Appendix 21 – Detailed Site Investigation

DETAILED SITE INVESTIGATION
2025 OHAUPO ROAD
TE AWAMUTU

CSI
Contaminated Site Investigation

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PREPARED FOR:
TE AWAMUTU DEVELOPMENTS

DECEMBER 2025

DSI: 2025 Ohaupo Road, Te Awamutu	
Prepared by: **GUY SOWRY**	Date:
	10.12.2025.
DIRECTOR	
CSI **CONTAMINATED SITE INVESTIGATION**	

I have read and agree to comply with the Code of Conduct for Expert Witnesses as set out in the Environment Court Consolidated Practice Note 2023 where it is relevant to this report, acknowledging that this is a technical report rather than expert evidence.

CONTENTS PAGE

0.0 EXECUTIVE SUMMARY 5

1.0 INTRODUCTION 6

2.0 CURRENT AND PROPOSED SITE STATUS 7
- 2.1 **Site Identification 7**
- 2.2 **Site Description 7**
- 2.3 **Surrounding Environment 8**
- 2.4 **Proposed Development 8**

3.0 BTW PSI SUMMARY 9
- 3.1 **Introduction 9**
- 3.2 **Site Conditions 9**
- 3.3 **Land History 9**
- 3.4 **Site Walkover and Sampling 10**
- 3.5 **Results 11**
- 3.6 **Conceptual Site Model 11**
- 3.7 **Conclusion and Recommendations 11**

4.0 SITE INVESTIGATION 12
- 4.1 **Additional History 12**
- 4.2 **Additional Literature Review 12**
- 4.3 **Site Walkover 12**
- 4.4 **Proposed Development 13**
- 4.5 **Potential Contamination Review 13**
- 4.6 **HAIL 15**
- 4.7 **Conceptual Site Model 15**
- 4.8 **Sampling Methodology 17**

5.0 RESULTS 19
- 5.1 **Human Health Assessment Criteria 19**
- 5.2 **Analytical Soil Results 19**
- 5.3 **Soil and Groundwater 20**

6.0 ASSESSMENT 21
- 6.1 **HAIL 21**
- 6.2 **Revised Conceptual Site Model 21**
- 6.3 **Risk Assessment 22**

7.0 LEGISLATIVE REQUIREMENTS 23
- 7.1 **WRC Regional Plan 23**
- 7.2 **NES Review 23**
- 7.3 **NES Assessment 24**

8.0 CONCLUSION AND RECOMMENDATIONS 25
- 8.1 **Conclusions 25**
- 8.2 **Recommendations 25**

FIGURE 1: WIDER SITE LOCATION 26
FIGURE 2: WIDER SITE PLAN 27
FIGURE 3: SITE PLAN 28
FIGURE 4: IMPELMENT SHED SURROUNDS SITE PLAN 29
FIGURE 5: HISTORCIAL DWELLING SITE PLAN 30
FIGURE 6: BURN PIT SITE PLAN 31
FIGURE 7: DEVELOPEMNT PLAN 32
FIGURE 8: HISTORICAL DWELLING SAMPLING PLAN 33
FIGURE 9: BURN PIT SAMPLING PLAN 34

APPENDIX A: REPORT CONDITIONS 35
APPENDIX B: AERIAL PHOTO 36
APPENDIX C: OBLIQUE AERIAL PHOTO 38
APPENDIX D: BURN PIT PHOTO 40
APPENDIX E: LABORATORY RESULTS 42

0.0 Executive Summary

Purpose	Undertake a DSI for 2025 Ohaupo Road, Te Awamutu
Current Site Status	The site is pastoral land.
Proposed Site Status	Develop into a retirement village.
PSI – BTW 2021	The PSI identified bulk timber storage, a historical dwelling (lead and asbestos) and a burn pit (metal and hydrocarbons) as HAIL.
CSI – Site Investigation	Timber storage unlikely to pose a risk to human health. The historical dwelling and burn pit presented a high risk to human health. Both HAIL I.
Sampling	Undertaken by Guy Sowry of CSI 24 November 2025 and comprised: 4 composite surface samples at the historical dwelling analysed for lead and asbestos; and two surface soil samples at the burn pit analysed for metals and hydrocarbons.
Results	Historical dwelling lead detected at but below NES recreational or high density residential SCS. No asbestos detected. Burn pit metals detected but below high density residential SCS. No hydrocarbons detected.
Assessment	**HAIL:** Historical dwelling lead below SCS so not significant and therefore HAIL I has not occurred. Burn pit metals below SCS so not significant and therefore HAIL I has not occurred. **Revised CSM:** A **LOW** risk to future occupants as lead is below applicable SCS, the contaminant pathways are considered to be incomplete.
Legislation Requirements	**WRC**: does not apply as site is not considered to be contaminated. **NES:** The site is not considered to be a piece of land and therefore, the NES does not apply.
Conclusion	Highly unlikely that there will be a risk to human health or the environment if the landuse changes.
Recommendations	1. No further contaminated land investigations are required for this application. 2. That a copy of this report is provided to WaipDC and WRC and that the site is recorded as 'Investigated – no risk to human health'.
This sheet is intended to provide a summary only of the assessment study of the site. This sheet does not provide a definitive scientific analysis.	

1.0 INTRODUCTION

1.1 Contaminated Site Investigations (CSI) has been appointed by Te Awamutu Developments to undertake a Detailed Site Investigation (DSI) of three areas within 2025 Ohaupo Road, Te Awamutu as a *2021 BTW Preliminary Site Investigation* (PSI) for the site documented a potential high risk to human health and the environment from:

- bulk treated timber storage by the implement shed;
- burn pit; and
- historical dwelling.

1.2 The aim of the DSI is to determine if the ground has been impacted by the above activities and therefore the risk that any contamination may pose to human health and the environment.

1.3 The DSI has been completed in general accordance with the Resource Management Act 1991; and the Resource Management Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011(NES).

1.4 This report is based on the BTW PSI dated 12.05.2021 and soil sampling undertaken at the site by Guy Sowry on the 24 November 2025. The report has been prepared by Guy Sowry in accordance with the NES and in particular the Ministry for the Environment *Contaminated Land Management Guidelines No 1 - Reporting on Contaminated Land.* Soil sampling was undertaken by Guy Sowry in accordance with *Contaminated Land Management Guidelines No 5 – Site Investigation and Analysis of Soils.*

1.5 As per the NES User Guide Suitably Qualified and Experienced Practitioner requirements Guy Sowry holds a postgraduate diploma in 'Environmental Health Science' and over 30 years' experience investigating and reporting on contaminated land.

1.6 The following limitations should be noted:

- this DSI is only for the three high risk areas identified by the *2021 BTW PSI*; and
- on the day of the site visit the phone went flat so photos were only taken of the burn pit however, additional photos were provided for by Mr. Chris Dawson, Principal Planner, Bloxam Burnett & Oliver Ltd.

1.8 Attention is drawn to the report conditions shown in Appendix A.

2.0 CURRENT AND PROPOSED SITE STATUS

2.1 Site Identification

2.1.1 The sites are located within 2025 Ohaupo Road, Te Awamutu which, is located on the northwestern outskirts of Te Awamutu as shown in Figure 1. Wider site details are presented in Table 1: Wider Site Details.

Table 1: Wider Site Details

ADDRESS	LEGAL DESCRIPTION	VGN	SIZE
2025 Ohaupo Road	LOT 1 DPS 36696	0449524400	9.1 ha
	PT LOT 1 DP 35654		16.6 ha

2.1.2 The wider site is irregular in shape as documented in Figure 2. The sites are all located on PT LOT 1 DP 35654 and hereafter are referred to as the Implement Shed Surrounds, the Burn Pit and the Historical Dwelling. The implement shed is located in the central northeast, the Burn Pit in the central south and the Historical Dwelling in the central southeast as documented in Figure 3.

2.1.3 The wider site is zoned in the Waipa District Council (WaipDC) District Plan as 'Rural Zone'.

2.2 Site Description

Implement Shed Surrounds

2.2.1 The implement shed surrounds are dirt yards, farm tracks and pastoral land. Refer Figure 4.

2.2.2 The north is grass and a dirt track. Further beyond to the northwest are the stockyards. To the east is a grass and dirt yard up to a wooden post and rail farm fence. Beyond is the rural dwellings section. To the west is a wooden post and rail fence and then pastoral land. To the south is grassed land and a dirt road.

2.2.3 The area gently slopes down to the west and south.

Burn Pit

2.2.4 The burn pit is contained within a small hollow. Refer Figure 5.

2.2.5 The eastern, western and southern boundaries are earth walls with the north open to a small slightly raised grassed area which, slopes steeply down after a few metres.

2.2.6 The area is flat.

Historical Dwelling

2.2.7 A grassed area with a post, wire and batten farm fence running from north to south in the eastern section. Refer Figure 6.

2.2.8 The site is open to pastoral land to the north and east. The site is bounded in the west by a post, wire and batten farm fence with bush surrounding a pond immediately beyond. The site is bounded in the south by a post, wire and batten farm fence with pastoral land beyond.

2.2.9 The site slopes gently to the west.

2.3 Surrounding Environment

2.3.1 The sites are situated in an area of pastoral land, rural residential and residential.

2.3.2 Pastoral land is located immediately beyond all of the sites and to the north, west and central south and southwest of the wider site.

2.3.3 The curtilage of a rural dwelling associated with the wider site is located approximately 15 m to the east of the Implement Shed. A rural dwelling is located approximately 200 m to the northwest of the Implement Shed on adjacent land.

2.3.4 A residential subdivision is located immediately beyond the southeastern boundary of the wider site. Dwellings are located to the east of the wider site immediately beyond Ohaupo Road.

2.4 Proposed Development

2.4.1 The intention is to develop the wider site into a Retirement Village with a care facility as documented in Figure 7.

2.4.2 The Implement Shed Surrounds is to be developed into three single story dwellings with limited section roads, and parking. The Burn Pit is to be developed into a road and at least one unit with limited section. The Historical Dwelling is to be developed into four apartment units with no sections and parking

3.0 BTW PSI SUMMARY

3.1 Introduction

3.1.1 Background, Scope and Site

3.1.1.1 Undertake a PSI for 2025 Ohaupo Road, Te Awamutu. The report addresses the risk to human health from HAIL identified at the site.

3.1.1.2 The residential dwelling was excluded.

3.2 Site Conditions

3.2.1 Soil

3.2.1.1 The local soil can be described as Hamilton Hills, ignimbrites overlaid with tephras and alluvial clay.

3.2.1.2 The topography can be described as rolling.

3.2.2 Hydrogeology

3.2.2.1 Waikato Regional Council (WRC) data documented no bores at the site with no information on bores in close proximity.

3.2.2.2 The author assumes that groundwater follows the topography.

3.2.3 Hydrology

3.2.3.1 The surface water drains into a central farm drain which runs east to west and discharges into a tributary of the Mangapiko Stream.

3.3 Land History

3.3.1 Aerial Photos

3.3.1.1 An aerial photo from 1943 documents the site as pastoral with one structure at the site.

3.3.1.2 Aerial photos from 1957, 1967, 1974 and 1979 documents as pastoral land with no structures. The 1979 aerial photo also documents two ponds.

3.3.1.3 An arial photos from 1995 documents pastoral land with fours structures at the site which, are considered to be the hay barn, dwelling, implement shed and stockyard.

3.3.1.4 Aerial photos from 2008, 2010, 2013 2107 and 2021 shows similar conditions except the implement shed is extended in 2010.

3.3.2 Consultation

3.3.2.1 WaipDC hold no information to add value to the PSI.

3.3.2.2 WRC information documents that the site is not on the Selected Land Use Register (SLUR).

3.3.2.3 Anecdotal information from Christoper Johnson (owner at the time) who brought it from his dad 20 years ago who had owned it for 12 years: always been a dry stock farm; no livestock dips; no asbestos in the building; three offal pits; a burn pit in a disused silage pit for green waste; no farm dumps; superphosphate is applied annually; and small amounts of fuel (40 lt petrol and 40 lt diesel) held in implement shed.

3.4 Site Walkover and Sampling

3.4.1 Walkover

3.4.1.1 Observations by BTW staff on 18 November 2021: burn pit contained green waste, a small amount of wire and unknown debris; a pile of treated timber by implement shed; no livestock dips; no asbestos observed on any structures; and no stained soils noted.

3.4.2 Preliminary Sampling Plan

3.4.2.1 10 random samples for an overall representation of the site analysed for metals.

3.4.2.2 Three judgemental samples from shed, stockyard and boundary adjacent to orchard activities and analysed for OCP’s and heavy metals.

3.5 Results

3.5.1 All metal concentrations were below NES residential Soil Contaminant Standards (SCS). Cadmium was elevated above WRC background in 12 samples. All OCP's were below detection limits.

3.6 Conceptual Site Model

3.6.1 Adjacent Orchards considered highly unlikely to pose a risk to the site based on sampling results.

3.6.2 Livestock Dipping and Spray Race Operations considered highly unlikely to pose a risk as none identified.

3.6.3 Fertiliser Application and other Animal Treatments considered highly unlikely to pose a risk to the site based on sampling results.

3.6.4 Offal Pits considered highly unlikely to pose a risk as no potential contaminants of concern. Mainly pathogenic and nitrogen.

3.6.5 Asbestos and Lead Based Paint only one building based on historical review and site walkover that potentially contained asbestos and painted with lead. Historical dwelling identified in 1943 aerial in the central southeast that needs to be quantified as part of a DSI. Contaminants of concern asbestos and lead.

3.6.6 Implement Shed activities in and on surrounding land associated with the shed are considered small scale and therefore, unlikely to pose a risk. However, bulk storage of treated timber identified as potential risk that needs to be quantified as part of a DSI. Contaminants of concern copper, chromium and arsenic (CCA).

3.6.6 Burn Pit not sampled and therefore, identified as a potential risk that needs to be quantified as part of a DSI. Contaminants of concern metals, hydrocarbons and dioxins.

3.7 Conclusions and Recommendations

3.7.1 Conclusions

3.7.1.1 Potential pieces of land identified as bulk timber storage surrounding the implement shed, the burn pit and the historical dwelling.

3.7.2 Recommendations

3.7.2.1 Complete a DSI for bulk timber storage, the burn pit and the historical dwelling.

4.0 SITE INVESTIGATION

4.1 Additional History

4.1.1 Aerial Photo

4.1.1.1 A 2024 aerial photo shows similar conditions on site to the 2021 mentioned in the BTW PSI. No piles of timber noted in yards surrounding the implement shed. A reproduction (SK01) is provided for in Appendix B.

4.1.2 Oblique Photo

4.1.2.1 A 1991 aerial photo shows the site as pastoral land with one structure visible, south of the present day stockyards. A reproduction (SK02) is provided for in Appendix C.

4.2 Additional Literature Review

4.2.1 HAIL Guidance

4.2.1.1 The *Hazardous Activities and Industries List Guidance, Identify HAIL land, Ministry for the Environment, March 2023*, (HAIL Guidance) provides guidance on identifying and classifying HAIL.

4.2.2.2 HAIL 'A.18 Bulk storage of timber outside' applicability states timber yards and supply premises. Bulk is not defined and farms are not mentioned. Contamination setting states that consideration should be given to the quantity and the duration in the same location.

4.2.2.3 Lead paint and asbestos accidental discharges and burn pits etc are not specifically included as HAIL and therefore, shall be addressed as HAIL 'I. Any other land that has been subject to the accidental release of hazardous substances in sufficient quantities that could be a risk to human health and or the environment.

4.3 Site Walkover

4.3.1 A site walkover was completed on the 24 November 2025 by Guy Sowry. At the time of the walkover the day was fine. Photos are included in Appendix D.

4.3.2 Historical Dwelling

4.3.2.1 The site was bare grass with a CCA post, wire and batten farm fence present running north to south in the east. No asbestos containing material (ACM) or asbestos like fibres were noted in the grass. No odour or stressed or dying grass was noted.

4.3.3 Implement Shed Surrounds

4.3.3.1 No bulk storage of CCA timber was noted in this area. No odour or stressed or dying grass was noted.

4.3.4 Burn Pit

4.3.4.1 A burn pit was clearly visible in a hollow however, the site was overgrown and therefore it was difficult to observe any waste material other than large half burnt tree trunks.

4.4 Proposed Development

4.4.1 Historical Dwelling

4.4.1.1 Developed into a wetland, a road and possibly 6 apartment units.

4.4.2 Implement Shed Surrounds

4.4.2.1 Developed into a road, four single story dwellings with a floor area of 149 m^2 on a section size of 400 m^2 and 4 apartment units.

4.4.3 Burn Pit

4.4.3.1 Developed into a wetland, a road and possibly 6 apartment units as these will be located in the east close to the boundary.

4.5 Potential Contamination Review

4.5.1 Historical Dwelling

4.5.1.1 The PSI noted that a historical dwelling was located under or directly to the east of the pond in the central southeast.

4.5.1.2 The DSI walkover did not note any remnants of a structure including any ACM immediately east and adjacent to the pond.

4.5.1.3 It is considered that the potential ground contaminants of lead form lead based paint and asbestos fibres has more than likely occurred at the historical dwelling site.

4.5.2 Implement Shed Surrounds

4.5.2.1 The PSI walkover noted what they considered to be bulk storage of CCA timber at the site. However, a location was not provided but based on photographic evidence is considered to be along the dwelling fence to the east.

4.5.2.2 The DSI walkover did not note any bulk storage of CCA timber at the site.

4.5.2.3 The MfE HAIL Guidance A18 listing does not specifically mention farms and states consideration should be given to the quantity and the duration in the same location. It is considered that this is why farms are not specifically mentioned as most farms only store CCA timber when fencing is undertaken and in temporary locations as they move around the farm when fencing.

4.5.2.4 Therefore, potential ground contaminants from CCA bulk timber storage has more than likely not occurred at the implement shed surrounds.

4.5.3 Burn Pit

4.5.3.1 The PSI walkover noted a burn pit containing unspecified material in an ex silage pit in the southeast.

4.5.3.2 The DSI walkover did not observed any waste material in the pit other than half burnt tree trunks.

4.5.3.3 Therefore, potential ground contaminants from the burning of trees and unspecified material has more than likely occurred at the burn pit.

4.5.4 Conclusion

4.5.4.1 Based on the above the following potential contaminants are likely to be present:

- lead and asbestos – historical dwelling; and
- metals, hydrocarbons and dioxins – burn pit.

4.6 HAIL

4.6.1 Based on the above it is considered that the following HAIL may have occurred at the site:

- I. Any other land that has been subject to the accidental release of lead and asbestos in sufficient quantities that could be a risk to human health and or the environment; and
- I. Any other land that has been subject to the accidental release of metals and hydrocarbons in sufficient quantities that could be a risk to human health and or the environment.

4.7 Conceptual Site Model

4.7.1 A Conceptual Site Model (CSM) for the proposed development of the site into a Retirement Village is presented in Table 4: Conceptual Site Model.

4.7.2 The risk component of the CSM uses the terms low, medium and high risk which, are consistent with the concepts and ranking system outlined in the *Contaminated Land Management Guidelines (CLMG) No 3 – Risk Screening System*. Fundamentally: **Low** refers to no risk – the absence of a hazard source or receptor and no exposure pathway link. **Medium** refers to a tolerable or acceptable risk – the presence of a hazard source and receptors but a limited exposure link. **High** refers to an unacceptable risk - the presence of a hazard source, receptors and a clear exposure link.

Table 4: Conceptual Site Model

<table>
<tr><th colspan="2" rowspan="2">ELEMENTS</th><th colspan="4">CONTAMINANTS</th></tr>
<tr><th>Lead</th><th>Asbestos</th><th>Metal</th><th>Hydrocarbons</th></tr>
<tr><td colspan="2" rowspan="2">HAZARD</td><td colspan="4">Historical Dwelling</td></tr>
<tr><td>Concentrations may exceed NES recreation or high density SCS.</td><td>Asbestos fibres may be present.</td><td colspan="2">Concentrations may exceed NES high density SCS.</td></tr>
<tr><td rowspan="5">PATHWAY</td><td>Air</td><td colspan="4">Dust during development.</td></tr>
<tr><td>Stormwater</td><td colspan="4">To land. The nearest surface water is:
an immediately adjacent pond. The grass barrier and clay soil will not prevent horizontal migration.
Not considered to be of local or national importance.
distant. The grass barrier and clay soil will limit the horizontal migration.</td></tr>
<tr><td>Groundwater</td><td colspan="4">Potentially present at unknown depth. The clay soil will limit vertical migration. The shallow groundwater is not used at this site or any adjacent sites and is therefore, not considered to be of local or national importance.</td></tr>
<tr><td>Contact</td><td colspan="4">Direct contact during site works, occupation and maintenance work. The soil is not considered to be of local and national importance.
Unlikely to be at concentrations that will cause corrosion to the built environment.</td></tr>
<tr><td rowspan="3">RECEPTOR</td><td>Human Health</td><td colspan="4">Onsite - development and maintenance workers and future residents.
Offsite - none.</td></tr>
<tr><td>Ecological</td><td colspan="4">Onsite – Aquatic organism in pond.
Offsite – none.</td></tr>
<tr><td>Built</td><td colspan="4">Not applicable.</td></tr>
<tr><td rowspan="3">RISK</td><td>Human Health</td><td colspan="4" rowspan="2">HIGH</td></tr>
<tr><td>Ecological</td></tr>
<tr><td>Built</td><td colspan="4">LOW</td></tr>
</table>

4.7.3 The CSM documents a high risk to human health as development workers, maintenance workers and residents may come into direct contact with heavy metals, asbestos and hydrocarbon impacted soil.

4.8 Sampling Methodology

4.8.1 An intrusive investigation was completed on the 24 November 2025 by Guy Sowry, a director of CSI with 30 years' experience in contaminated land investigations, to determine if lead and asbestos has or has not impacted the historical dwelling area and metals and hydrocarbons have or have not impacted the burn pit area

4.8.2 The details of the investigation are provided for in Table 3: Investigation Details. Sample locations are provided for in Figures 3A and 3B. Sampling Plan. Note all samples were analysed at Hill's Laboratories, Hamilton (Hills) who are accredited for all of the sample's analyses.

4.8.3 In summary, the investigation comprised:

- the collection of 4 composite surface soils samples at the historical dwelling site and analysed for lead and asbestos; and
- the collection of two discrete surface samples from the rear burn pit and analysed for NES metals; Polycyclic Aromatic Hydrocarbons (PAH) and Total Petroleum Hydrocarbons (TPH).

4.8.4 The following limitation should be noted:

- due to the high cost of dioxin analysis it was not undertaken as PAH can be used as an indicator. If PAH is detected at concentration above recommend SCS or Soil Guideline Values (SGV) then dioxin analysis will be undertaken.

Table 3: Investigation Details

PROCEDURES	SAMPLES	
	HD.1 - 4	BP.1 and 2.
Location	Historical dwelling.	Bun pit.
Reason	Lead paint and asbestos accidental discharges.	Buring or waste.
Depth	Surface	
Type	Composite with four cores in each sample.	Discrete – judgemental.
Collection Method	Plot sampler. Each core was placed into a Hill's plastic bag and then sealed immediately after the fourth sample.	The soil was collected from a trowel with a disposable glove. Each sample was placed into a Hill's plastic glass jar and then sealed immediately.
Field Quality Control	The plastic bags and glass jars were placed directly into a chilly bin and kept in cool storage until dispatched to Hills. A chain of custody was not required as Guy Sowry took the samples to Hills.	
Analysis	Lead and asbestos	NES metals, PAH and TPH.
Decontamination	Prior to sampling and between each composite sample the plot sampler was washed in water, then washed in a solution of water and Decon 90 (a zero residue analytical detergent) and then rinsed in deionised water.	Prior to sampling and between each sample the trowel was
Hot Spot Detection	Not applicable.	

Note:

1. Sample – all samples were preceded with TAD (Te Awamutu Developments): and
2. Sample - HD denotes historical dwelling and BP denotes burn pit.

5.0 RESULTS

5.1 Human Health Assessment Criteria

5.1.1 The NES includes SCS for arsenic, boron, cadmium, chromium, copper, lead, mercury and benzo(a)pyrene (BaP) for either high density residential or recreational landuse exposure scenario, which is the intended landuse. An industrial landuse exposure scenario is also used to determine the potential risk to development and future maintenance workers.

5.1.2 The ***Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand*** (Ministry for the Environment, 1999) (also known as the ***Petroleum Hydrocarbon Guidelines*** or the ***Oil Industry Guidelines***). This guideline is designed to allow the application of a risk-based approach for the protection of human health by petroleum products and includes a guideline value for naphthalene and TPH in a clay soil at the surface for a residential landuse.

5.1.3 A asbestos yes/no is included as an indicator for the presence of asbestos with regard to the potential dwelling only.

5.3 Analytical Soil Results

5.3.1 The analytical soil results are summarised in Table 4: Historical Dwelling Analytical Soil Results and Table 5: Burn Pit Analytical Soil Results. The actual analytical laboratory reports are reproduced in full in Appendix E.

Table 4: Burn Pit Analytical Soil Results

PARAMETER	SAMPLE				GUIDELINE NES		
	HD.1	HD.2	HD.3	HD.4	RES	REC	IND
Lead	165	71	670	480	500	880	3,300
Asbestos	No	No	No	No			

Notes:

1. Guideline – RES denotes residential, REC denotes recreational and IND denotes industrial;
2. All concentrations in ppm and are on a dry weight basis; and
3. A grey highlighted box denotes above NES high density residential.

5.3.2 A lead concentration of 670 mg/kg in sample 3 at the surface is above the NES high density residential SCS of 500 but below the recreational SCS of 880 mg/kg which, is more than likely the landuse at this location. All other lead concentrations were below high density or recreational landuse SCS.

5.3.3 Asbestos not detected.

Table 5: Burn Pit Analytical Soil Results

PARAMETER	SAMPLE		GUIDELINE		
	BP.1	BP.2	NES		OIL
			RES	IND	
Arsenic	23	14	45	70	
Boron	26	<20	>10,000		
Cadmium	0.95	1.62	230		
Chromium	43	17	>10,000		
Copper	70	56	>10,000		
Lead	23	19.7	500	3,300	
Mercury	<0.10	<0.10	1,000	4,200	
BaP	<0.044	<0.045	24	35	
Naphthalene	<0.09	<0.10			71
TPH	101	<100			NA

Notes:

1. Guideline – RES denotes residential and IND denotes industrial; and
2. All concentrations in ppm and are on a dry weight basis.

5.3.4 No concentrations exceed NES high density or industrial SCS. No naphthalene or TPH concentrations exceed the oil industry SGV. In fact all hydrocarbons were either close to or below non detect and therefor, it is considered that dioxins are more than likely not present at the burn pit.

5.4 Soil and Groundwater

5.4.1 A topsoil down to approximately 0.2 bgl and then a clay soil was found at all sample locations.

5.4.2 Groundwater was not encountered.

6.0 ASSESSMENT

6.1 HAIL Assessment

6.1.1 HAIL I – Accidental release of lead and asbestos

6.1.1.1 Section 5.2 documents lead concentrations below the NES lead high density or recreational SCS and no asbestos was detected.

6.1.1.2 Therefore, as the NES standard for determining this HAIL is concentrations found **in sufficient quantity that it could be a risk to human health**, it is considered that the accidental release of lead from the use of lead based paint at the historical dwelling has not occurred at the site.

6.1.1.3 HAIL in relation to lead and asbestos at the historical dwelling has not occurred at this site.

6.1.2 HAIL I – Accidental release of metals and hydrocarbons

6.1.2.1 Section 5.2 documents metal and BaP concentrations below NES lead high density residential SCS and naphthalene and TPH concentrations below Oil Industry residential guideline values.

6.1.2.2 Therefore, as the NES standard for determining this HAIL is concentrations found **in sufficient quantity that it could be a risk to human health**, it is considered that the accidental release of metals and hydrocarbons at the burn pit has not occurred at the site.

6.1.2.3 HAIL I in relation to metals and hydrocarbons from the burn pit has not occurred at this site.

6.2 Revised Conceptual Site Model

6.2.1 A revised CSM for a retirement village is presented in Table 6: Revised Conceptual Site Model.

6.2.2 The risk component of the CSM uses the terms provided for in *CLMG No 3* – as documented in section 4.7.2.

Table 7: Revised Conceptual Site Model

RISK EQUATION		CONTAMINANTS None
HAZARD		One lead concentration above NES high density SCS but below the intended use of recreational SCS.
PATHWAY	**Contact**	Indirect contact by residents from consuming produce grown at the site.
RECEPTOR	**Human Health**	Onsite - future residents. Offsite - none.
RISK	**Human Health**	**LOW**

6.2.3 The CSM documents a **LOW** risk to human health as future occupants as lead concentrations are below relevant SCS for the intended land use of a retirement village.

6. 3 Risk Assessment

6.3.1 A risk assessment is not required as the risk to human health at the site is considered to be **LOW** as demonstrated by the revised CSM.

7.0 LEGISLATIVE REQUIREMENTS

7.1 WRC Regional Plan

7.1.1 A Contaminated Land Remediation rule in the WRC Plan requires if any remediation of a known contaminated site is to occur then a PSI, DSI and Remedial Action Plan (RAP) must be completed and approved of by WRC prior to any remediation occurring. And at the completion of remediation a Site Validation Report (SVR) must be submitted to WRC for approval.

7.1.2 This DSI documents that the site is **not** considered to be **contaminated land**. Therefore, this rule does not apply.

7.2 NES Review

7.2.1 Application

7.2.1.1 Under clause 5 the regulation applies when a person wants to do an activity described in any of subclauses (2) to (6) on a piece of land described in subclause (7) or (7).

7.2.2 Activity

7.2.2.1 The activities of potential relevance are considered to be:

- disturbing the soil of the piece of land for a particular purpose; and/or
- changing the use of the piece of land to a use that is reasonably likely to harm human health.

7.2.3 Piece of Land

7.2.3.1 A piece of land is a piece of land that has had a HAIL undertaken on it, or being undertaken on it, or it is more likely than not had a HAIL undertaken on it.

7.2.4 Assessment Criteria

7.2.4.1 To determine if a HAIL has occurred on a piece of land a PSI or DSI must be completed by a Suitably Qualified and Experienced Practitioner and is reported on in accordance with the current edition of *Contaminated Land Management Guidelines No 1 - Reporting on Contaminated Land*.

7.2.5 Permitted Activities

7.2.5.1 Disturbing the soil of the piece of land is a permitted activity subject to requirement being met, including that the volume of disturbance of the soil of the piece of land is no more than 25 m^3 per 500 m^2 and only, up to 5 m^3 per 500 m^2 is taken away per year.

7.2.5.2 Changing the use of the piece of land is a permitted activity provided a PSI of the land or piece of land has been undertaken and that the associated report must state that it is highly unlikely that there will be a risk to human health if the activity is done to the piece of land.

7.3 NES Assessment

7.3.1 Piece of Land Assessment Criteria

7.3.1.1 This DSI clearly documents that no HAIL has occurred at the site. This DSI has been completed by Guy Sowry who holds a post graduate diploma in 'Environmental Health Science' and over 30 years' experience investigating and reporting on contaminated land. This report has been prepared by Guy Sowry in general accordance with CLMG#1 (note it is considered impossible to comply with this guideline hence the term general). This DSI is to be submitted in support of a resource consent application.

7.3.1.2 Therefore, the site is not considered to be a **piece of land** under the NES.

7.3.2 Permitted Activity – Soil Disturbance

7.3.2.1 Therefore, Soil Disturbance Regulations do not apply.

7.3.3 Changing Use

7.3.3.1 Therefore, the Changing Use Regulations do not apply.

8.0 CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

8.1.1 A BTW PSI dated 12.05.2021 for 2025 Ohaupo Road, Te Awamutu documented three areas that were considered to pose a potential risk to human health: implement shed surrounds bulk storage of CCA treated timber; historical dwelling lead and asbestos and burn pit metals and hydrocarbons. A desktop investigation by CSI concluded that the timber storage did not pose a significant risk to human health or the environment but, the historical dwelling and burn pit presented a high risk to human health and a low risk to the environment. The areas were both considered to be HAIL I.

8.1.2 An intrusive investigation of these two area was undertaken by Guy Sowry. Sampling was undertaken in accordance with CLMG #5. Lead concentrations were detected at the historical dwelling but were below NES recreational or high density SCS. Asbestos was not detected. Metal concentrations were detected at the burn pit but were below high density residential SCS. No hydrocarbon concentrations were detected.

8.1.3 The revised CSM documents a **LOW** risk to human health at the historical dwelling as lead was present but the concentrations were below SCS and therefore, the contaminant pathways are considered to be incomplete as there are no identified potential contaminants/hazards.

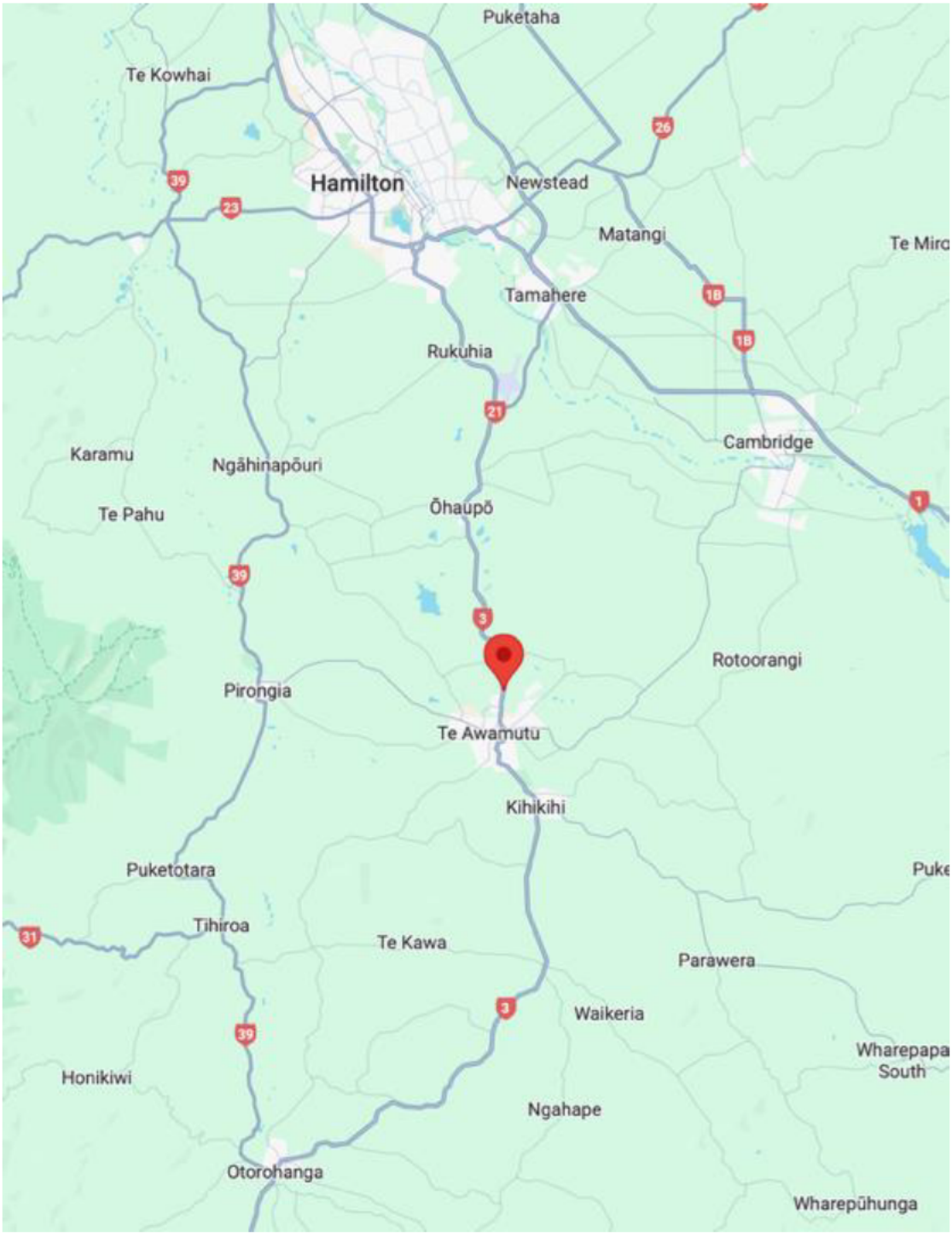
8.1.4 Therefore, it is considered highly unlikely that that there will be a risk to human health if the site is developed into a retirement village.

8.1.5 The WRC remediation rule does not apply as the site is not considered to be a contaminated site. The NES does not apply as the site is not considered to be piece of land.

8.2 Recommendations

8.2.1 No further contaminated land investigations are required for this application.

8.2.2 That the site shall be listed on WaipDC and WRC Selected Land Use Registers as ‘Investigated – no risk to human health for a high density landuse and a recreational landuse’.



CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	FIGURE 1
	SITE LOCATION



CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	FIGURE 2
	WIDER SITE PLAN



CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	FIGURE 3
	SITE LOCATIONS



CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	FIGURE 4
	IMPLEMENT SHED SITE PLAN



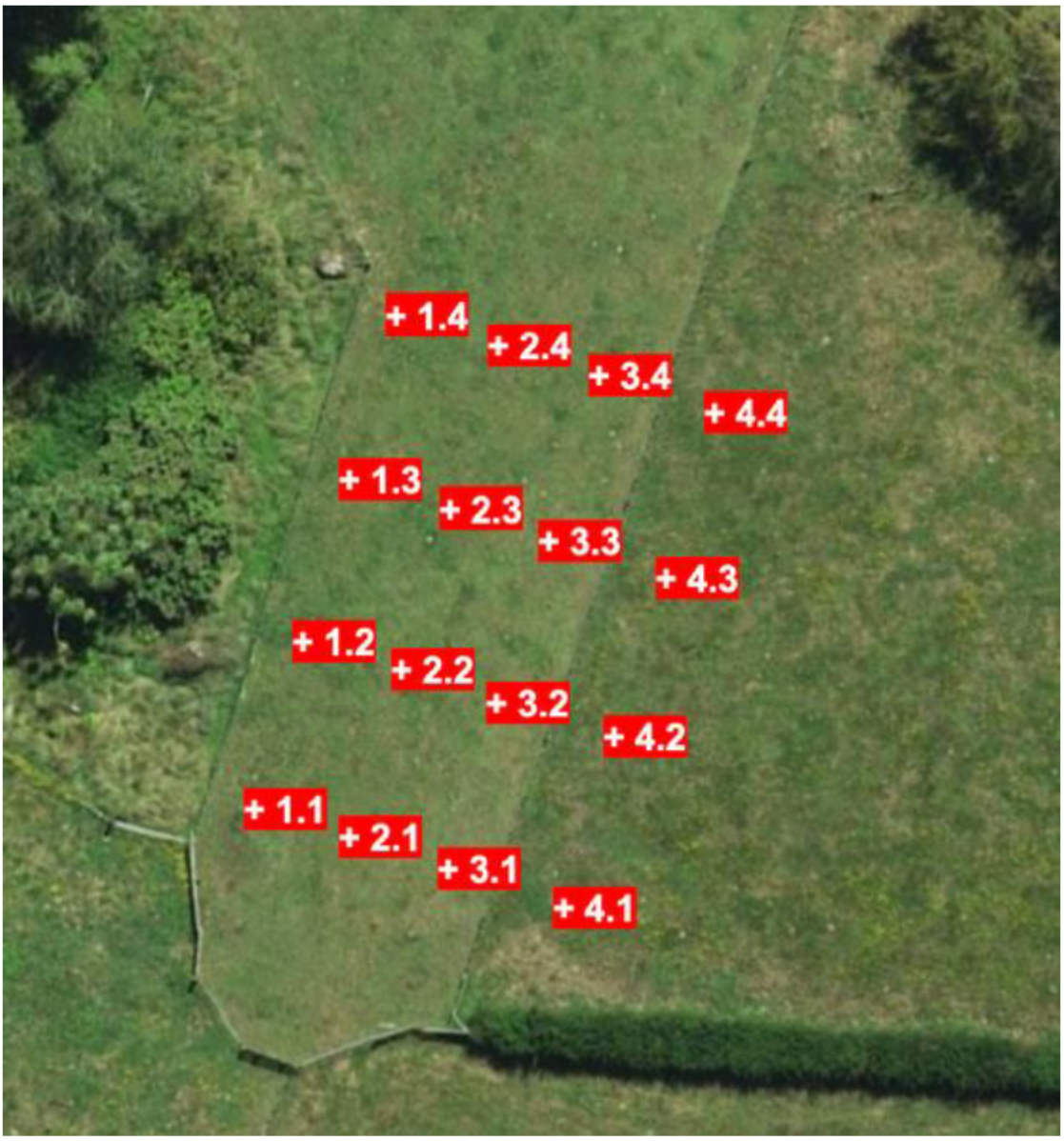
CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	FIGURE 5
	HISTORICAL DWELLING SITE PLAN



CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	FIGURE 6
	BURN PIT SITE PLAN



CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	FIGURE 7
	DEVELOPMENT PLAN



CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	FIGURE 8
	HISTORICAL DWELLING SAMPLING PLAN



CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	FIGURE
	BURN PIT SAMPLING PLAN

APPENDIX A

REPORT CONDITIONS

*This report is prepared solely for the benefit of **TE AWAMUTU DEVELOPEMNTS LIMITED** and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.*

This report refers, with the limitations stated, to the conditions of site at the time of the investigation. No warranty is given as to the possibility of future changes in the condition of the site.

This report is based on a 2021 BTW PSI, photos, anecdotal information, and a site investigation comprising a site walkover and the collection of soil samples. Some of the opinions are based on unconfirmed data and information and are presented as the best that can be obtained without further extensive research. The samples collected have been undertaken in accordance with recognised guidelines however, the possibility of the presence of contaminants, perhaps in higher concentrations, elsewhere on the site cannot be discounted.

Whilst the findings detailed in this report reflect our best assessment, we are unable to give categoric assurances that they will be accepted by regulatory authorities without questions as such authorities may have unpublished more stringent objectives. This report is prepared and written for the proposed uses stated in the report and should not be used in a different context without reference to CSI. In time approved practices or amended legislation may necessitate a re-assessment.

The report is limited to those aspects of land contamination specifically reported on and is necessarily restricted and no liability is accepted for any other aspects especially concerning gradual or sudden pollution incidents. The opinions expressed cannot be absolute due to the limitations of time and resources imposed by the agreed brief and the possibility of unrecorded previous use and abuse of the site and adjacent sites. The report concentrates on the site as defined in the report and provides an opinion on surrounding sites. If migrating pollution or contaminants (past or present) exists further research will be required before the effects can be better determined.

APPENDIX B

AERIAL PHOTO



CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	SK01
	2024

APPENDIX C

OBLIQUE AERIAL PHOTO



CSI **Contaminated Site Investigations** **34 Brookfield Street** **Hamilton**	2025 OHAUPO ROAD, TE AWAMUTU
	SK02
	1991
	WHITES AVIATION ALEX TURNBULL LIBRARY WA-80924-F

APPENDIX D

SITE PHOTOS



BURN PIT



LOCATION OF HISTORIC DWELLING



IMPLEMENT SHED



IMPLEMENT SHED

APPENDIX E

LABORATORY RESULTS

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand
[redacted]
www.hill-labs.co.nz

Certificate of Analysis

Client:	CSI Limited	**Lab No:**	4042933	SPv2
Contact:	G Sowry C/- CSI Limited 34 Brookfield Street Hamilton East Hamilton 3216	**Date Received:**	27-Nov-2025	
		Date Reported:	05-Dec-2025	
		Quote No:	142005	
		Order No:		
		Client Reference:		
		Submitted By:	G Sowry	

Sample Type: Soil

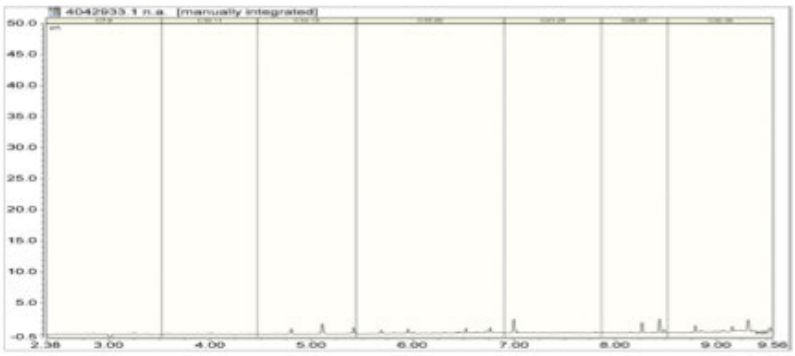
Sample Name:		TAD. BP 1 24-Nov-2025 1:30 pm	TAD. BP. 2 24-Nov-2025 1:40 pm	TAD. HD.1 24-Nov-2025	TAD. HD.2 24-Nov-2025	TAD. HD.3 24-Nov-2025
Lab Number:		4042933.1	4042933.2	4042933.3	4042933.4	4042933.5
Individual Tests						
Dry Matter	g/100g as rcvd	54	53	-	-	-
Total Recoverable Lead	mg/kg dry wt	-	-	165	71	670
National Environmental Standards Metals*						
Total Recoverable Arsenic	mg/kg dry wt	23	14	-	-	-
Total Recoverable Boron	mg/kg dry wt	26	< 20	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.95	1.62	-	-	-
Trivalent Chromium*	mg/kg dry wt	43	17	-	-	-
Chromium (hexavalent)*	mg/kg dry wt	< 0.4	< 0.4	-	-	-
Total Recoverable Chromium	mg/kg dry wt	43	17	-	-	-
Total Recoverable Copper	mg/kg dry wt	70	56	-	-	-
Total Recoverable Lead	mg/kg dry wt	23	19.7	-	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	-	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.5	< 0.5	-	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.03	< 0.03	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Acenaphthene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Anthracene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.044	< 0.045	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.043	< 0.045	-	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Chrysene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Fluoranthene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Fluorene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Naphthalene	mg/kg dry wt	< 0.09	< 0.10	-	-	-
Perylene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Phenanthrene	mg/kg dry wt	< 0.018	< 0.019	-	-	-

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

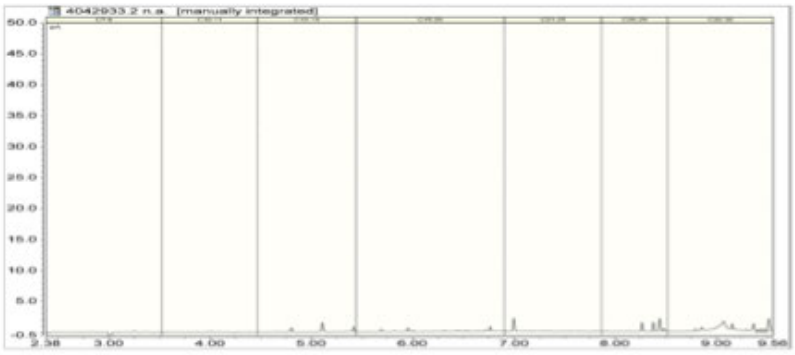
Sample Type: Soil						
Sample Name:		TAD. BP.1 24-Nov-2025 1:30 pm	TAD. BP. 2 24-Nov-2025 1:40 pm	TAD. HD.1 24-Nov-2025	TAD. HD.2 24-Nov-2025	TAD. HD.3 24-Nov-2025
Lab Number:		4042933.1	4042933.2	4042933.3	4042933.4	4042933.5
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Pyrene	mg/kg dry wt	< 0.018	< 0.019	-	-	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 30	< 30	-	-	-
C10 - C14	mg/kg dry wt	< 30	< 30	-	-	-
C15 - C36	mg/kg dry wt	95	76	-	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	101	< 100	-	-	-

Sample Name:		TAD. HD.4 24-Nov-2025
Lab Number:		4042933.6
Individual Tests		
Total Recoverable Lead	mg/kg dry wt	480

4042933.1
TAD. BP.1 24-Nov-2025 1:30 pm
Client Chromatogram for TPH by FID



4042933.2
TAD. BP. 2 24-Nov-2025 1:40 pm
Client Chromatogram for TPH by FID



Analyst's Comments

Samples 1-2 Comment:
It should be noted that the results reported for lead and mercury are total recoverable, not inorganic as specified by the NES standards. This should be kept in mind when interpreting these results.

R J Hill Laboratories Limited
1/17 Print Place
Middleton
Christchurch 8024 New Zealand
[redacted]
www.hill-labs.co.nz

Certificate of Analysis

Client:	CSI Limited	**Lab No:**	4043294	A2Pv1
Contact:	G Sowry	**Date Received:**	27-Nov-2025	
	C/- CSI Limited	**Date Reported:**	03-Dec-2025	
	34 Brookfield Street	**Quote No:**	142005	
	Hamilton East	**Order No:**		
	Hamilton 3216	**Client Reference:**		
		Submitted By:	G Sowry	

Sample Type: Soil

Sample Name	Lab Number	As Received Weight Presence / Absence Testing (g)	Dry Weight Presence / Absence Testing (g)	<2mm Subsample Weight Presence / Absence Testing (g dry wt)	Asbestos Presence / Absence from Presence / Absence Testing	Description of Asbestos Form Presence / Absence Testing
TAD. HD.1	4043294.1	95.2	60.6	52.0	Asbestos NOT detected.	-
TAD. HD.2	4043294.2	94.6	62.5	50.4	Asbestos NOT detected.	-
TAD. HD.3	4043294.3	112.3	73.8	51.2	Asbestos NOT detected.	-
TAD. HD.4	4043294.4	90.7	57.8	50.4	Asbestos NOT detected.	-

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: Soil

Test	Method Description	Default Detection Limit	Sample No
Asbestos in Soil			
As Received Weight Presence / Absence Testing	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g	1-4
Dry Weight Presence / Absence Testing	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g	1-4
<2mm Subsample Weight Presence / Absence Testing	Sample dried at 100 to 105°C, weight of <2mm sample fraction taken for asbestos identification if less than entire fraction. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	-	1-4
Asbestos Presence / Absence from Presence / Absence Testing	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-4
Description of Asbestos Form Presence / Absence Testing	Description of asbestos form and/or shape if present.	-	1-4

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