boundary in northern section of property – 1980. Removed by 2024. (Partly on paper road and 231 Upper Orewa Road)	Soil, demolition material, and household rubbish stockpiles around former dwelling location. Material includes fibrolite cement sheet pieces, timber, and soil. Some grass-covered. Nine asbestos cement pipe sections (<2 m long) stacked next to the first stockpile. Sample 003 (red 0.4 cm thick fibrolite cement sheet with coating) – No asbestos detected Sample 004 (white 0.5 cm thick fibrolite cement sheet with coating) – No asbestos detected Sample 005 (white 0.3 cm thick fibrolite cement sheet) – No asbestos detected Sample 006 (asbestos cement pipe fragment) – Asbestos detected. 

Groundwater and Environmental Services

		
128	Track in NE corner 1940s	No visible indications of potential contamination
129	Scrub cleared. Track in northwest -1960s	No visible indications of potential contamination
130	Stream crossings in south. -1960s	No visible indications of potential contamination
Allot 549 SO 41565		
115	Stream crossing - 1970s	No visible indications of potential contamination
231 Upper Orewa Road		
2	Stream crossings (x 2)	Gate crossing with concrete rubble. Ford with concrete and brick rubble
3	Disturbed ground by stream near the eastern boundary - 2006	No visible indications of potential contamination
4	Dwelling in west of property - accessed by driveway from Upper Orewa Road – 1980s Removed by 2024	Concrete water tank & remaining concrete slab 
5	Stream crossing – 1970s	No visible indications of potential contamination
6	Pond and disturbed ground near track in southeast - 2006	Some clean demolition material but no indications of potential contamination in pond margins
114	Pond on drainage	Pond

Groundwater and Environmental Services

	gully – 1980s	
116	Track – 1970s	Recent earthworks
117	Track – 1970s	Several asbestos cement sheet pieces and asbestos cement pipe fragments on track surface. Track consists of demolition concrete, brick, and gravel  
118	Stream crossing – 1970s	Major stream crossing
119		Soil stockpile (3 m x 3 m by less than 1 m) on top of bank. Isolated asbestos cement sheet pieces. Demolition rubble (including concrete) on the bank below soil stockpile – extends down bank to track below. Buried rubbish/demolition material below the concrete – includes potential asbestos cement sheet pieces

Groundwater and Environmental Services

		 
173 Upper Orewa Road		
7	Dwelling in NW corner (south of sheds/glasshouses on the adjacent property to the north) – 1950s Most sheds on property to north removed by 1980s Dwelling removed by 2024	Former dwelling location. Large concrete water tank and power pole remain. Remaining garage Slab and footing – concrete demolition material placed outside east end of former garage. 

Groundwater and Environmental Services

		 
8	Stream crossings – 1950s	No issues identified
9	Stream crossing and disturbed ground at South end of property – 1950s	Lower crossing – concrete and rubble and crossing surface. Vehicle parts (x2) on track edge above crossing. Upper crossing – raised crossing with gravel on surface.
10	Disturbed ground – 2024	Cleared ground with vegetation burning pile. Fencing timber and wire stacked at the edge of the burning pile – should be removed
11	Ponds – 2024	No visible indications of potential contamination
120	Stream crossing – 1960s	Recently reworked stream crossing. Isolated and dispersed asbestos cement sheet and pipe fragments on the west and east approaches to crossing.

Groundwater and Environmental Services

		 
121	Sheds on 163 Upper Orewa Road – 1970s	Plastic shade house and partially collapsed shed on adjacent property to the north. Shed cladding includes ACM sheet 

Appendix B
Laboratory Analytical Report



Certificate of Analysis

Page 1 of 2

Client:	Groundwater & Environmental Services	Lab No:	4105628	A2Pv1
Contact:	Mr A MacDonald	Date Received:	19-Feb-2026	
	C/- Groundwater & Environmental Services	Date Reported:	24-Feb-2026	
	PO Box 190	Quote No:	82855	
	Cambridge 3450	Order No:		
		Client Reference:	Milldale North	
		Submitted By:	Mr A MacDonald	

Sample Type: Building Material

Sample Name	Lab Number	Sample Category*	Sample Weight on receipt (g)	Asbestos Presence / Absence	Description of Asbestos in Non Homogeneous Samples
MN26001 16-Feb-2026	4105628.1	Cement Product	35.11	Amosite (Brown Asbestos) detected. Chrysotile (White Asbestos) detected.	N/A
MN26002 16-Feb-2026	4105628.2	Cement Product	19.41	Amosite (Brown Asbestos) detected. Chrysotile (White Asbestos) detected.	N/A
MN26003 16-Feb-2026	4105628.3	Cement Product	55.27	Asbestos NOT detected. Organic fibres detected.	N/A
MN26004 16-Feb-2026	4105628.4	Cement Product	42.17	Asbestos NOT detected. Organic fibres detected.	N/A
MN26005 16-Feb-2026	4105628.5	Cement Product	26.78	Asbestos NOT detected. Organic fibres detected.	N/A
MN26006 16-Feb-2026	4105628.6	Cement Product	23.43	Amosite (Brown Asbestos) detected. Chrysotile (White Asbestos) detected. Crocidolite (Blue Asbestos) detected.	N/A

Glossary of Terms

- Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
 - Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
 - ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
 - ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
 - Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
 - Trace - Trace levels of asbestos, as defined by AS4964-2004.
- For further details, please contact the Asbestos Team.

Summary of Methods

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

Sample Type: Building Material

Test	Method Description	Default Detection Limit	Sample No
Asbestos in Bulk Material			
Sample Category*	Assessment of sample type. Analysed at Hill Laboratories - Asbestos; 204 Thorndon Quay, Wellington.	-	1-6
Sample Weight on receipt	Sample weight (approximate). Analysed at Hill Laboratories - Asbestos; 204 Thorndon Quay, Wellington.	0.01 g	1-6
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 204 Thorndon Quay, Wellington. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-6
Description of Asbestos in Non Homogeneous Samples	Form, dimensions and/or weight of asbestos fibres present. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	-	1-6



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

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

Testing was completed between 23-Feb-2026 and 24-Feb-2026. For completion dates of individual analyses please contact the laboratory.

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

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



Kelsey Rohloff BSc
Laboratory Technician - Asbestos

Appendix C

Statement of Qualification

Groundwater and Environmental Services

My full name is **Andrew James MacDonald**. I am an environmental consultant trading as **Groundwater and Environmental Services (GES)**.

I certify that I meet the requirements to operate as a suitably qualified and experienced practitioner (SQEP) under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) in contaminated land and groundwater assessment, management, and remediation.

I hold Bachelor of Science and Master of Science Honours degrees from Auckland University.

I have worked as a consultant in the field of contaminated land and groundwater assessment, management, and remediation since 1991. In that time, I have dealt with contamination issues at numerous industrial, commercial, horticultural, rural and residential sites throughout New Zealand on behalf of commercial, local government and central government clients.

CAPABILITIES

Environmental Site Investigation
Remediation of Contaminated Land
Environmental Effects Assessment
Contaminated Site Consents
Groundwater Investigation
Contaminant Transport Modelling
Groundwater Contamination Remediation

EDUCATION

Bachelor of Science (Geology)	University of Auckland, 1989
Master of Science, Hons (Geology)	University of Auckland, 1991
Environmental Law (COP)	University of Auckland, 1993
Resource Management (Planning) Law (COP)	University of Auckland, 1993

PROFESSIONAL HISTORY

1995 - Groundwater and Environmental Services, Principal
1991 - 1995 Woodward-Clyde (NZ) Ltd, Environmental Scientist

REPRESENTATIVE EXPERIENCE

- Preliminary and detailed environmental site investigations of a wide range of potentially contaminated sites.
- Remedial action/site management plans for contaminated sites.
- Organisation and supervision of remediation at contaminated sites.
- Validation of remediation at contaminated sites.
- Long term contaminated site monitoring and management plans.

Groundwater and Environmental Services

- Resource consents for site remediation and ongoing discharges of contaminants to ground at contaminated sites.
- Provision of expert evidence related to contamination issues.
- Peer review of contaminated site investigations.
- Drilling supervision, soil sampling and groundwater monitoring well installation at a range of sites for investigations of contaminated ground and groundwater.
- Computer modelling of groundwater contaminant transport and associated environmental effects.