2 March 2023

Wyborn Capital Investments Limited
Level 3, 16 Viaduct Harbour Avenue
Auckland CBD
Auckland 1010

Contamination Assessment - 167-173 Pilkington Road, Point England, Auckland

(Our Reference: 21255.000.001_02)

1 Introduction

ENGEO Ltd was requested by Wyborn Capital Investments Limited (Wyborn) to undertake a contamination assessment to support a private plan change for the property at 167-173 Pilkington Road, Point England, Auckland (herein referred to as 'the site'; shown in Figure 1). We understand that Wyborn intend to rezone the site from Business - Light Industry to Business – Mixed Use under the Auckland Unitary Plan (AUP, 2016). This work has been carried out in accordance with our signed agreement dated 9 December 2022.

Figure 1: Site Location

Image sourced from NearMaps; dated March 2022

2 Scope of the Assessment

The assessment considered high-level potential for contamination across the site, which may preclude future redevelopment from light industrial to a mixed land use. The assessment comprised a review of the following:

- Aerial photographs;
- Auckland Council property files and site contamination enquiry response; and
- Findings of previous investigations completed for the northern part of the site.

The investigation has been completed with the intention of identifying key environmental constraints or data gaps that may affect a future conversion to a mixed use development. It is not intended to replace the need for a site-specific preliminary and / or detailed site investigation during future redevelopment. Additional environmental investigation may be required prior to earthworks, subdivision and / or change in land use.

3 Site Description

Site information and site setting are summarised in Table 1 and Table 2, respectively.

Table 1: Site Information

Item	Description
Legal Description	Lot 1 DP 86427, Lot 2 DP 20163, Lot 1 DP 32360
Current Land Use	Industrial buildings, a childcare facility and some commercial spaces occupy the site. Current tenants are primarily using warehouse buildings for storage and distribution (including carpet, homeware, appliances, and recreational gear). Two bunded ethanol tanks are stored outside of the warehouse used as a beverage canning facility.
Proposed Land Use	Business – Mixed Use (residential, commercial and community hubs)
Site Area	Approximately 10,000 m^2
Territorial Authority	Auckland Council

Table 2: Site Setting

Item	Description
Topography	The central sealed portion of the site is flat while the vegetated eastern boundary of the site slopes down approximately 2 metres towards Apirana Avenue. The train tracks along the western boundary are approximately 3 metres above the site surface.
Local Setting	The site is situated in a mixed land use area. The North Island Main Trunk rail line runs along the western boundary of the site, industrial / commercial land use is present further west and to the south. Residential land use is present to the east of the site (across Apirana Avenue). No significant ecological areas are mapped on-site or in the immediate surrounding area (Auckland Council Geomaps).
Nearest Surface Water & Use	The nearest watercourse is Omaru Creek, located more than 300 metres northeast of the site. A piped portion of the watercourse is mapped approximately 40 metres north of the site. Auckland Council Geomaps indicate the presence of multiple overland flow paths (OVFPs) on the site. The OVFP in the centre of the northern portion of the site has an estimated catchment area of 3 – 100 hectares (ha), whilst all other mapped OVFPs have a catchment area of 3 ha and below.
Geology	The site soils are mapped by GNS online maps (GNS, 2022) as Auckland Basalts tuff (Kerikeri Volcanic Group) of Auckland Volcanic Field comprising *comminuted pre-volcanic materials with basaltic fragments, and unconsolidated ash and lapilli deposits*.
Hydrogeology	No information was obtained on depth to groundwater in this investigation. Based on site topography, surface water and shallow groundwater are inferred to flow in a north to northeast direction, towards Omaru Creek.

4 Site History and Desktop Review

ENGEO reviewed available environmental information relevant to the site, including aerial photographs, Auckland Council property files and site contamination enquiry response. Site information obtained during this review is summarised in this section, together with the findings of a previous investigation completed by ENGEO for the northern portion of the site.

4.1 Aerial Photographs

ENGEO reviewed selected historical aerial photographs for the site, dating between 1940 and 2022. Aerial photographs were sourced from Retrolens, Auckland Council GeoMaps and Google Earth and are included in Appendix 1 for reference.

The following features were noted:

- Potential horticultural activity can be observed on-site between the 1940s and 1970s.
- The North Island Main Trunk rail line is observed adjacent to the western site boundary in the earliest aerial image (1940).
- Low density residential housing is observed in the southeast portion of the site from 1955. By the early 1970s, a small development (likely residential based on the size) is observed approximately at the centre of the site.
- By the 1980s commercial / industrial development including construction of large warehouses / manufacturing buildings has occurred in the northern and southeast portion of the site. The southwest portion appears to have been earthworked.
- In the 2001 aerial image, undeveloped portions of the site appear to have been sealed by either gravel or asphalt / concrete (with the exception of a small area along the southern and southeast boundary which remains grassed).
- By 2008, additional buildings have been constructed in the southern portion of the site and existing buildings extended.
- Currently, the surrounding land use is residential to the north and east, and commercial to the west and south.

4.2 Auckland Council Site Contamination Enquiry

A Site Contamination Enquiry (SCE) response provided by Auckland Council was received on 22 February 2021 (Appendix 2).

Council's records indicate that the site has possibly been subject to two activities listed on the Ministry for the Environment (MfE's) Hazardous Activities and Industries List (HAIL; MfE, 2011); namely the storage of dangerous goods in association with Montana Wines Ltd (*HAIL ID A2: Chemical manufacture, formulation, or bulk storage*) and historical horticultural activity (*HAIL ID A10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds)*.

In preparing the response, the former Auckland Regional Council and current databases were searched for records of closed landfills, bores, air discharge, industrial and trade process consents, contaminated site discharge consents, and environmental assessments on-site and within approximately 200 metres of the site. Several consents relating to the construction of geotechnical boreholes and discharge from industrial or trade processes have been listed, in addition to nearby incidents such as concrete trucks washing gravel into stormwater drains, a building fire, and a clandestine lab. Due to the location of these incidents, and the absence of records indicating that they have resulted in significant impacts, it is considered unlikely that these consents or incidents have resulted in contamination at the site.

4.3 Auckland Council Property Files

The property file held by Auckland Council was received on 26 February 2021, and relevant findings in relation to our contamination assessment are provided in Table 3 below.

Table 3: Property File Summary

Date	Description
December 1977	Application to enable operation of a trucking and container depot on-site.
1978	Subdivision plan indicates that the site (as well as the remainder of the current facility) is identified as Railway Land.
November 1988	Erect a winery factory building and warehouse.
January 1993	Application to store freight containers on-site with vehicle access onto Pilkington Road.
February 1994	Building consent to construct a warehouse space.
October 1998	Building consent for the construction of a transformer building.
February 1999	Proposal to remove existing 4,684 litre LPG storage tanks on the site and install a new LPG storage tank further north, with an increased capacity of 7,500L.
February 2001	Proposed construction of a new tank farm building in the northern portion of the site, and a new bulk store and covered loading area, as well as car parking spaces located at the southern end of site.
2001	Facsimile from Auckland City Council Environmental Health Officer states that the property (167 Pilkington Road) is 'tagged as a potential contaminated site only because Montana holds a dangerous goods license. There is no evidence of any actual site contamination, no record of complaint and no record of pollution incident'.
March 2001	Dangerous Goods License – contains storage of aerosols and flammable liquids.
November 2001	Application to construct a wine storage tank building.
2001	A Geotechnical Investigation was completed by Riley Consultants Limited for the proposed tank farm. The reports indicate that subsurface soils had no visual indicators of potential contamination (e.g. demolition debris, staining etc.). Buried topsoil was identified at one borehole location. A site investigation plan attached to the report shows an electrical plant and stormwater cesspit system within the footprint of the existing tank farm building.
March 2002	Building consent to construct a new warehouse building and canopy for bulk storage of bottled wine.
May 2002	Proposal to progressively increase the volume of wine stored on and distributed from the site (increase the volume from 40 million litres to 60 million litres annually).

Date	Description
October 2002	Proposal to erect a dangerous goods store to house diesel fuel. In association with construction of a new bulk warehouse building, dangerous good store was proposed to house the diesel fuel (2 x 1000 L diesel tanks to power the pumps in adjacent valve room).
November 2004	Notice from Auckland City Council indicating the site was historically used for horticultural activity.
March 2007	Building consent to construct small lean-to extensions to accommodate new machine and conveyors for bottling line.
March 2008	Resource consent application to construct a waste treatment plant near the eastern boundary. The letter indicates that trade waste will be treated on-site prior to discharge to the Council's sanitary sewer.
April 2009	Proposal for resource consent to permit the discharge of contaminants onto or into land from an existing industrial or trade process (wine manufacturing).
2009	Letter to Auckland City Council indicates that no contamination was identified in subsurface soils during the enabling earthworks for the water treatment plant.
2016	Email correspondence indicates that Tonkin+Taylor conducted a Detailed Site Investigation (DSI) to support the consent application for the childcare centre. Correspondence indicates that the presence of organochlorine pesticides in site soil were assessed, and it has been demonstrated that contaminants are not present above background concentrations.
No Date	Notice indicating the use of treated timber in construction. Facsimile from Auckland City Council Environmental Health Officer states that the property (167 Pilkington Road) is 'tagged as a potential contaminated site only because Montana holds a dangerous goods license. There is no evidence of any actual site contamination, no record of complaint and no record of pollution incident'.

4.4 Previous ENGEO Investigation

ENGEO completed a preliminary and detailed site investigation (PSI and DSI) of the northern portion of the site (333 Apirana Avenue, also referred to as 167 Pilkington Road) in June 2021 and April 2022, respectively (ENGEO, 2021 and ENGEO, 2022; Appendix 3).

The intrusive investigation comprised collection of soil samples from eight test pits positioned to provide general coverage across the site. Ground conditions encountered generally comprised an asphalt layer on top of soil, with the exception of a vegetated area in the northern portion of the site.

Samples were analysed for contaminants of concern including metals / metalloids, polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs) and asbestos. Contaminant concentrations in samples analysed did not exceed the adopted human health or environmental discharge criteria. All samples detected concentrations below the regional background levels.

Based on the results of the PSI and DSI, it was considered that soils did not present a risk for the proposed industrial land use. Although potential HAIL land use (horticultural activity) has been identified on-site, testing has indicated that the level of contaminants in soils on-site are at or below the natural background levels. This portion of the site was therefore considered to meet the definition of "land not covered" from Regulation 5(9) of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (the "NESCS").

5 Potential HAIL Activities

Based on the desktop review of available environmental information, and the findings from the previous ENGEO investigation, the following HAIL activities are considered potentially occurring / have occurred on-site:

- *HAIL ID A2: Chemical manufacture, formulation, or bulk storage*
    - Since the 1970s the site has formed part of the larger wine manufacturing facility. Until the late 1980s the site appeared to be utilised as a storage area, and in the late 1990s the facility extended onto the site, with construction of the tank farm and tank unload area. Based on the nature and type of manufacturing undertaken, the potential for significant contamination of underlying soil or groundwater as a result of these activities is low. The facility has a dangerous good license and fuels and chemicals are used to maintain machinery and vehicles on-site. The facility is predominantly sealed by hardstand area and buildings, and no significant incidents associated with this activity have been reported in Auckland Council documents (Section 4.2 and 4.3). Geotechnical investigations were completed for the wider property by Riley Consultants Limited and Tonkin+Taylor. The reports did not indicate that subsurface soils had visual indicators of potential contamination (e.g. demolition debris, staining etc.). Based on the information reviewed, the wine manufacturing activities conducted on-site are not considered more likely than not to meet the definition of a land use from the HAIL, however further investigation across the wider site is recommended to support this.
- *HAIL ID A10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds*
    - Based on the information reviewed in the property file documents and historical aerial photographs, historical horticultural activity has occurred on the site. It is considered likely that topsoil was removed from the site prior to the present commercial / industrial construction. This is supported by previous geotechnical investigations where only limited areas of buried topsoil were encountered, and email communications regarding the Tonkin +& Taylor DSI. Recent testing completed by ENGEO in the northern portion of the site has indicated that the level of contaminants in soils on-site are at or below the natural background levels. If buried topsoil is encountered during future investigations, it is recommended that samples are collected and analysed for contaminants of concern; namely, metals / metalloids and organochlorine pesticides.

- *HAIL ID A17: Storage tanks or drums of fuel, chemicals, or liquid waste*
    - Storage tanks (diesel and LPG) have historically, and are currently, stored on-site.
- *HAIL ID 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*
    - Based on the age of site buildings, there is potential for contamination associated with the use of lead-based paints and asbestos on buildings.

Based on the above findings, the site is considered more likely than not to have been subject to activities listed on the HAIL (MfE, 2011). Because of this the site will require additional investigation under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES-CS) and Auckland Unitary Plan E30 (AUP) prior to redevelopment and, if elevated contaminants are identified, subsequent remediation. In our experience, conversion of the above land with the above activities / uses is common in Auckland and New Zealand, and the presence of these activities does not make them unsuitable for future land use change.

6 Conclusion

ENGEO did not identify activities which would be likely to preclude future conversion of this area to mixed land use from a contamination perspective, provided that the relevant provisions of the NESCS and the Auckland Unitary Plan are followed when the change in land use occurs, and remedial works occur as required by the findings of the additional investigation works.

This investigation is not intended to replace the need for a PSI and / or DSI for the property during future redevelopment. Additional environmental investigation will be required prior to earthworks, subdivision and / or change in land use.

7 Limitations

i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, Wyborn Capital Investments Limited, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.

ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the Client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.

iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.

iv. This Limitation should be read in conjunction with the Engineering NZ / ACENZ Standard Terms of Engagement.

v. This report is not to be reproduced either wholly or in part without our prior written permission.

We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on (09) 972 2205 if you require any further information.

Report prepared by

Tyler Paterson

Environmental Scientist

Report reviewed by

Claire Davies, CEnvP

Associate Environmental Consultant

8 References

AUP, 2016. Auckland Regional Council. (2016). The Auckland Unitary Plan (Operative in Part) notified 15 November 2016.

ENGEO, 2021. ENGEO Limited. (2021). Preliminary Environmental Site Investigation – 333 Apirana Avenue, Point England, Auckland (report reference 18308.000.001_02)

ENGEO, 2022. ENGEO Limited. (2022). Detailed Environmental Site Investigation – 333 Apirana Avenue, Point England, Auckland (report reference 18308.000.001_03)

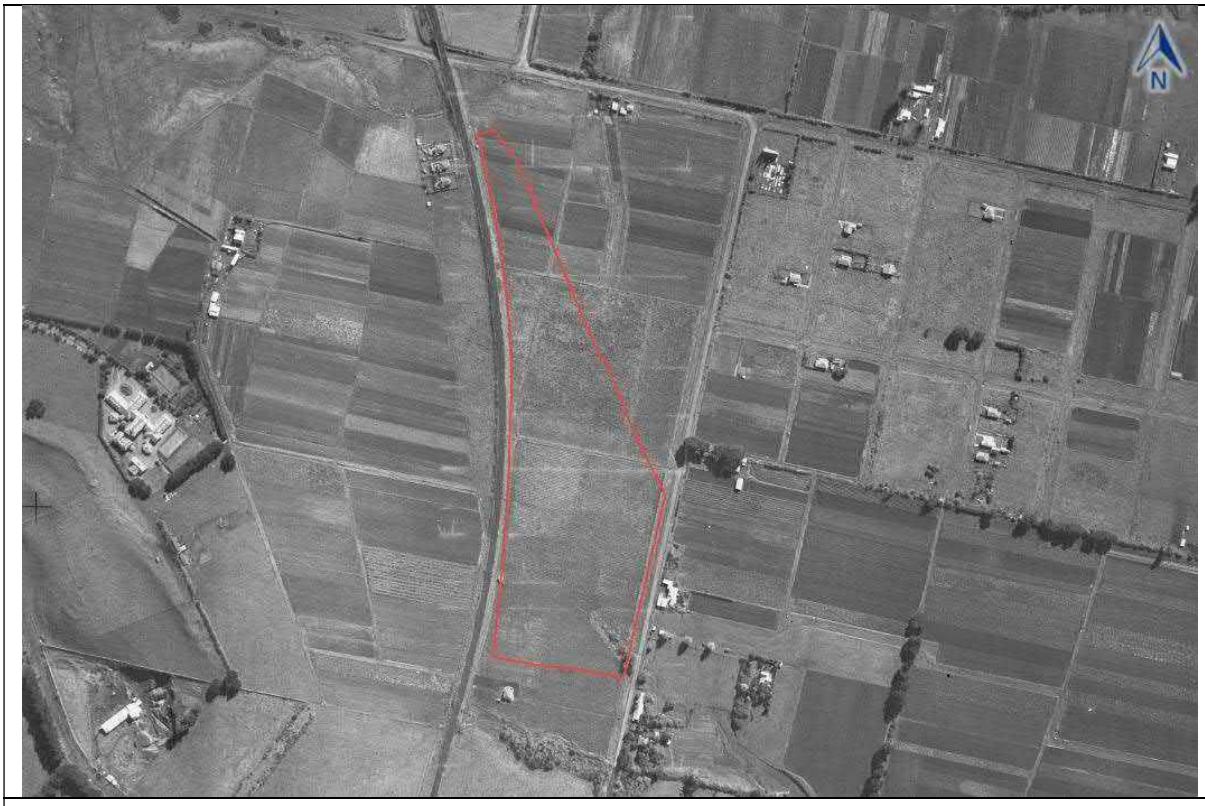
GNS, 2022. Institute of Geological and Nuclear Sciences Ltd. 2022. 1:250,000 Geological Map 3, Auckland.

MfE, 2011. Ministry for the Environment. (2011). Hazardous Activities and Industries List (HAIL).

NESCS, 2011. The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations (2011).

APPENDIX 1

Aerial Photographs



1940 (Retrolens)

1955 (Retrolens NZ)

1961 (Retrolens NZ)

1972 (Retrolens NZ)

1980 (Retrolens NZ)

1988 (Retrolens NZ)

2001 (Auckland Council Geomaps)

2008 (Auckland Council Geomaps)

2017 (Auckland Council Geomaps)

2022 (Google Earth)

APPENDIX 2

Site Contamination Enquiry Response

22 February 2021

ENGEO Limited
8 Greydene Place
AUCKLAND 0622

Attention: Claire Davies

Dear Claire

Site Contamination Enquiry – *167 Pilkington Road, Point England*

This letter is in response to your enquiry requesting available site contamination information within Auckland Council records for the above site. Please note this report does not constitute a site investigation report; such reports are required to be prepared by a (third-party) Suitably Qualified and Experienced Practitioner.

The following details are based on information available to the Contamination, Air & Noise Team in the Resource Consent Department. The details provided may be from former regional council information, as well as property information held by the former district/city councils. For completeness the relevant property file should also be requested to obtain all historical records and reports via 09 3010101 or online at:

https://www.aucklandcouncil.govt.nz/buying-property/order-property-report/Pages/order-property-file.aspx.

1. Hazardous Activities and Industries List (HAIL) Information

This list published by the Ministry for the Environment (MfE) comprises activities and industries that are considered likely to cause land contamination as a result of hazardous substance use, storage, and/or disposal.

Council's records indicate this site has possibly been subject to the following activities that fall within the HAIL:

- HAIL Item (A.2) – Chemical manufacture, formulation or bulk storage.
- HAIL Item (A.10) – Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds.

Records indicate the site 167 Pilkington Road, Point England, has been utilised for historical horticultural activity. The site has also been subject to the storage of dangerous goods in association with Montana Wines Ltd. Additionally, records indicate the site has been identified as filled/weak ground.

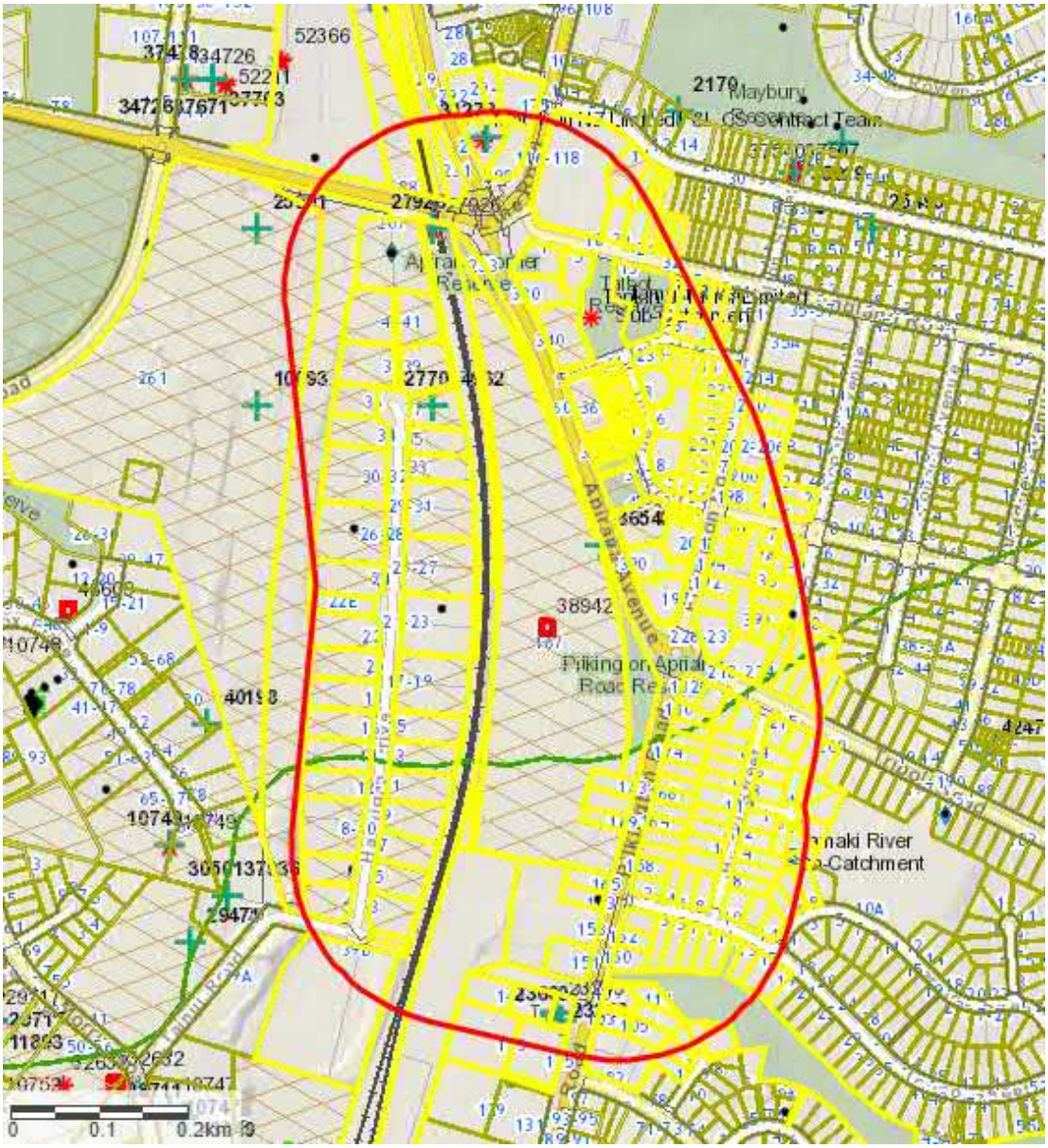
Please note:

- *If you are demolishing any building that may have asbestos containing materials (ACM) in it, you have obligations under the Health and Safety at Work (Abestos) Regulations 2016 for the management and removal of asbestos, including the need to engage a Competent Asbestos Surveyor to confirm the presence or absence of any ACM.*
- *Paints used on external parts of properties up until the mid-1970's routinely contained lead, a poison and a persistent environmental pollutant. You are advised to ensure that soils affected by old, peeling or flaking paint are assessed in relation to the proposed use of the property, including high risk use by young children.*

2. Consents and Incidents Information (200m radius of the selected site)

The Council database was searched for records of the following activities within approximately 200 metres of the site:

- Pollution Incidents (including air discharges, oil or diesel spills)
- Bores
- Contaminated site and air discharges, and industrial trade process consents
- Closed Landfills
- Air quality permitted activities



Legend:

All Consents

All Applications

All Permitted Activities

All Bores

Closed Landfill (Auckland Council owned)

Closed Landfill (Privately owned)

Relevant details of any pollution incidents and consents are appended to this letter (Attachment A). Please refer to the column titled ‘Property Address’ on the spreadsheet to aid in identifying corresponding data on the map.

While the Auckland Council has carried out the above search using its best practical endeavours, it does not warrant its completeness or accuracy and disclaims any responsibility or liability in respect of the information. If you or any other person wishes to act or to rely on this information, or make any financial commitment based upon it, it is recommended that you seek appropriate technical and/or professional advice.

If you wish to clarify anything in this letter that relates to this site, please contact contaminatedsites@aucklandcouncil.govt.nz. Any follow up requests for information on other sites must go through the online order process.

Should you wish to request any of the files referenced above and/or listed in the attached spreadsheet for viewing, please contact the Auckland Council Call Centre on 301 0101 and note you are requesting former Auckland Regional Council records (the records department requires three working days’ notice to ensure the files will be available).

Please note Auckland Council cost recovers officer’s time for all site enquiries. As such an invoice for $128 for the time involved in this enquiry will follow shortly.

Yours Sincerely,

Contamination, Air and Noise Team
Specialist Unit | Resource Consents
Auckland Council

APPENDIX 3

PSI - DSI Report

Preliminary Environmental Site Investigation

333 Apirana Avenue

Point England

Auckland

Submitted to:

Wyborn Capital Properties Limited
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ACENZ

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ENGEO Document Control:

Report Title	Preliminary Environmental Site Investigation - 333 Apirana Avenue, Point England			
Project No.	18308.000.001	Doc ID	02	
Client	Wyborn Capital Properties Limited	Client Contact	Andrew Reed	
Distribution (PDF)	Andrew Reed, Wyborn Capital Properties Limited Michael Judd, Recap Limited			
Date	Revision Details/Status	Author	Reviewer	WP
29/06/2021	Issued to Client - Draft	CD / VP	JR	VB
29/06/2021	Issued to Client	CD	JR	VB

1 Introduction

ENGEO Ltd was requested by Wyborn Capital Properties Limited to undertake a preliminary environmental site investigation of the piece of land at 333 Apirana Avenue, Point England, Auckland. The area comprises the northern portion of the site formerly used as the Pernod Ricard bottling facility (herein referred to as 'the site'; Figure 1). The purpose of the assessment was to support resource consent application for the proposed new light industrial development at the property, understood to comprise generally two story industrial units and carparking areas, and a café. This work has been carried out in accordance with our signed agreement dated 4 February 2021.

2 Objectives

The objective of this investigation was to evaluate and identify conditions indicative of releases and threatened releases of hazardous substances at, or to the subject site, and report on the associated potential risk posed to future site users.

This Preliminary Site Investigation (PSI) has been undertaken to satisfy the requirements of the Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011, herein referred to as the "NES" (NES, 2011).

This investigation was undertaken in general accordance with the Ministry for the Environment (MfE) Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand (MfE, 2011a).

3 Site Description

Site information is summarised in Table 1, and the site setting is summarised in Table 2.

Table 1: Site Information

Item	Description
Legal Description	The site area is the northern part of Lot 1 DP 86427 *(Note: Auckland Council reference the site address as 167 Pilkington Road)*
Current Land Use	Industrial
Proposed Land Use	Light Industrial
Site Area	Approximately 8,220 m^2
Territorial Authority	Auckland Council

Table 2: Site Setting

Item	Description
Topography	The central sealed portion of the site is flat while the vegetated eastern boundary of the site slopes down approximately 2 metres towards Apirana Avenue. The train tracks along the western boundary are approximately 3.5 metres above the site surface.
Local Setting	The site is situated in a mixed land use area. The North Island Main Trunk rail line runs along the western boundary of the site, industrial / commercial land use is present further west. Residential land use is present to the east of the site. The balance of the Pernod Ricard bottling facility occupies land to the south of the site. No significant ecological areas are mapped on-site or in the immediate surrounding area (Auckland Geomaps).
Nearest Surface Water & Use	Auckland Council GeoMaps indicate that the nearest surface watercourse is Omaru Creek more than 300 metres northeast of the site. A piped portion of the watercourse is mapped approximately 40 metres north from the site. No overland flow paths are mapped on the site, however a number are mapped to the south on the balance of the facility (Auckland GeoMaps).
Geology (GNS, 2018)	The site soils are mapped by GNS (2020) as *Auckland Basalts tuff (Kerikeri Volcanic Group) of Auckland Volcanic Field* comprising *comminuted pre-volcanic materials with basaltic fragments, and unconsolidated ash and lapilli deposits.*
Hydrogeology	No information was obtained on depth to groundwater in this investigation. Based on site topography, surface water and shallow groundwater are inferred to flow in a north to northeast direction, towards Omaru Creek.

4 Site History

ENGEO reviewed available environmental and geological information relevant to the site, including geological maps, historical aerial photographs, and the Auckland Council property file. Information obtained during review of this information is summarised in this section.

4.1 Auckland Council Site Contamination Enquiry

The Site Contamination Enquiry response provided by Auckland Council was received on 22 February 2021 (Appendix 1). The historical horticultural use of the site has been identified by Council as a potential activity listed on the Ministry for the Environment's Hazardous Activities and Industries List (HAIL) (MfE, 2011b). The report also indicates that, *the site has also been subject to the storage of dangerous goods in association with Montana Wines Ltd*, and *has been identified as filled / weak ground.*

Due to the age of buildings, Auckland Council also identified that asbestos and / or lead-based paint may be a contaminant in older buildings. Based on the age of the buildings on-site, (which were constructed circa 2000), this is not considered applicable.

In preparing the response, the former Auckland Regional Council and current databases were searched for records of closed landfills, bores, air discharge, industrial and trade process consents, contaminated site discharge consents, and environmental assessments on-site and within approximately 200 metres of the site. Relevant findings in relation to our environmental assessment are provided in Table 3 below.

Table 3: Site Contamination Enquiry Summary

Date	Description	Risk to Development
2005	Potential impacts from a clandestine lab at an industrial property approximately 60 metres northwest of the site.	As this has been identified as a potential impact and no significant incidents associated with this activity have been reported, the risk to site redevelopment activities is considered low.
2009	Discharge consent for the Pernod Ricard facility (of which the site forms part) to authorise the discharge of contaminants onto or into land or water from an industrial or trade process (wine manufacturing).	No non-conformances have been identified in the property file documents reviewed. The risk to site redevelopment activities is considered low.
2014	Fire water run-off from a property approximately 160 metres southwest of the site.	The railway line is elevated with respect to the properties, providing a barrier for any potential significant run-off as a result of this event. The risk to site redevelopment activities is considered low.
2017	Permitted activity consent for contaminated site discharge from a Mobil petrol station approximately 150 metres north of the site. Record indicates that a *"Hotspot of TPH/BTEX above comm/ind appears to be localised. Effects on environment likely to be minor."*	Any significant discharges would likely have discharged to the east of the property (away from the site). The risk to site redevelopment activities is considered low.
2017	Permitted activity consent for contaminated site discharge from a residential development approximately 50 metres to the northeast of the site, which is located on former horticultural land.	No information indicating that works resulted in contaminants crossing site boundary. Given this property is downslope of the site, if significant releases did occur they would have more likely discharged away from the site.

4.2 Auckland Council Property File Review

The property file held by Auckland Council was received on 26 February 2021. Relevant findings in relation to our environmental assessment are provided in Table 4 below.

Table 4: Property File Summary

Date	Description
Site Specific Files	
1978	Subdivision plan indicates that the site (as well as the remainder of the current facility) is identified as Railway Land.
1988	Site plan for Montana Wines indicates that the site is used for car parking.
2001	Proposed Site Layout for Montana Wines indicates that a 'tanker unload' is present approximately at the centre of the western boundary. The larger of the existing buildings is identified as the 'Northern Tank Farm' and the building to the south as a workshop.
2001	Site and Drainage Plan indicates that the larger of the existing site buildings is identified as the 'Northern Tank Farm' and the building to the south as a 'Drainer Building'.
2001	A Geotechnical Investigation was completed by Riley Consultants Limited for the proposed tank farm. The reports indicate that subsurface soils had no visual indicators of potential contamination (e.g. demolition debris, staining etc). Buried topsoil was identified at one borehole location. A site investigation plan attached to the report shows an electrical plant and stormwater cesspit system within the footprint of the existing tank farm building.
Files relating the wider property	
1987	Design Certificate for a tanker standing area indicates that it is situated on a reinforced concrete slab.
1988	Letter regarding dangerous goods storage states that Class 3 flammable liquids are stored on the property, including flavouring liquids and an above ground ethanol tank. Appropriate storage requirements are stipulated.
1993	Application to store freight containers on-site with vehicle access onto Pilkington Road.
1998	Application for construction of transformer building.
1999	Proposal to remove the existing 4,684 L LPG storage tank and install a new 500 L tank further north (near western boundary).
2001 2002	Geotechnical Investigations were completed for the wider property by Riley Consultants Limited and Tonkin+Taylor. The reports indicate that subsurface soils had no visual indicators of potential contamination (e.g. demolition debris, staining etc).

Date	Description
2001	Facsimile from Auckland City Council Environmental Health Officer states that the property (167 Pilkington Road) is 'tagged as a potential contaminated site only because Montana holds a dangerous goods license. There is no evidence of any actual site contamination, no record of complaint and no record of pollution incident'.
2002	In association with construction of a new bulk warehouse building, dangerous good store was proposed to house the diesel fuel (2 x 1000 L diesel tanks to power the pumps in adjacent valve room).
2002	An Assessment of Environmental Effects to support an extension to the bottling facility indicates that the facility is used for the 'receipt, bottling, storage and distribution of wine'. Hazardous substances have been stored on-site since 1977. The report indicates that the northern tank farm (on the site) is proposed to be constructed in the next few months.
2004	Council notice informing that the property was, at some stage, used for horticultural activity.
2008	Letter to Auckland City Council relating to a resource consent application for a waste treatment plant. The letter indicates that generated trade waste will be treated on-site prior to discharge to the council's sanitary sewer.
2009	Letter to Auckland City Council indicates that no contamination was identified in subsurface soils during the enabling earthworks for the water treatment plant.
2009	Auckland Regional Council application to authorise the discharge of contaminants onto or into land or water from an industrial or trade process (wine manufacturing). The quality of stormwater in the main stormwater line will be monitored quarterly as a condition of consent.
2012, 2016 and 2020.	Annual reports prepared by Integrated Waste Solutions Limited. No significant compliance issues appear to have been identified.
2013	Plans indicate that the office building is proposed to be converted to a childcare centre and college of education.
2016	Email correspondence indicates that Tonkin+Taylor conducted a Detailed Site Investigation (DSI) to support the consent application for the childcare centre. Correspondence indicates that the presence of organochlorine pesticides in site soil were assessed, and it has been demonstrated that contaminants are not present above background concentrations.

4.3 Historical Aerial Photograph Review

Aerial photographs dating from 1940 to 2021 have been reviewed and are included in Appendix 2 for reference. The aerials were sourced from Auckland Council GeoMaps and Retrolens. Relevant visible features on the site and surrounding area are summarised in Table 5 below.

Table 5: Historical Aerial Photograph Summary

Date	Description
1940	Horticultural activity is observed on the site and in the surrounding area. The railway line is observed to the west of the site, and low density residential housing and agricultural land in the wider area.
1955	The site and immediate surrounding area is largely unchanged. A significant increase in residential development to the east and northeast of the site is observed. A large area of land to the northwest of the site appears to be used for storage of timber.
1959	No significant changes to the site are observed. Construction of Apirana Avenue and the residential development to the east is occurring.
1961	Horticultural activity is not observed on the site or the balance of the property to the south. Industrial development are observed to the north of the site.
1974	The site appears to have been earthworked. This is likely associated with construction on the balance of the property to the south of the site.
1981	Large rectangular items are being stored along the eastern extent of the site. Smaller items are present along the western extent. It is not clear whether the site surface is sealed. Significant construction has occurred on the balance of the property.
1996	Poor image quality does not allow for detailed observations of the site, however storage of miscellaneous items are still observed. Expansion of the facilities on the balance of the property is observed. Development of the industrial estate to the west of the railway line has occurred.
2001	The tank farm has been constructed in the southwest corner of the site. The balance of the site continues to be utilised as a storage area.
2003 / 2004	Poor image quality does not allow for detailed observations of the site, however the site appears to be more or less in its current configuration. The ‘tanker unload’ area is observed to the north of the tank farm, and the truck turnaround area at the northern end of the site. No significant changes to the surrounding area are observed.
2010 / 2011	No significant changes to the site are observed. Densification of residential land to the east of Apirana Avenue is observed.
2017	Large shipping containers are observed along the centre of the site, and planting in the northern portion of the site.
2018	Only one shipping container is observed on the southern boundary, and the tankers in the ‘tanker unload’ area appear to have been removed.
2021	What appears to be large tanks (positioned on their side) are being stored along the centre of the site. This may be associated with decommissioning of the tank farm.

5 Current Site Conditions

A site walkover was completed on 27 May 2021 by an ENGEO Environmental Scientist. Observations of conditions present at the site are summarised in Table 6. Relevant observations and information obtained during the site visit are presented in the table below. Photographs taken during the site visit are included in Appendix 3.

Table 6: Current Site Conditions

Site Conditions	Comments
Overview	The site contains one large warehouse building which formerly contained the fermentation tanks for the wine. These can be observed on the hardstand in the centre of the site in Figure 1. The eastern third of the site was formerly a carpark. The remaining areas were primarily utilised for storage of shipping containers and movement of trucks and equipment. A concrete area at the centre of the site was formally used as a wash-down area for shipping containers used for transporting wine.
Ground Cover	Eastern boundary is vegetated while the remaining (~90 %) is sealed or occupied by buildings. The concreted areas in the northwest and southern portion of the site is in good condition. Evidence of regular repairs to the asphalt in the central area of the site is evident (see photos in Appendix 3). The northern quarter of the site was behind a locked gate during the site walkover. However, through the wire fence the surface comprised asphalt and concrete hardstand, which appeared to be in good condition.
Surface Water Appearance	Observed in all stormwater grates through the central concreted area of the site. No visual evidence of contamination was observed.
Current Surrounding Land Use	Industrial to the south. Rail line to the west. Residential to the east. Council reserve to the north.
Local sensitive environments	None observed
Visible Signs of Plant Stress	No signs of plant distress were observed.
Potential for On - Or - Off - Site Migration of Contaminants	No activities associated with migration of contaminants on or off-site were identified.
Visible Signs of Contamination	None observed

6 Potential HAIL Activities

Activities included on the Ministry for the Environment's Hazardous Activities and Industries List (HAIL) (MfE, 2011b) trigger the requirement for an intrusive contaminated land investigation prior to redevelopment. Based on the information reviewed as part of this PSI, the following activities may have been historically and / or are currently present at the site:

6.1 Historical Pesticide Application

Based on the information reviewed in the property file documents and historical aerial photographs, historical horticultural activity has occurred on the site. It is considered likely that topsoil was removed from the site prior to the present commercial / industrial construction. This is supported by previous geotechnical investigations where only limited areas of buried topsoil were encountered, and email communications regarding the Tonkin & Taylor DSI, however the DSI has not been obtained for review.

The HAIL, Category A10 *Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray shed*, is considered more likely than not to have occurred on-site.

6.2 Wine Manufacturing

Since the 1970's the site has formed part of the larger wine manufacturing facility. Until the late 1980's the site appeared to be utilised as a storage area, and in the late 1990's the facility extended onto the site, with construction of the tank farm and tank unload area. Based on the nature of the type of manufacturing undertaken, the potential for significant contamination of underlying soil or groundwater as a result of these activities is low. As discussed earlier, the facility has a dangerous good licence and fuels and chemicals are used to maintain machinery and vehicles on-site. The facility (including the site) is predominantly sealed by hardstand area and buildings, and no significant incidents associated with this activity have been reported in Auckland Council documents (Section 4.1 and 4.2). Geotechnical Investigations were completed for the wider property by Riley Consultants Limited and Tonkin+Taylor. The reports did not indicate that subsurface soils had visual indicators of potential contamination (e.g. demolition debris, staining etc).

Based on the information reviewed it is not considered more likely than not that wine manufacturing as conducted on-site meets the definition of a land use from the HAIL.

7 Preliminary Conceptual Model

A preliminary conceptual site model has been developed to assess the potential exposure pathways present at the site. A contamination conceptual site model consists of three primary components. For a contaminant to present a risk to human health or an environmental receptor, all three components are required to be present and connected. The three components of a conceptual site model are:

- Source of contamination.
- An exposure route, where the receptor and contaminants come into contact (e.g. ingestion, inhalation, dermal contact).
- Receptor(s) that may be exposed to the contaminants.

The potential source, pathway, receptor linkages at this subject site are provided in Table 7.

Table 7: Conceptual Site Model

Source	Exposure Pathway	Potential Receptor	Acceptable Risk?
Historical application of pesticides *Heavy metals / metalloids and organochlorine pesticides (OCPs)*	Soil ingestion, inhalation of dust, and / or dermal contact	Site redevelopment workers Surrounding residents	**Likely** If present, impact is likely limited to residual buried topsoil. As topsoils will be geotechnically unsuitable to remain on-site, these should be tested prior to disposal to inform suitable disposal options. The site will remain largely sealed at the completion of works, preventing access for long term site users. Additional investigation to assess topsoils, or a site management plan to outline suitable controls if topsoils encountered is recommended.
	Leaching of contaminants	Surrounding environment	

8 Summary and Conclusions

ENGEO was requested to undertake a Preliminary Environmental Site Investigation of the northern portion of the property at 333 Apirana Avenue, Point England, Auckland currently planned for redevelopment.

Based on the information reviewed as part of this PSI, the site is more likely than not to have been subject to activities listed on the HAIL and therefore the NES applies to the proposed soil disturbance, subdivison and change of land use.

Because a DSI does not exist for the site, the proposed soil disturbance / disposal is a discretionary activity under Regulation 11 of the NES unless the permitted activity standards from Regulation 8(3) of the NES can be met.

The change of land use and subdivision is unlikely to present a risk to human health, and therefore the subdivision and change of land use is a Permitted Activity under Regulation 8(4) of the NES.

9 Limitations

i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, Wyborn Capital Properties Limited, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.

ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.

iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.

iv. This Limitation should be read in conjunction with the Engineering NZ / ACENZ Standard Terms of Engagement.

v. This report is not to be reproduced either wholly or in part without our prior written permission.

We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on (09) 972 2205 if you require any further information.

Report prepared by

Claire Davies, CEnvP

Senior Environmental Consultant

Report reviewed by

Jamie Rhodes

Associate Environmental Engineer

10 References

AUP, 2016. Auckland Regional Council. (2016). The Proposed Auckland Unitary Plan Decisions version (notified 19 August 2016).

GNS, 2021. Geological and Nuclear Sciences Web Map: https://data.gns.cri.nz/geology/

MfE, 2011a. Ministry for the Environment. (2011). Contaminated Land Management Guidelines No.1: Reporting on Contaminated Sites in New Zealand.

MfE, 2011b. Ministry for the Environment. (2011). Hazardous Activities and Industries List (HAIL).

NES, 2011. The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations (2011).

FIGURES

Legend

- Site Boundary
- Balance of wine manufacturing facility

10m 0 10 20m

© Nearmaps

ENGEO

Produced by Evalu8.earth

Title: Site Location Plan		
Client: Wyborn Capital Properties Limited		Figure No: 1 Size: A3
Project: 333 Apirana Avenue, Point England	Drawn: CD	
Date: 28-06-2021	Checked: JR	
Proj No: 18308.000.001	Scale: 1:2158	Version: Final

APPENDIX 1:

Site Contamination Enquiry

22 February 2021

ENGEO Limited
8 Greydene Place
AUCKLAND 0622

Attention: Claire Davies

Dear Claire

Site Contamination Enquiry – *167 Pilkington Road, Point England*

This letter is in response to your enquiry requesting available site contamination information within Auckland Council records for the above site. Please note this report does not constitute a site investigation report; such reports are required to be prepared by a (third-party) Suitably Qualified and Experienced Practitioner.

The following details are based on information available to the Contamination, Air & Noise Team in the Resource Consent Department. The details provided may be from former regional council information, as well as property information held by the former district/city councils. For completeness the relevant property file should also be requested to obtain all historical records and reports via 09 3010101 or online at:

https://www.aucklandcouncil.govt.nz/buying-property/order-property-report/Pages/order-property-file.aspx.

1. Hazardous Activities and Industries List (HAIL) Information

This list published by the Ministry for the Environment (MfE) comprises activities and industries that are considered likely to cause land contamination as a result of hazardous substance use, storage, and/or disposal.

Council's records indicate this site has possibly been subject to the following activities that fall within the HAIL:

- HAIL Item (A.2) – Chemical manufacture, formulation or bulk storage.
- HAIL Item (A.10) – Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds.

Records indicate the site 167 Pilkington Road, Point England, has been utilised for historical horticultural activity. The site has also been subject to the storage of dangerous goods in association with Montana Wines Ltd. Additionally, records indicate the site has been identified as filled/weak ground.

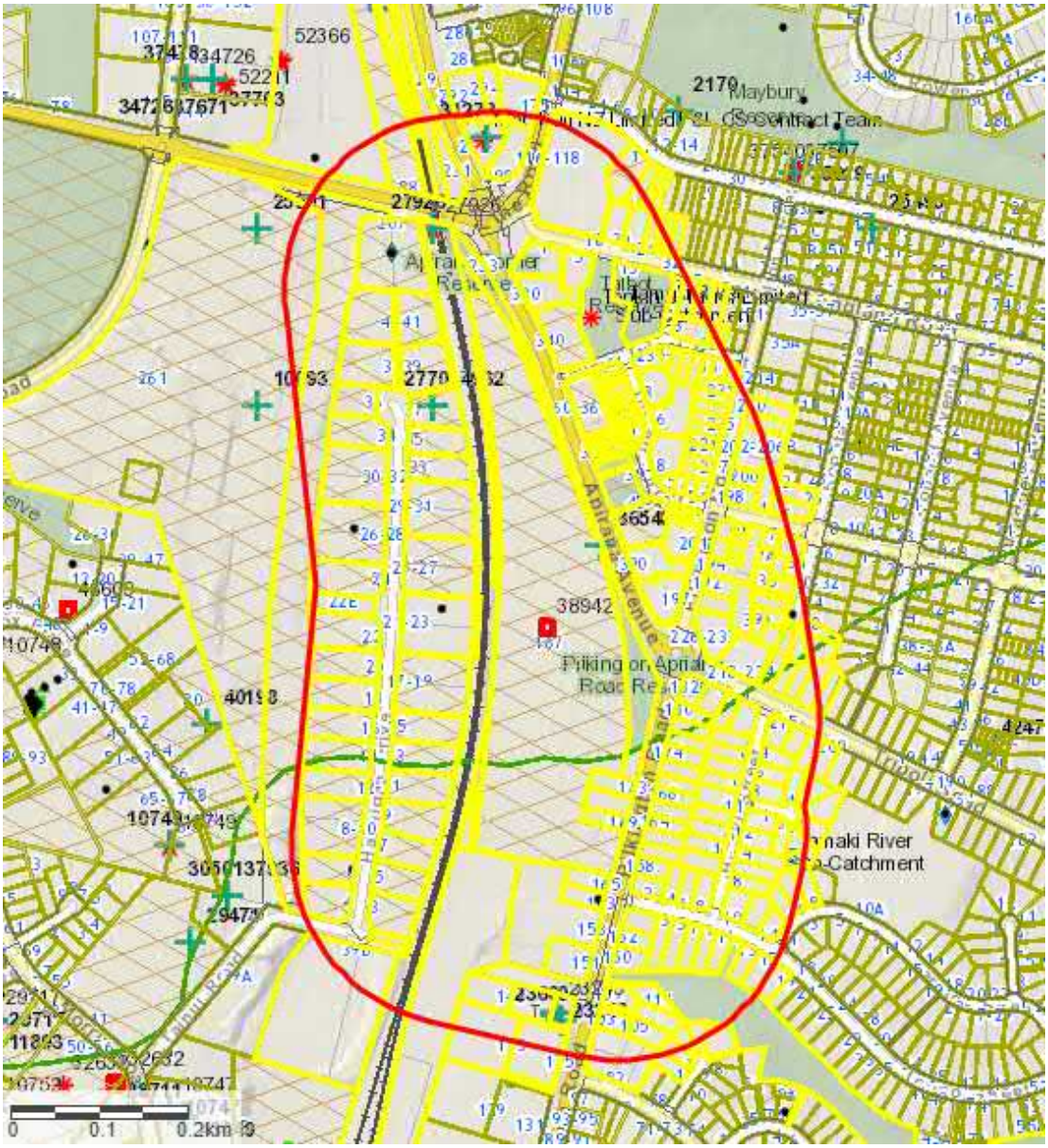
Please note:

- *If you are demolishing any building that may have asbestos containing materials (ACM) in it, you have obligations under the Health and Safety at Work (Abestos) Regulations 2016 for the management and removal of asbestos, including the need to engage a Competent Asbestos Surveyor to confirm the presence or absence of any ACM.*
- *Paints used on external parts of properties up until the mid-1970's routinely contained lead, a poison and a persistent environmental pollutant. You are advised to ensure that soils affected by old, peeling or flaking paint are assessed in relation to the proposed use of the property, including high risk use by young children.*

2. Consents and Incidents Information (200m radius of the selected site)

The Council database was searched for records of the following activities within approximately 200 metres of the site:

- Pollution Incidents (including air discharges, oil or diesel spills)
- Bores
- Contaminated site and air discharges, and industrial trade process consents
- Closed Landfills
- Air quality permitted activities



Legend:

All Consents

All Applications

All Permitted Activities

All Bores

Closed Landfill (Auckland Council owned)

Closed Landfill (Privately owned)

Relevant details of any pollution incidents and consents are appended to this letter (Attachment A). Please refer to the column titled ‘Property Address’ on the spreadsheet to aid in identifying corresponding data on the map.

While the Auckland Council has carried out the above search using its best practical endeavours, it does not warrant its completeness or accuracy and disclaims any responsibility or liability in respect of the information. If you or any other person wishes to act or to rely on this information, or make any financial commitment based upon it, it is recommended that you seek appropriate technical and/or professional advice.

If you wish to clarify anything in this letter that relates to this site, please contact contaminatedsites@aucklandcouncil.govt.nz. Any follow up requests for information on other sites must go through the online order process.

Should you wish to request any of the files referenced above and/or listed in the attached spreadsheet for viewing, please contact the Auckland Council Call Centre on 301 0101 and note you are requesting former Auckland Regional Council records (the records department requires three working days’ notice to ensure the files will be available).

Please note Auckland Council cost recovers officer’s time for all site enquiries. As such an invoice for $128 for the time involved in this enquiry will follow shortly.

Yours Sincerely,

Contamination, Air and Noise Team
Specialist Unit | Resource Consents
Auckland Council

CONSENT_NUMBER	FILE_REFERENCE	CONSENT_HOLDER	BORE_ID	GRANTED_DATE	EXPIRY_DATE	CONSENT_STATUS	PROCESSING_OFFICER	PURPOSE	WORKS_DESCRIPTION	EASTING	NORTHING	ACTIVITY_STATUS	BORE_USE	ACTIVITY_DESCRIPTION	SITE_NAME	SITE_DESCRIPTION	MAIN_AQUIFER	AQUIFER	ENVIRONMENT_REPORTING_AREA	TLA	DATE_DRILLED	TOTAL_DEPTH	GROUND_ELEVATION	STATIC_WATER_LEVEL	STATIC_WATER_DATE	BORE_LOG	DIAMETER_FROM	DIAMETER_TO	DIAMETER	CASING_FROM	CASING_TO	CASING_TYPE	CASING_DIAMETER	SCREEN_FROM	SCREEN_TO	SCREEN_TYPE	DATE_CREATED	PROPERTY_ADDRESS	LOC_TYP
27926	CS12-12-31187	Opus International Consultants Ltd	21905	20030509	20040508	Expired	_Michelle Ip	To authorise the construction of up to 23 geotechnical bores associated with the eastern corridor project.	Construction of up to 23 100mm diameter bores to a depth of approximately 40m. Installation of PVC casing to various depths.	1765300	5916700	Drilled		To authorise the construction of up to 23 geotechnical bores associated with the eastern corridor project.			Waitemata	Auckland Isthmus Waitemata	Auckland Central	Auckland Central	20030521	22.6	21.8			Y				0	18.5	PVC/ABS					20170601	Various - Eastern Corridor Auckland City, Manukau City	Point
23249	CS12-12-24917	Pattle Delamore Partners Limited	23186	19991029	20001029	Expired	_Gillian Crowcroft	Authorise the construction of bores for groundwater level and/or chemistry monitoring.	Construction of three 100mm diameter bores to a depth of 6m. Installation of PVC casing to 1.5m depth and PVC screen from 1.5-4.5m depth.	1765440	5915810	Drilled	Observation / Piezo		Mobil Oil	147 Pilkington Rd, Panmure				Auckland Central	20000427	5		2			0	5	50	0	1	PVC/ABS	50	1	5	PVC/ABS	20170601	147 Pilkington Road Mount Wellington Auckland Central	Point

CONSENT_NUMBER	FILE_REFERENCE	ACTIVITY	CONSENT_HOLDER	CONSENT_STATUS	GRANTED_DATE	REVIEW_DATE	EXPIRY_DATE	PROCESSING_OFFICER	PURPOSE	WORKS_DESCRIPTION	EASTING	NORTHING	ACTIVITY_ID	ACTIVITY_STATUS	ACTIVITY_DESCRIPTION	SITE_NAME	SITE_DESCRIPTION	DATE_CREATED	PROPERTY_ADDRESS	LOC_TYP	MONITORING_OFFICER	PREVIOUS_INSPECTION_DATE	NEXT_INSPECTION_DATE
23249	C512-12-2491*	Bore	Pattle Delamore Partners Limited	Expired	19991029		20001029	_Gillian Crowcroft	Authorise the construction of bores for groundwater level and/or chemistry monitoring.	Construction of three 100mm diameter bores to a depth of 6m. Installation of PVC casing to 1.5m depth and PVC screen from 1.5-4.5m depth.	1765440	5915810	21086	Drilled		Mobil Oil	147 Pilkington Rd, Panmure	2/06/2017	147 Pilkington Road Mount Wellington Auckland Central	Point	_Gillian Crowcroft	Nil	Nil
27926	C512-12-3118*	Bore	Opus International Consultants Ltd	Expired	20030509		20040508	_Michelle Ip	To authorise the construction of up to 23 geotechnical bores associated with the eastern corridor project.	Construction of up to 23 100mm diameter bores to a depth of approximately 40m. Installation of PVC casing to various depths.	1765300	5916700	21905	Drilled	To authorise the construction of up to 23 geotechnical bores associated with the eastern corridor project.			2/06/2017	Various - Eastern Corridor Auckland City, Manukau City	Point		Nil	Nil
36548	21000	Industrial or Trade Process	Pernod Ricard New Zealand	Issued	20090709	20110630	20290731	_Kathryn Markham	To authorise the discharge of contaminants onto or into land or water from an industrial or trade process (wine manufacturing).		1765490	5916340	151	Occurring	To discharge from an industrial or trade process from a site that ferments, blends & bottles wines.	Pernod Ricard NZ	Wine production facility, involved in the fermentation, blending and bottling of wine that comes from external vineyards.	2/06/2017	171 Pilkington Road Point England Auckland Central	Point	Richard Preece	2/12/2015	1/12/2016

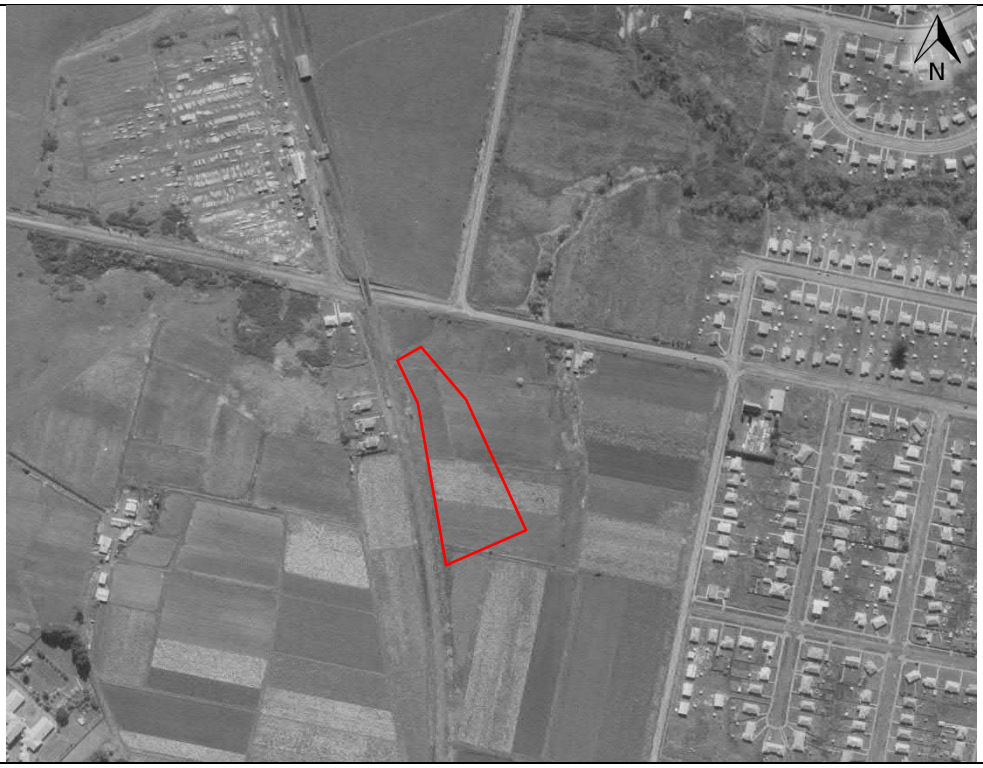
INCIDENTNUMBER	XCOORD	YCOORD	NZTMXCOORD	NZTMYCOORD	LOCATION	SUBURB	CATCHMENTCODE	POLLUTANTTYPE	RECIEVED	REPORT	INCIDENTTYPE	ACTIONEDBY	IMPACT	VOLUME	PROBLEMFOUND	CULPRITTRACED	RECORDDATE	INVESTIGATIONDATE
Oct-71	1765310.87	5916268.54	1765310.87	5916268.54	4/23 Hannigan Dr	Panmure	605	Dirt / Inert Minerals / Sediment	Hotline	Concrete trucks washing gravel into SW drain	Water / Land Pollution	Tim Butler	Stormwater	<10 litres	YES	YES	15/09/2010	15/09/2010
10/1620	1765707.51	5916263.13	1765707.51	5916263.13	41 Ropata Ave	Glen Innes	605	Wastewater - Sewer Overflow	Hotline	DWSO	Sewage Overflow	Aaron Douglas	Stormwater	10-200 litres	YES	YES	29/04/2010	29/04/2010
14/0489	1765209.8	5916359.29	1765209.8	5916359.29	26 Hannigan Dr	Panmure	605	Fire Water Run-off	Fire Pager	Building Fire	Fire (Attended)	Aaron Graham	Potential	>1000 litres	YES	YES	3/02/2014	3/02/2014
Nov-45	1765253.52	5916673.62	1765253.52	5916673.62	207 Merton Rd	St Johns	605	Unidentified - Toxic	Other	Clan Lab	ClanLab Report	Fiona Southall	Potential	Potential	YES	YES	7/09/2005	7/09/2005

PERMITTED_ACTIVITY_ID	FILE_REFERENCE	PERMITTED_ACTIVITY_HOLDER	PERMITTED_ACTIVITY_TYPE	ACTIVITY	CONSENT_STATUS	PROCESSING_OFFICER	PURPOSE	WORKS_DESCRIPTION	EASTING	NORTHING	ACTIVITY_ID	ACTIVITY_STATUS	ACTIVITY_DESCRIPTION	SITE_NAME	SITE_DESCRIPTION	DATE_CREATED	PROPERTY_ADDRESS	LOC_TYP
51744	6/05/3899	Mobil Oil NZ Limited F&L CS Contract Team	Contaminated Site Discharge	Contaminated Site Discharge	Assessment Completed	_Sarah Pinkerton	Hotspot of TPH/BTEX above comm/ind appears to be localised. Effects on environment likely to be minor. Have requested SMP.	c/o Kylie EckersleyFile 6-05-3899	1765358	5916800	20814	Occurring	Mobil Glen Innes	296 Apirana Ave, Glen Innes	Lot 4 DP 145066	2/06/2017	296 Apirana Avenue Glen Innes Auckland Central	Point
51127	T096-05-3371	Tonkin & Taylor Limited	Contaminated Site Discharge	Contaminated Site Discharge	Assessment Completed	_Sarah Pinkerton	redevelopment of residential, increased density of housing	PO peter Kavanagh	1765480	5916600	20333	Completed	redevelopment of residential Housing NZ site for higher density residential housing on former horticultural land	Talbot Park		2/06/2017	330 Apirana Avenue Point England Auckland Central	Area

APPENDIX 2:

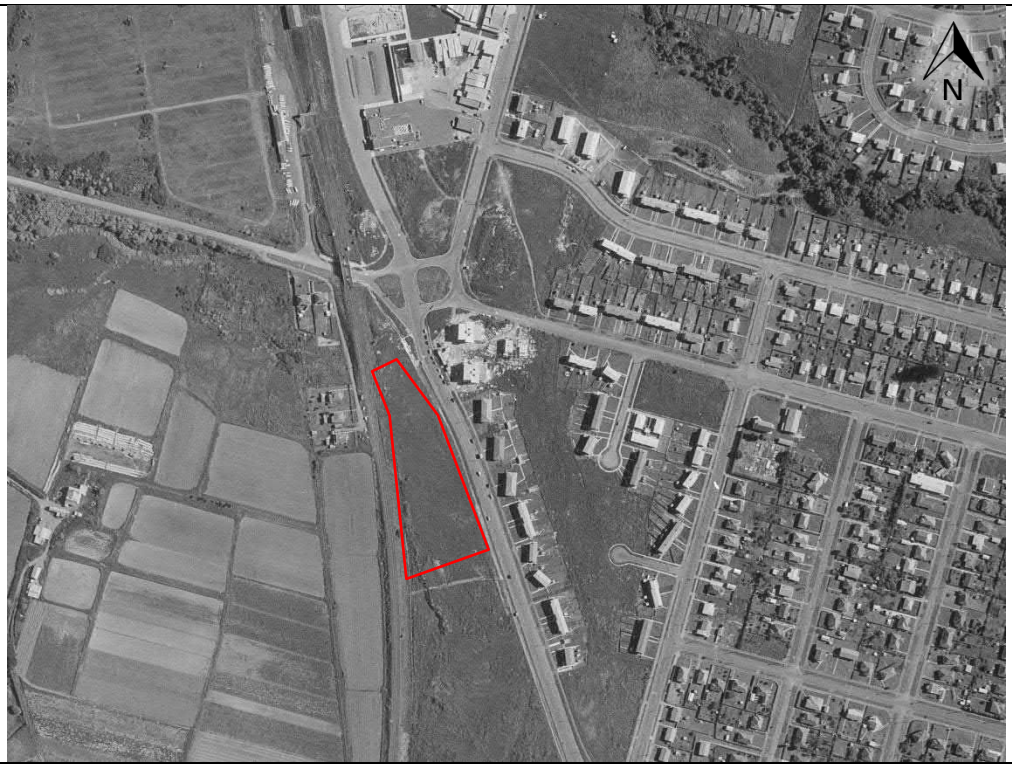
Historical Aerial Photographs

1940 (Retrolens NZ)

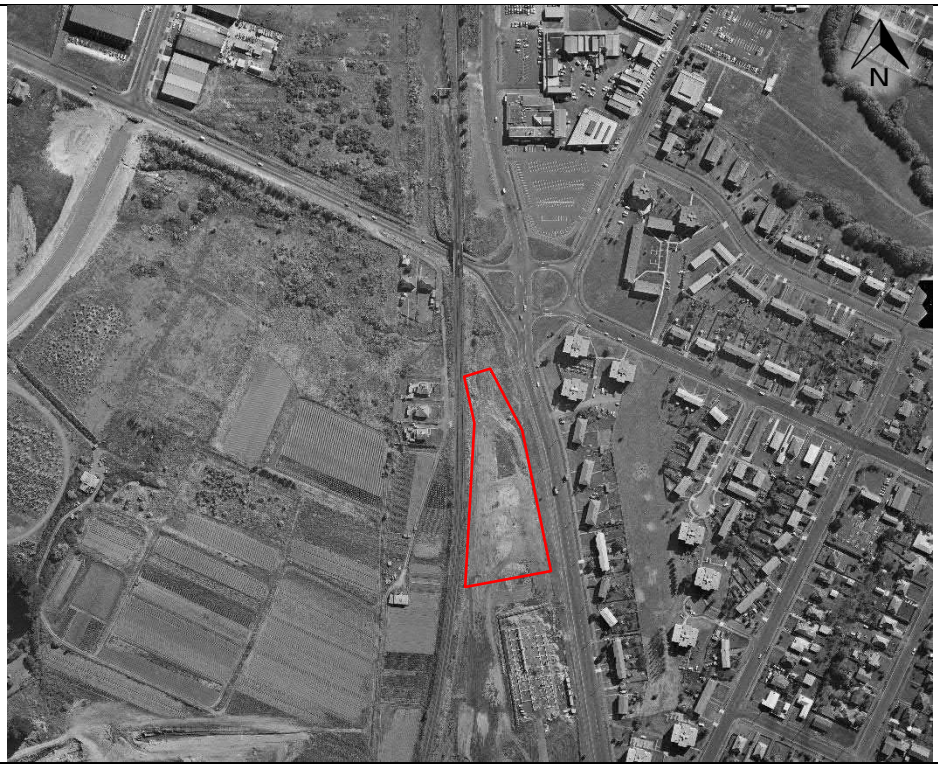


1955 (Retrolens NZ)

1959 (Auckland Council Geomaps)



1961 (Retrolens NZ)



1974 (Retrolens NZ)

1981 (Retrolens NZ)

1996 (Auckland Council Geomaps)

2001 (Auckland Council Geomaps)

2003 / 2004 (Auckland Council Geomaps)

2006 (Auckland Council Geomaps)

2010 / 2011 (Auckland Council Geomaps)

2017 (Nearmaps)

2018 (Nearmaps)

2021 (Nearmaps)

APPENDIX 3:

Site Walkover Photographs

Photo 1: Northern end of site showing trees in planter boxes (access was unavailable due to locked gates).

Photo 2: Central eastern area of site showing asphalt car parking area in worn condition.

Photo 3: Central yard showing patched asphalt pad.

Photo 4: Western central yard facing the tank farm building.

Photo 5: Patched asphalt north of the tank farm building.

Photo 6: Stormwater drainage system in central area of site between the tank farm building and the 'flexi station.'

Photo 7: Flexi Station building in centre of yard area.

Photo 8: Western entrance to the ‘drainer building’ in the south-western corner of the site.

Photo 9: Western site boundary facing south along the edge of the tank farm building.

Photo 10: Interior of the tank farm building.

Photo 11: Tank plinth in the tank farm building.

Photo 12: Doorway between the tank farm building and the ‘drainer building.’

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T: +64 9 972 2205
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Project Number 18308.000.001

Detailed Environmental Site Investigation

333 Apirana Avenue, Point England, Auckland

Submitted to:
Wyborn Capital Properties Limited
Level 3
16 Viaduct Harbour Avenue
Auckland 1010

Contents

Tables

Appendices

ENGEO Document Control:

Report Title	Detailed Environmental Site Investigation - 333 Apirana Avenue, Point England			
Project No.	18308.000.001	**Doc ID**	03	
Client	Wyborn Capital Properties Limited	**Client Contact**	Andrew Reed	
Distribution (PDF)	Andrew Reed, Wyborn Capital Properties Limited Michael Judd, Recap Limited			
Date	**Revision Details / Status**	**Author**	**Reviewer**	**WP**
27/04/2022	Issued to Client	GJ	JR	DF

1 Introduction

ENGEO Ltd was requested by Wyborn Capital Properties Limited to undertake a detailed environmental site investigation of the piece of land at 333 Apirana Avenue, Point England, Auckland. The area comprises the northern portion of the site formerly used as the Pernod Ricard bottling facility (herein referred to as 'the site', Figure 1). The purpose of the assessment was to support the resource consent application for the proposed light industrial development at the property, understood to comprise generally two story industrial units and carparking areas, as well as a café. This work has been carried out in accordance with our signed agreement dated 18 March 2022 (Reference P2020.002.163_03).

This combined Preliminary and Detailed Site Investigation (PSI and DSI) has been undertaken to satisfy the requirements of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011, herein referred to as the "NES" (NES, 2011).

The investigation provides information regarding the presence of land contaminants that pose a potential human health risk to future site users and site redevelopment workers during earthworks and construction. The results of this investigation have been used to evaluate whether remediation is necessary prior to site redevelopment, and to further assess the resource consents required under the NES.

This investigation also addresses the requirements of regional regulations covering discharges to the environment from contaminated sites during and post-redevelopment works; namely, the Auckland Unitary Plan Operative in part - 15 November 2016 (herein referred to as the AUP; AUP, 2016).

This investigation was undertaken in general accordance with the Ministry for the Environment (MfE) Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand (MfE, 2021a).

2 Objectives

The PSI component of the work included a desktop review of historical site information and review / assessment of information gathered during the site walkover undertaken on 27 May 2021.

The objective of this phase of the investigation was to evaluate and identify conditions indicative of releases and threatened releases of hazardous substances at, or to the subject property.

The DSI was an intrusive investigation undertaken to assess:

- The type, extent and level of contamination within the proposed development site.
- Whether contaminants of concern identified present an unacceptable risk to human health or environmental receptors.
- Disposal options for the potentially impacted soil that may be required to be removed from site during redevelopment.
- Whether the soils remaining on-site are suitable for the proposed end use.

3 Site Description

Site information is summarised in Table 1, and the site setting is summarised in Table 2.

Table 1: Site Information

Item	Description
Legal Description	The site area is the northern part of Lot 1 DP 86427 *(Note: Auckland Council reference the site address as 167 Pilkington Road)*
Current Land Use	Industrial
Proposed Land Use	Light Industrial
Site Area	Approximately 8,220 m^2
Territorial Authority	Auckland Council

Table 2: Site Setting

Item	Description
Topography	The central sealed portion of the site is flat while the vegetated eastern boundary of the site slopes down approximately 2 metres towards Apirana Avenue. The train tracks along the western boundary are approximately 3.5 metres above the site surface.
Local Setting	The site is situated in a mixed land use area. The North Island Main Trunk rail line runs along the western boundary of the site, industrial / commercial land use is present further west. Residential land use is present to the east of the site (across Apirana Ave). The balance of the Pernod Ricard bottling facility occupies land to the south of the site. No significant ecological areas are mapped on-site or in the immediate surrounding area (Auckland Geomaps).
Nearest Surface Water & Use	Auckland Council GeoMaps indicate that the nearest surface watercourse is Omaru Creek more than 300 metres northeast of the site. A piped portion of the watercourse is mapped approximately 40 metres north from the site. No overland flow paths are mapped on the site, however a number are mapped to the south on the balance of the facility (Auckland GeoMaps).
Geology	The site soils are mapped by GNS online maps (GNS, 2022) as *Auckland Basalts tuff (Kerikeri Volcanic Group) of Auckland Volcanic Field* comprising *comminuted pre-volcanic materials with basaltic fragments, and unconsolidated ash and lapilli deposits.*
Hydrogeology	No information was obtained on depth to groundwater in this investigation. Based on site topography, surface water and shallow groundwater are inferred to flow in a north to northeast direction, towards Omaru Creek.

4 Site History

ENGEO reviewed available environmental and geological information relevant to the site, including geological maps, historical aerial photographs, and the Auckland Council property file. Information obtained during review of this information is summarised in this section.

4.1 Auckland Council Site Contamination Enquiry

The Site Contamination Enquiry response provided by Auckland Council was received on 22 February 2021 (Appendix 1). The historical horticultural use of the site has been identified by Council as a potential activity listed on the Ministry for the Environment's Hazardous Activities and Industries List (HAIL) (MfE, 2011b). The report also indicates that, *the site has also been subject to the storage of dangerous goods in association with Montana Wines Ltd* and *has been identified as filled / weak ground.*

Due to the age of buildings, Auckland Council also identified that asbestos and / or lead-based paint may be a contaminant in older buildings. Based on the age of the buildings on-site, (which were constructed circa 2000), this is not considered applicable.

In preparing the response, the former Auckland Regional Council and current databases were searched for records of closed landfills, bores, air discharge, industrial and trade process consents, contaminated site discharge consents, and environmental assessments on-site and within approximately 200 metres of the site. Relevant findings in relation to our environmental assessment are provided in Table 3 below.

Table 3: Site Contamination Enquiry Summary

Date	Description	Risk to Development
2005	Potential impacts from a clandestine lab at an industrial property approximately 60 metres northwest of the site.	As this has been identified as a potential impact and no significant incidents associated with this activity have been reported, the risk to site redevelopment activities is considered low.
2009	Discharge consent for the Pernod Ricard facility (of which the site forms part) to authorise the discharge of contaminants onto or into land or water from an industrial or trade process (wine manufacturing).	No non-conformances have been identified in the property file documents reviewed. The risk to site redevelopment activities is considered low.
2014	Fire water run-off from a property approximately 160 metres southwest of the site.	The railway line is elevated with respect to the properties, providing a barrier for any potential significant run-off as a result of this event. The risk to site redevelopment activities is considered low.
2017	Permitted activity consent for contaminated site discharge from a Mobil petrol station approximately 150 metres north of the site. Record indicates that a *"Hotspot of TPH/BTEX above comm/ind appears to be localised. Effects on environment likely to be minor."*	Any significant discharges would likely have discharged to the east of the property (away from the site). The risk to site redevelopment activities is considered low.

Date	Description	Risk to Development
2017	Permitted activity consent for contaminated site discharge from a residential development approximately 50 metres to the northeast of the site, which is located on former horticultural land.	No information indicating that works resulted in contaminants crossing site boundary. Given this property is downslope of the site, if significant releases did occur they would have more likely discharged away from the site.

4.2 Auckland Council Property File Review

The property file held by Auckland Council was received on 26 February 2021. Relevant findings in relation to our environmental assessment are provided in Table 4 below.

Table 4: Property File Summary

Date	Description
Site Specific Files	
1978	Subdivision plan indicates that the site (as well as the remainder of the current facility) is identified as Railway Land.
1988	Site plan for Montana Wines indicates that the site is used for carparking.
2001	Proposed Site Layout for Montana Wines indicates that a 'tanker unload' is present approximately at the centre of the western boundary. The larger of the existing buildings is identified as the 'Northern Tank Farm' and the building to the south as a workshop.
2001	Site and Drainage Plan indicates that the larger of the existing site buildings is identified as the 'Northern Tank Farm' and the building to the south as a 'Drainer Building'.
2001	A Geotechnical Investigation was completed by Riley Consultants Limited for the proposed tank farm. The reports indicate that subsurface soils had no visual indicators of potential contamination (e.g. demolition debris, staining etc.). Buried topsoil was identified at one borehole location. A site investigation plan attached to the report shows an electrical plant and stormwater cesspit system within the footprint of the existing tank farm building.
Files relating the wider property	
1987	Design Certificate for a tanker standing area indicates that it is situated on a reinforced concrete slab.
1988	Letter regarding dangerous goods storage states that Class 3 flammable liquids are stored on the property, including flavouring liquids and an above ground ethanol tank. Appropriate storage requirements are stipulated.
1993	Application to store freight containers on-site with vehicle access onto Pilkington Road.
1998	Application for construction of transformer building.

Date	Description
1999	Proposal to remove the existing 4,684 L LPG storage tank and install a new 500 L tank further north (near western boundary).
2001 2002	Geotechnical Investigations were completed for the wider property by Riley Consultants Limited and Tonkin+Taylor. The reports indicate that subsurface soils had no visual indicators of potential contamination (e.g. demolition debris, staining etc.).
2001	Facsimile from Auckland City Council Environmental Health Officer states that the property (167 Pilkington Road) is 'tagged as a potential contaminated site only because Montana holds a dangerous goods license. There is no evidence of any actual site contamination, no record of complaint and no record of pollution incident'.
2002	In association with construction of a new bulk warehouse building, dangerous good store was proposed to house the diesel fuel (2 x 1000 L diesel tanks to power the pumps in adjacent valve room).
2002	An Assessment of Environmental Effects to support an extension to the bottling facility indicates that the facility is used for the 'receipt, bottling, storage and distribution of wine'. Hazardous substances have been stored on-site since 1977. The report indicates that the northern tank farm (on the site) is proposed to be constructed in the next few months.
2004	Council notice informing that the property was, at some stage, used for horticultural activity.
2008	Letter to Auckland City Council relating to a resource consent application for a waste treatment plant. The letter indicates that generated trade waste will be treated on-site prior to discharge to the council's sanitary sewer.
2009	Letter to Auckland City Council indicates that no contamination was identified in subsurface soils during the enabling earthworks for the water treatment plant.
2009	Auckland Regional Council application to authorise the discharge of contaminants onto or into land or water from an industrial or trade process (wine manufacturing). The quality of stormwater in the main stormwater line will be monitored quarterly as a condition of consent.
2012, 2016 and 2020.	Annual reports prepared by Integrated Waste Solutions Limited. No significant compliance issues appear to have been identified.
2013	Plans indicate that the office building is proposed to be converted to a childcare centre and college of education.
2016	Email correspondence indicates that Tonkin+Taylor conducted a Detailed Site Investigation (DSI) to support the consent application for the childcare centre. Correspondence indicates that the presence of organochlorine pesticides in site soil were assessed, and it has been demonstrated that contaminants are not present above background concentrations.

4.3 Historical Aerial Photograph Review

Aerial photographs dating from 1940 to 2021 have been reviewed and are included in Appendix 2 for reference. The aerials were sourced from Auckland Council GeoMaps and Retrolens. Relevant visible features on the site and surrounding area are summarised in Table 5 below.

Table 5: Historical Aerial Photograph Summary

Date	Description
1940	Horticultural activity is observed on the site and in the surrounding area. The railway line is observed to the west of the site, and low density residential housing and agricultural land in the wider area.
1955	The site and immediate surrounding area is largely unchanged. A significant increase in residential development to the east and northeast of the site is observed. A large area of land to the northwest of the site appears to be used for storage of timber.
1959	No significant changes to the site are observed. Construction of Apirana Avenue and the residential development to the east is occurring.
1961	Horticultural activity is not observed on the site or the balance of the property to the south. Industrial development are observed to the north of the site.
1974	The site appears to have been earthworked. This is likely associated with construction on the balance of the property to the south of the site.
1981	Large rectangular items are being stored along the eastern extent of the site. Smaller items are present along the western extent. It is not clear whether the site surface is sealed. Significant construction has occurred on the balance of the property.
1996	Poor image quality does not allow for detailed observations of the site, however storage of miscellaneous items are still observed. Expansion of the facilities on the balance of the property is observed. Development of the industrial estate to the west of the railway line has occurred.
2001	The tank farm has been constructed in the southwest corner of the site. The balance of the site continues to be utilised as a storage area.
2003 / 2004	Poor image quality does not allow for detailed observations of the site, however the site appears to be more or less in its current configuration. The ‘tanker unload’ area is observed to the north of the tank farm, and the truck turnaround area at the northern end of the site. No significant changes to the surrounding area are observed.
2010 / 2011	No significant changes to the site are observed. Densification of residential land to the east of Apirana Avenue is observed.
2017	Large shipping containers are observed along the centre of the site, and planting in the northern portion of the site.

Date	Description
2018	Only one shipping container is observed on the southern boundary, and the tankers in the 'tanker unload' area appear to have been removed.
2021	What appears to be large tanks (positioned on their side) are being stored along the centre of the site. This may be associated with decommissioning of the tank farm.

5 Site Observations

The site walkover and collection of soil samples was completed by an ENGEO Environmental Scientist on two site visits - 27 May 2021 (observations only) and 31 March 2022 (intrusive investigation / sampling works). During the intrusive sampling investigation, an excavator was used to advance test pits in seven locations (as shown in Figure 1) with soil samples collected in accordance with MfE CLMG No 5 (MfE, 2021b). Further details of the intrusive investigation works are described in Section 7.

5.1 Site Walkover and Sampling Observations

Observations of conditions present at the site at the time of the walkover are summarised in Table 6. Relevant observations and information obtained during the site visit are presented in the table below. Photographs taken during the site visit are included in Appendix 3.

Table 6: Current Site Conditions

Site Conditions	Comments
Overview	The site contains one large warehouse building which formerly contained the fermentation tanks for the wine. These can be observed on the hardstand in the centre of the site in Figure 1. The eastern third of the site was formerly a carpark. The remaining areas were primarily utilised for storage of shipping containers and movement of trucks and equipment. A concrete area at the centre of the site was formally used as a wash-down area for shipping containers used for transporting wine.
Ground Cover	Eastern boundary is vegetated while the remaining (~90 %) is sealed or occupied by buildings. The concreted areas in the northwest and southern portion of the site is in good condition. Evidence of regular repairs to the asphalt in the central area of the site is evident (see photos in Appendix 3). The northern quarter of the site was behind a locked gate during the site walkover. However, through the wire fence the surface comprised asphalt and concrete hardstand, which appeared to be in good condition.
Surface Water Appearance	Observed in all stormwater grates through the central concreted area of the site. No visual evidence of contamination was observed.

Site Conditions	Comments
Current Surrounding Land Use	Industrial to the south. Rail line to the west. Residential to the east. Council reserve to the north.
Local sensitive environments	None observed
Visible Signs of Plant Stress	No signs of plant distress were observed.
Potential for On - Or - Off - Site Migration of Contaminants	No activities associated with migration of contaminants on or off-site were identified.
Visible Signs of Contamination	None observed

5.2 Ground Conditions

Generally, the majority of the site had an asphalt layer across seal over the soil, excluding the northern-most vegetated portion of the site. Ground conditions encountered are described in Table 7 below.

Table 7: Summary of Ground Conditions Site Model

Sample Locations	Depth (m bgl)	Description
TP01, TP03 – TP08	0 - 0.1	Asphalt
TP01,TP03, TP05, TP07, TP08	0.1 – 0.3	Gravel / Hardfill
TP04, TP06	0.1 – 0.3 / 0.4	Brown sandy gravel with gravel chunks
TP03	0.4 – 1.0	Brownish grey (dark) clayey silt with trace rootlets
	1.0 – 1.7	Orange clayey silt
	1.7 – 2.5	Orange clayey silt with long orange / grey streaks
TP04	0.4 – 0.9	Orange clayey silt with brown mottles
	0.9 – 2.0	Grey clayey silt with orange / brown mottles
	2.0 – 2.5	Orange clayey silt
TP05	0.5 – 1.0	Orange silty clay with grey streaks
	1.0 – 1.6	Grey clayey silt with orange and red mottles
TP06	0.3 – 1.5	Orange clayey silt, dark grey mottles
	1.5 – 2.2	Orange / grey silty clay

Sample Locations	Depth (m bgl)	Description
TP07	0.4 – 0.8	Orange clayey silt with grey streaks
	0.8 – 1.6	Grey / orange silty clay
TP08	0.3 – 0.5	Brown / grey clayey silt, trace gravel
	0.5 – 1.2	Grey clayey silt with orange mottles

During the investigation, all soil samples were screened for visual and olfactory evidence of contamination. No visual or olfactory indicators of contamination were noted in the soil samples.

6 Potential HAIL Activities

Activities included on the Ministry for the Environment's Hazardous Activities and Industries List (HAIL) (MfE, 2011b) trigger the requirement for an intrusive contaminated land investigation prior to redevelopment. Based on the information reviewed, the following activities may have been historically and / or are currently present at the site:

6.1 Historical Pesticide Application

Based on the information reviewed in the property file documents and historical aerial photographs, historical horticultural activity has occurred on the site. It is considered likely that topsoil was removed from the site prior to the present commercial / industrial construction. This is supported by previous geotechnical investigations where only limited areas of buried topsoil were encountered, and email communications regarding the Tonkin+Taylor DSI, however the DSI has not been obtained for review.

The HAIL, Category A10 *Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray shed*, is considered more likely than not to have occurred on-site.

6.2 Wine Manufacturing

Since the 1970's the site has formed part of the larger wine manufacturing facility. Until the late 1980s the site appeared to be utilised as a storage area, and in the late 1990s the facility extended onto the site, with construction of the tank farm and tank unload area. Based on the nature of the type of manufacturing undertaken, the potential for significant contamination of underlying soil or groundwater as a result of these activities is low. As discussed earlier, the facility has a dangerous good licence and fuels and chemicals are used to maintain machinery and vehicles on-site. The facility (including the site) is predominantly sealed by hardstand area and buildings, and no significant incidents associated with this activity have been reported in Auckland Council documents (Section 4.1 and 4.2). Geotechnical Investigations were completed for the wider property by Riley Consultants Limited and Tonkin+Taylor. The reports did not indicate that subsurface soils had visual indicators of potential contamination (e.g. demolition debris, staining etc.).

Based on the information reviewed it is not considered more likely than not that wine manufacturing as conducted on-site meets the definition of a land use from the HAIL.

The potential contaminants of concern identified, based on the findings of the PSI component of this investigation, are summarised in Table 8.

Table 8: Potential Contaminants

Potential Source of Contamination	Primary Contaminants of Concern	Possible Extent of Contamination	HAIL Activity as Defined by the NES (Soil)
Potential historical application of agrichemicals	Heavy metals and organochlorine pesticides (OCPs)	Shallow soil across spread of site from historical horticultural use	HAIL ID A10: Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray shed
Asbestos in building materials or use of lead-based paint on buildings	Asbestos fines and fibrous asbestos, Lead	Shallow soil around current and former site buildings	HAIL ID 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

6.3 Regulatory Context

The NES

The National Environmental Standards (NES, 2011) applies when a person wants to undertake an activity listed in Regulations 5(2) to 5(6) of the NES, on a piece of land that is described under Regulations 5(7) or 5(8) of the NES.

Based on our understanding of the redevelopment activities associated with the project, the following activities listed in the NES have been assessed:

- Regulation 5(4) – disturbing soil.
- Regulation 5(5) – subdividing the land.
- Regulation 5(6) – changing the land use.

Based on our review of available information, the piece of land is considered to potentially meet the definition of “land covered” under Regulation 5(7) of the NES because an activity or industry described in the HAIL has potentially been undertaken on it; specifically:

- HAIL ID A10 (contaminant concentrations will assist in assessing the likelihood of this HAIL activity being applicable to the site); and
- HAIL ID I (subject to contaminant concentrations being found at levels posing an unacceptable risk to human health or the environment).

The Auckland Unitary Plan

Section E30 of the AUP sets out consent requirements for dealing with discharges to the environment from contaminated land. On sites with *elevated levels of contaminants*, soil disturbance requires consent unless the conditions of Rule E30.6.1.2 of the AUP can be met. These conditions include, but are not limited to, a maximum contaminated soil disturbance volume of 200 m^3 per site with the duration of soil disturbance lasting two months or less. If elevated levels of contaminants are detected (as defined by the AUP), and one or more of the conditions of Rule E30.6.1.2 of the AUP cannot be met, a short-term environmental discharge consent will be required under Rule E30.6.2 of the AUP for soil disturbance associated with redevelopment works.

7 Site Investigation

7.1 Soil Sampling Procedures

To quantify the potential impacts identified above, ENGEO collected soil samples from testpits on 31 March 2022. Sample locations were selected to provide general coverage across the site (refer Figure 1).

To help ensure that soil sample results accurately reflect the soil conditions at the site, the following was undertaken:

- Samples were given a unique sample ID to identify the location and depth from where they were collected on-site.
- Samples were compressed directly into laboratory supplied sample containers using a new pair of nitrile gloves for each sample. Prior to sampling, the equipment was decontaminated using potable water, Decon 90 solution and distilled water.
- The use of standard sample registers and chain of custody records for all samples collected.
- Samples were placed directly into an insulated container prior to transport to Eurofins laboratory under ENGEO standard chain of custody.
- Fieldwork and sampling was undertaken in general accordance with the procedures for the appropriate handling of potentially contaminated soils as described in the MfE Contaminated Land Management Guidelines No.5: Site Investigation and Analysis of Soils (MfE, 2021b).

7.2 Quality Assurance and Quality Control

The quality assurance / quality control (QA / QC) procedures undertaken during the works included:

- The use of standard sample registers and chain of custody records for all samples collected.
- Each soil sample was given a unique identification number.
- Sampling equipment was decontaminated using the triple wash method (as previously stated) between each sample location.

Eurofins are accredited by National Association of Testing Authorities (NATA) for the analyses performed. Additionally, Eurofins are accredited to AS 4964-2004: *Method for the Qualitative Identification of Asbestos in Bulk Samples* for the analysis of suspected asbestos in soil samples, and to international standard NZS ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories* in accordance with The Building Research Association New Zealand (BRANZ) New Zealand Guidelines for Assessing and Managing Asbestos in Soil.

7.3 Laboratory analyses.

Table 9 provides a summary of the soil samples analysed.

Table 9: Summary of Soil Samples Analysed

Sample Location	Depth (m bgl)	Investigation Objective	Requested Analyses
TP01	0.3	Assess the potential impact of the use of asbestos in current or historical buildings.	Asbestos
	0.6	Assess the potential impact of historical horticultural use.	HM8, OCP
TP03	0.3	Assess the potential impact of the use of asbestos in current or historical buildings.	Asbestos
	0.7	Assess the potential impact of historical horticultural use. Screen for presence of hydrocarbons.	HM8, PAH, OCP
TP04	0.3	Assess the potential impact of historical horticultural use. Screen for presence of hydrocarbons in near surface fill	HM8, PAH
	0.7	Assess the potential impact of historical horticultural use.	HM8, OCP
TP05	0.3	Assess the potential impact of the use of asbestos in current or historical buildings.	Asbestos
	0.7	Assess the potential impact of historical horticultural use.	HM8, OCP
TP06	0.2	Assess the potential impact of horticultural use, as well as the use of asbestos in current or historical buildings. Screen for presence of hydrocarbons in near surface fill.	Asbestos, HM8, PAH
	0.7	Assess the potential impact of historical horticultural use.	HM8, OCP
TP07	0.2	Assess the potential impact of horticultural use, as well as the use of asbestos in current or historical buildings. Screen for presence of hydrocarbons in near surface fill.	Asbestos, HM8, PAH
	0.6	Assess the potential impact of historical horticultural use.	HM8, OCP
TP08	0.2	Assess the potential impact of the use of asbestos in current or historical buildings.	Asbestos
	0.4	Assess the potential impact of horticultural use, as well as the use of asbestos in current or historical buildings.	HM8, OCP

Note: PAH – Polycyclic aromatic hydrocarbons. OCP - Organochlorine pesticides. HM8 – Heavy metals / Metalloids (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn).

8 Analytical Results

8.1 Assessment Criteria

Analytical results were assessed to determine consenting requirements and options for disposal of any soil which may be taken off-site. The following criteria were used.

Human Health Criteria

The following criteria were used to assess the risk to future site users:

- Soil contaminant standards from the NES commercial / industrial land use have been selected (MfE, 2012).
- The soil guideline values for industrial land use from the BRANZ guidelines (BRANZ, 2017).
- In accordance with MfE's Contaminated Land Management Guidelines No.2 – Hierarchy and Application in New Zealand of Environmental Guideline Values (MfE, 2011b) for contaminants not listed above.

Environmental Discharge Criteria

In the Auckland region, potential discharges to the environment from land containing elevated levels of contaminants are managed through the AUP (AUP, 2016), operative in part on 15 November 2016. Therefore, the Auckland Council permitted activity standards listed in E30.6.1.4 of the AUP were used as environmental discharge criteria.

Background Criteria

To determine the natural background levels, or whether soils can meet the definition of cleanfill:

- The background concentration of trace elements in Auckland Soils (volcanic) from table E30.6.1.4.2 (AUP, 2016); or
- The laboratory limit of reporting, where no natural background level of a given contaminant is available, or where the natural background limit is below the limit of reporting.

8.2 Analysis Results

Soil contaminant concentrations are compared to the relevant criteria in Appendix 6. Full analytical laboratory reports are included in Appendix 4. A summary of the test results is provided below.

Human Health Assessment

- Concentrations of heavy metals / metalloids, PAHs and OCPs were below human health criteria based on commercial / industrial land use.

Environmental Discharge Assessment

- Concentrations of heavy metals / metalloids, PAHs and OCPs were below environmental discharge criteria.

Background Criteria

- No contaminants were detected above the published natural background levels.

8.3 Conceptual Site Model

A conceptual site model has been developed to assess the potential exposure pathways present at the site. A contamination conceptual site model consists of three primary components. For a contaminant to present a risk to human health or an environmental receptor, all three components are required to be present and connected. The three components of a conceptual site model are:

- Source of contamination;
- An exposure route, where the receptor and contaminants come into contact (e.g. ingestion, inhalation, dermal contact); and
- Receptor(s) that may be exposed to the contaminants.

The potential source, pathway, receptor linkages at this subject site are provided in Table 10.

Table 10: Conceptual Site Model

Source	Exposure Pathway	Potential Receptor	Acceptable Risk?
Historical application of pesticides - *Heavy metals / metalloids / Organochlorine pesticides and polycyclic aromatic hydrocarbons*	Soil ingestion, inhalation of dust, and / or dermal contact	Site redevelopment workers Surrounding residents	**Yes** Concentrations were below the human health and environmental discharge criteria.
	Leaching of contaminants	Surrounding environment	
Building materials containing asbestos (current and historical buildings)	Inhalation of asbestos fibres released from impacted soils / dust	Future site users Surrounding residents	**Yes** No asbestos was detected in the samples analysed.
Lead-based paint on buildings (current and historical buildings)	Soil ingestion, inhalation of dust, and / or dermal contact	Future site users Surrounding residents	**Yes** Concentrations were below the human health and environmental discharge criteria.
	Leaching of contaminants	Surrounding environment	

9 Conclusion

Based on the results of the PSI / DSI, site soils do not present a risk for the proposed industrial land use.

Although potential HAIL landuse (horticultural activity) has been identified on-site, testing has indicated that the level of contaminants in soils on-site are at or below the natural background levels. The site is therefore considered to meet the definition of “land not covered” from Regulation 5(9) of the NES.

There were no exceedances of environmental discharge criteria, therefore an environmental discharge consent is not likely to be required under the Auckland Unitary Plan for soil disturbance associated with redevelopment activities.

10 Recommendations

No further contaminated land work is considered necessary to support the redevelopment works. If during redevelopment works, signs of visual / olfactory evidence of contamination were to be observed, then works should stop immediately until further testing and assessment of the material is conducted.

11 Sustainability

We encourage you to consider sustainability when assessing the options available for your project. Where suitable for the project, we recommend prioritising the sustainable use of resources, using locally sourced materials where available, and installing in an environmentally friendly way (e.g., reduced carbon emissions and minimal contamination). If you would like to discuss these options further, ENGEO staff are available to offer suggestions.

12 Limitations

i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, Wyborn Capital Properties Limited, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.

ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.

iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.

iv. This Limitation should be read in conjunction with the Engineering NZ/ACENZ Standard Terms of Engagement.

v. This report is not to be reproduced either wholly or in part without our prior written permission.

We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on (09) 972 2205 if you require any further information.

Report prepared by

Georgina Jackson

Asbestos Surveyor

Report reviewed by

Jamie Rhodes, CEnvP (SC)

Associate Environmental Engineer

13 References

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FIGURES

Legend

- Balance of wine manufacturing facility
- Test Pit Locations
- Site Boundary

TP02 was abandoned due to uncertainty around services.

0 10 m 20 m

© Nearmaps

ENGEO

Produced by Datanest.earth

Title: Environmental Test Pit Investigation		
Client: Wyborn Capital Properties Limited		Figure No: 11 Size: A4
Project: 333 Apirana Avenue, Point England	Drawn: GJ	
Date: 26-04-2022	Checked: JR	
Proj No: 18308.000.001	Scale: 1:961	Version: Final

APPENDIX 1:

Site Contamination Enquiry

22 February 2021

ENGEO Limited
8 Greydene Place
AUCKLAND 0622

Attention: Claire Davies

Dear Claire

Site Contamination Enquiry – *167 Pilkington Road, Point England*

This letter is in response to your enquiry requesting available site contamination information within Auckland Council records for the above site. Please note this report does not constitute a site investigation report; such reports are required to be prepared by a (third-party) Suitably Qualified and Experienced Practitioner.

The following details are based on information available to the Contamination, Air & Noise Team in the Resource Consent Department. The details provided may be from former regional council information, as well as property information held by the former district/city councils. For completeness the relevant property file should also be requested to obtain all historical records and reports via 09 3010101 or online at:

https://www.aucklandcouncil.govt.nz/buying-property/order-property-report/Pages/order-property-file.aspx.

1. Hazardous Activities and Industries List (HAIL) Information

This list published by the Ministry for the Environment (MfE) comprises activities and industries that are considered likely to cause land contamination as a result of hazardous substance use, storage, and/or disposal.

Council's records indicate this site has possibly been subject to the following activities that fall within the HAIL:

- HAIL Item (A.2) – Chemical manufacture, formulation or bulk storage.
- HAIL Item (A.10) – Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds.

Records indicate the site 167 Pilkington Road, Point England, has been utilised for historical horticultural activity. The site has also been subject to the storage of dangerous goods in association with Montana Wines Ltd. Additionally, records indicate the site has been identified as filled/weak ground.

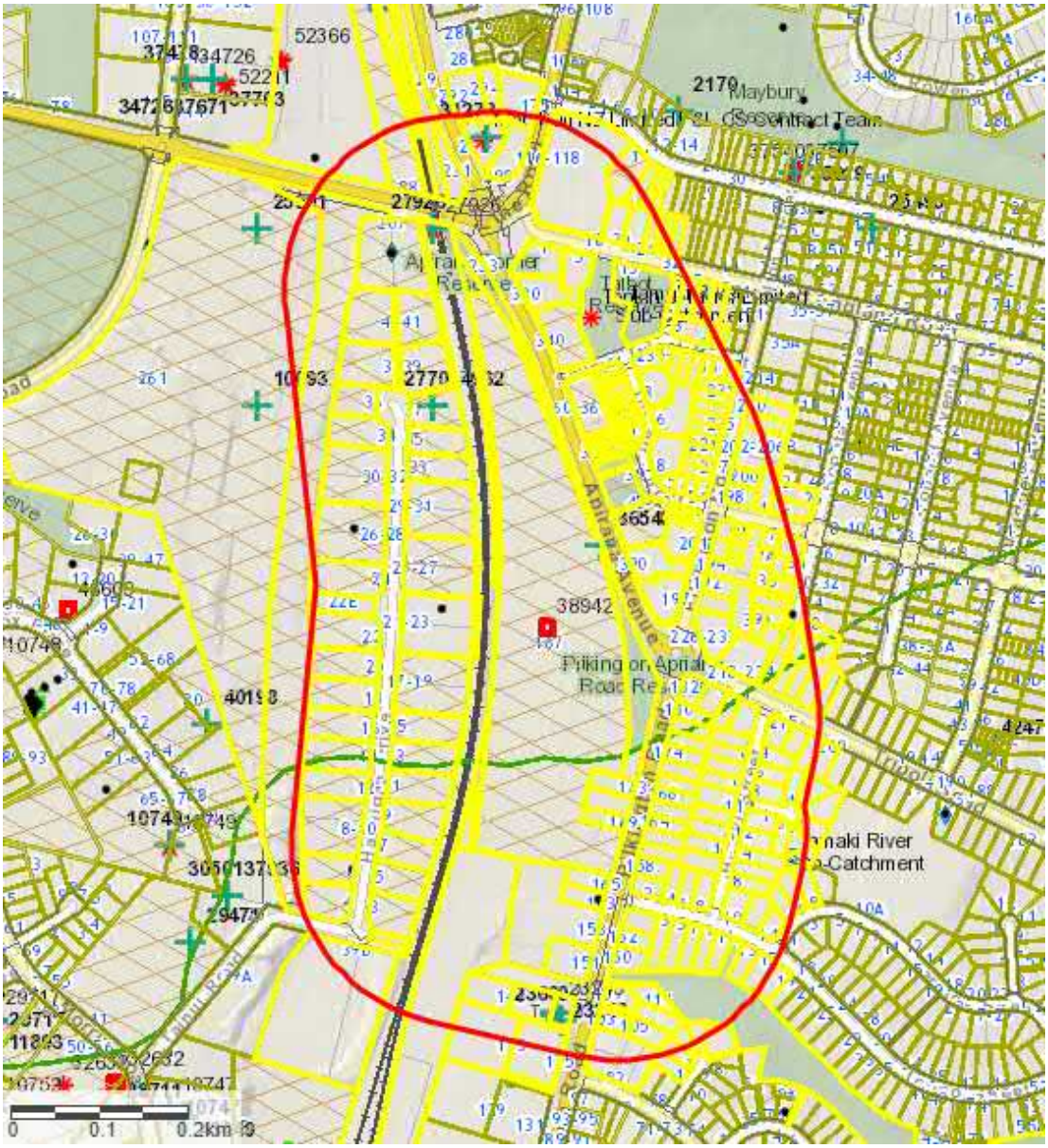
Please note:

- *If you are demolishing any building that may have asbestos containing materials (ACM) in it, you have obligations under the Health and Safety at Work (Abestos) Regulations 2016 for the management and removal of asbestos, including the need to engage a Competent Asbestos Surveyor to confirm the presence or absence of any ACM.*
- *Paints used on external parts of properties up until the mid-1970's routinely contained lead, a poison and a persistent environmental pollutant. You are advised to ensure that soils affected by old, peeling or flaking paint are assessed in relation to the proposed use of the property, including high risk use by young children.*

2. Consents and Incidents Information (200m radius of the selected site)

The Council database was searched for records of the following activities within approximately 200 metres of the site:

- Pollution Incidents (including air discharges, oil or diesel spills)
- Bores
- Contaminated site and air discharges, and industrial trade process consents
- Closed Landfills
- Air quality permitted activities



Legend:

All Consents

All Applications

All Permitted Activities

All Bores

Closed Landfill (Auckland Council owned)

Closed Landfill (Privately owned)

Relevant details of any pollution incidents and consents are appended to this letter (Attachment A). Please refer to the column titled ‘Property Address’ on the spreadsheet to aid in identifying corresponding data on the map.

While the Auckland Council has carried out the above search using its best practical endeavours, it does not warrant its completeness or accuracy and disclaims any responsibility or liability in respect of the information. If you or any other person wishes to act or to rely on this information, or make any financial commitment based upon it, it is recommended that you seek appropriate technical and/or professional advice.

If you wish to clarify anything in this letter that relates to this site, please contact contaminatedsites@aucklandcouncil.govt.nz. Any follow up requests for information on other sites must go through the online order process.

Should you wish to request any of the files referenced above and/or listed in the attached spreadsheet for viewing, please contact the Auckland Council Call Centre on 301 0101 and note you are requesting former Auckland Regional Council records (the records department requires three working days’ notice to ensure the files will be available).

Please note Auckland Council cost recovers officer’s time for all site enquiries. As such an invoice for $128 for the time involved in this enquiry will follow shortly.

Yours Sincerely,

Contamination, Air and Noise Team
Specialist Unit | Resource Consents
Auckland Council

CONSENT_NUMBER	FILE_REFERENCE	CONSENT_HOLDER	BORE_ID	GRANTED_DATE	EXPIRY_DATE	CONSENT_STATUS	PROCESSING_OFFICER	PURPOSE	WORKS_DESCRIPTION	EASTING	NORTHING	ACTIVITY_STATUS	BORE_USE	ACTIVITY_DESCRIPTION	SITE_NAME	SITE_DESCRIPTION	MAIN_AQUIFER	AQUIFER	ENVIRONMENT_REPORTING_AREA	TLA	DATE_DRILLED	TOTAL_DEPTH	GROUND_ELEVATION	STATIC_WATER_LEVEL	STATIC_WATER_DATE	BORE_LOG	DIAMETER_FROM	DIAMETER_TO	DIAMETER	CASING_FROM	CASING_TO	CASING_TYPE	CASING_DIAMETER	SCREEN_FROM	SCREEN_TO	SCREEN_TYPE	DATE_CREATED	PROPERTY_ADDRESS	LOC_TYP
27926	CS12-12-31187	Opus International Consultants Ltd	21905	20030509	20040508	Expired	_Michelle Ip	To authorise the construction of up to 23 geotechnical bores associated with the eastern corridor project.	Construction of up to 23 100mm diameter bores to a depth of approximately 40m. Installation of PVC casing to various depths.	1765300	5916700	Drilled		To authorise the construction of up to 23 geotechnical bores associated with the eastern corridor project.			Waitemata	Auckland Isthmus Waitemata	Auckland Central	Auckland Central	20030521	22.6	21.8			Y				0	18.5	PVC/ABS					20170601	Various - Eastern Corridor Auckland City, Manukau City	Point
23249	CS12-12-24917	Pattle Delamore Partners Limited	23186	19991029	20001029	Expired	_Gillian Crowcroft	Authorise the construction of bores for groundwater level and/or chemistry monitoring.	Construction of three 100mm diameter bores to a depth of 6m. Installation of PVC casing to 1.5m depth and PVC screen from 1.5-4.5m depth.	1765440	5915810	Drilled	Observation / Piezo		Mobil Oil	147 Pilkington Rd, Panmure				Auckland Central	20000427	5		2			0	5	50	0	1	PVC/ABS	50	1	5	PVC/ABS	20170601	147 Pilkington Road Mount Wellington Auckland Central	Point

CONSENT_NUMBER	FILE_REFERENCE	ACTIVITY	CONSENT_HOLDER	CONSENT_STATUS	GRANTED_DATE	REVIEW_DATE	EXPIRY_DATE	PROCESSING_OFFICER	PURPOSE	WORKS_DESCRIPTION	EASTING	NORTHING	ACTIVITY_ID	ACTIVITY_STATUS	ACTIVITY_DESCRIPTION	SITE_NAME	SITE_DESCRIPTION	DATE_CREATED	PROPERTY_ADDRESS	LOC_TYP	MONITORING_OFFICER	PREVIOUS_INSPECTION_DATE	NEXT_INSPECTION_DATE
23249	C512-12-2491*	Bore	Pattle Delamore Partners Limited	Expired	19991029		20001029	_Gillian Crowcroft	Authorise the construction of bores for groundwater level and/or chemistry monitoring.	Construction of three 100mm diameter bores to a depth of 6m. Installation of PVC casing to 1.5m depth and PVC screen from 1.5-4.5m depth.	1765440	5915810	21086	Drilled		Mobil Oil	147 Pilkington Rd, Panmure	2/06/2017	147 Pilkington Road Mount Wellington Auckland Central	Point	_Gillian Crowcroft	Nil	Nil
27926	C512-12-3118*	Bore	Opus International Consultants Ltd	Expired	20030509		20040508	_Michelle Ip	To authorise the construction of up to 23 geotechnical bores associated with the eastern corridor project.	Construction of up to 23 100mm diameter bores to a depth of approximately 40m. Installation of PVC casing to various depths.	1765300	5916700	21905	Drilled	To authorise the construction of up to 23 geotechnical bores associated with the eastern corridor project.			2/06/2017	Various - Eastern Corridor Auckland City, Manukau City	Point		Nil	Nil
36548	21000	Industrial or Trade Process	Pernod Ricard New Zealand	Issued	20090709	20110630	20290731	_Kathryn Markham	To authorise the discharge of contaminants onto or into land or water from an industrial or trade process (wine manufacturing).		1765490	5916340	151	Occurring	To discharge from an industrial or trade process from a site that ferments, blends & bottles wines.	Pernod Ricard NZ	Wine production facility, involved in the fermentation, blending and bottling of wine that comes from external vineyards.	2/06/2017	171 Pilkington Road Point England Auckland Central	Point	Richard Preece	2/12/2015	1/12/2016

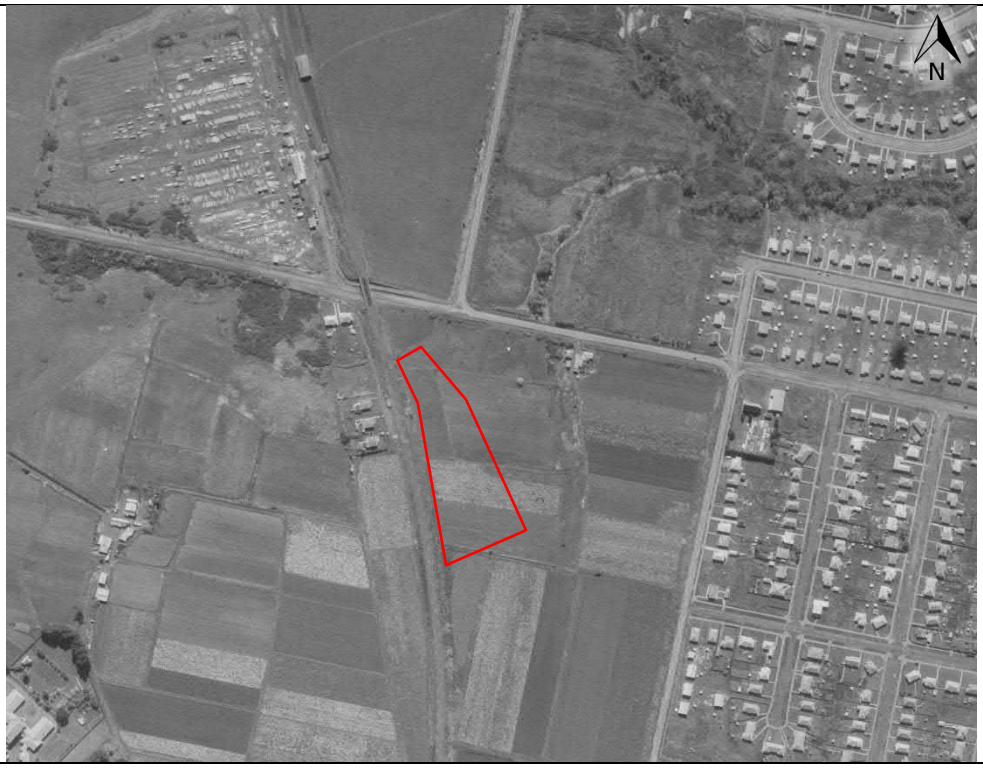
INCIDENTNUMBER	XCOORD	YCOORD	NZTMXCOORD	NZTMYCOORD	LOCATION	SUBURB	CATCHMENTCODE	POLLUTANTTYPE	RECIEVED	REPORT	INCIDENTTYPE	ACTIONEDBY	IMPACT	VOLUME	PROBLEMFOUND	CULPRITTRACED	RECORDDATE	INVESTIGATIONDATE
Oct-71	1765310.87	5916268.54	1765310.87	5916268.54	4/23 Hannigan Dr	Panmure	605	Dirt / Inert Minerals / Sediment	Hotline	Concrete trucks washing gravel into SW drain	Water / Land Pollution	Tim Butler	Stormwater	<10 litres	YES	YES	15/09/2010	15/09/2010
10/1620	1765707.51	5916263.13	1765707.51	5916263.13	41 Ropata Ave	Glen Innes	605	Wastewater - Sewer Overflow	Hotline	DWSO	Sewage Overflow	Aaron Douglas	Stormwater	10-200 litres	YES	YES	29/04/2010	29/04/2010
14/0489	1765209.8	5916359.29	1765209.8	5916359.29	26 Hannigan Dr	Panmure	605	Fire Water Run-off	Fire Pager	Building Fire	Fire (Attended)	Aaron Graham	Potential	>1000 litres	YES	YES	3/02/2014	3/02/2014
Nov-45	1765253.52	5916673.62	1765253.52	5916673.62	207 Merton Rd	St Johns	605	Unidentified - Toxic	Other	Clan Lab	ClanLab Report	Fiona Southall	Potential	Potential	YES	YES	7/09/2005	7/09/2005

PERMITTED_ACTIVITY_ID	FILE_REFERENCE	PERMITTED_ACTIVITY_HOLDER	PERMITTED_ACTIVITY_TYPE	ACTIVITY	CONSENT_STATUS	PROCESSING_OFFICER	PURPOSE	WORKS_DESCRIPTION	EASTING	NORTHING	ACTIVITY_ID	ACTIVITY_STATUS	ACTIVITY_DESCRIPTION	SITE_NAME	SITE_DESCRIPTION	DATE_CREATED	PROPERTY_ADDRESS	LOC_TYP
51744	6/05/3899	Mobil Oil NZ Limited F&L CS Contract Team	Contaminated Site Discharge	Contaminated Site Discharge	Assessment Completed	_Sarah Pinkerton	Hotspot of TPH/BTEX above comm/ind appears to be localised. Effects on environment likely to be minor. Have requested SMP.	c/o Kylie EckersleyFile 6-05-3899	1765358	5916800	20814	Occurring	Mobil Glen Innes	296 Apirana Ave, Glen Innes	Lot 4 DP 145066	2/06/2017	296 Apirana Avenue Glen Innes Auckland Central	Point
51127	T096-05-3371	Tonkin & Taylor Limited	Contaminated Site Discharge	Contaminated Site Discharge	Assessment Completed	_Sarah Pinkerton	redevelopment of residential, increased density of housing	PO peter Kavanagh	1765480	5916600	20333	Completed	redevelopment of residential Housing NZ site for higher density residential housing on former horticultural land	Talbot Park		2/06/2017	330 Apirana Avenue Point England Auckland Central	Area

APPENDIX 2:

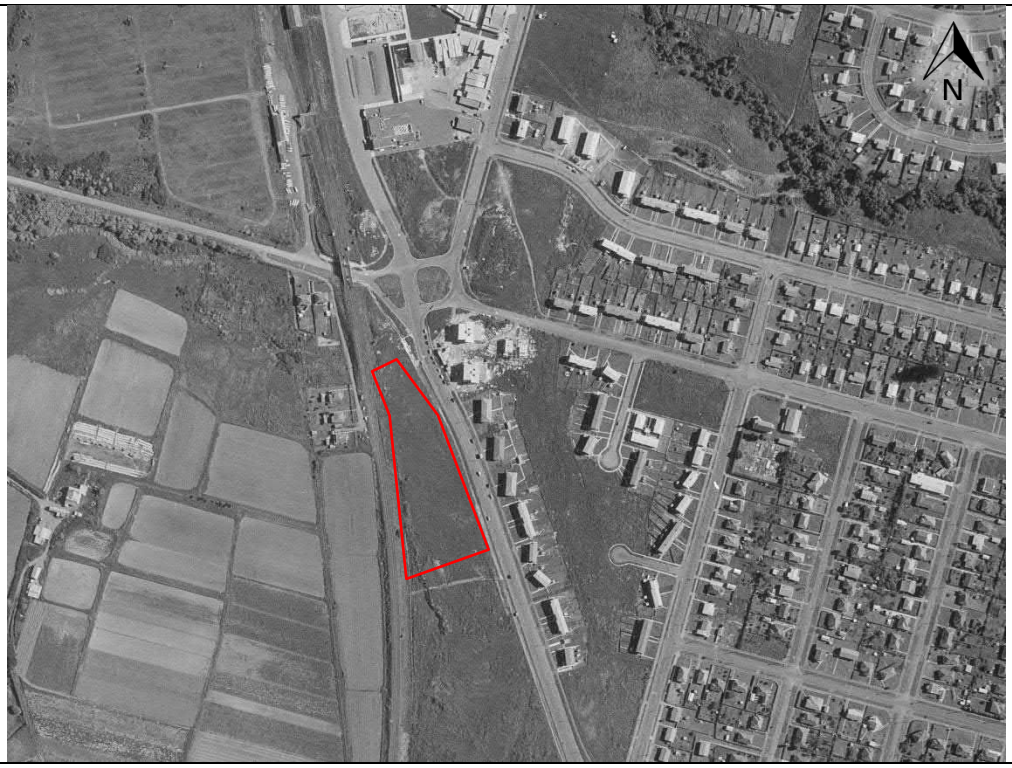
Aerial Imagery

1940 (Retrolens NZ)

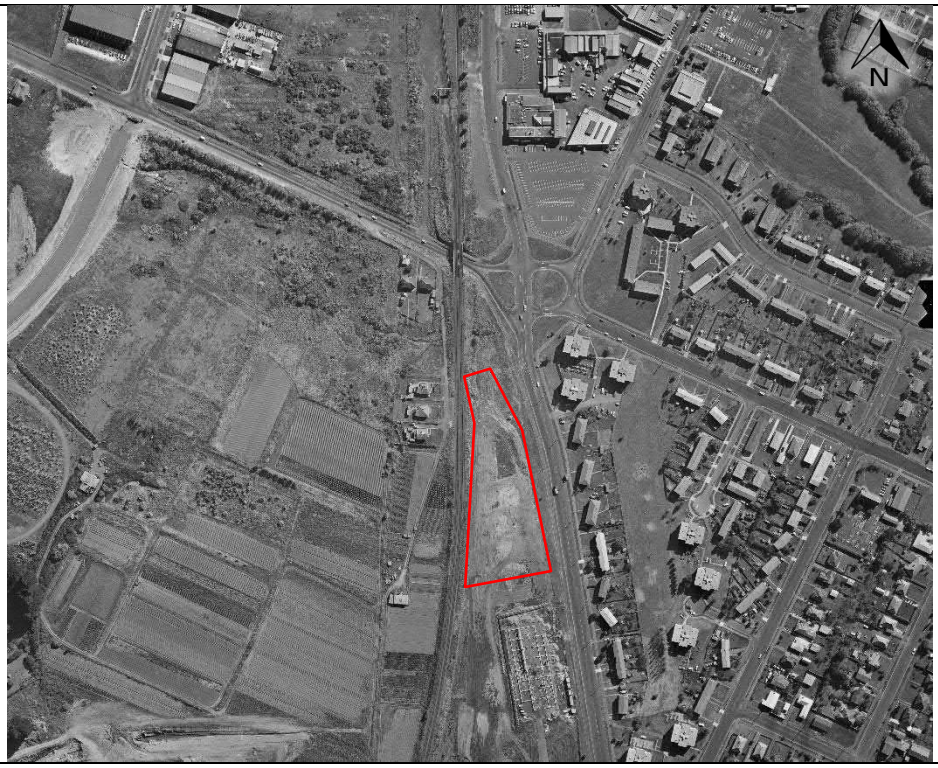


1955 (Retrolens NZ)

1959 (Auckland Council Geomaps)



1961 (Retrolens NZ)



1974 (Retrolens NZ)

1981 (Retrolens NZ)

1996 (Auckland Council Geomaps)

2001 (Auckland Council Geomaps)

2003 / 2004 (Auckland Council Geomaps)

2006 (Auckland Council Geomaps)

2010 / 2011 (Auckland Council Geomaps)

2017 (Nearmaps)

2018 (Nearmaps)

2021 (Nearmaps)

APPENDIX 3:

Site Photographs

Photo 1: Northern end of site showing trees in planter boxes (access was unavailable due to locked gates).

Photo 2: Central eastern area of site showing asphalt car parking area in worn condition.

Photo 3: Central yard showing patched asphalt pad.

Photo 4: Western central yard facing the tank farm building.

Photo 5: Patched asphalt north of the tank farm building.

Photo 6: Stormwater drainage system in central area of site between the tank farm building and the 'flexi station.'

Photo 7: Flexi Station building in centre of yard area.

Photo 8: Western entrance to the ‘drainer building’ in the south-western corner of the site.

Photo 9: Western site boundary facing south along the edge of the tank farm building.

Photo 10: Interior of the tank farm building.

Photo 11: Tank plinth in the tank farm building.

Photo 12: Doorway between the tank farm building and the ‘drainer building.’

APPENDIX 4:

Laboratory Reports

Certificate of Analysis

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

ENGEO Ltd
8 Greydene Place
Takapuna
Auckland 0622

Attention:	Jamie Rhodes
Report	876768-AID
Project Name	APIRANA AVENUE
Project ID	18308.000.001
Received Date	Apr 04, 2022
Date Reported	Apr 11, 2022

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence IANZ Accreditation does not cover the performance of this service (non-IANZ results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name APIRANA AVENUE
Project ID 18308.000.001
Date Sampled Mar 31, 2022
Report 876768-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
TP01 0.3	22-Ap0003220	Mar 31, 2022	Approximate Sample 1318g Sample consisted of: Fine grained soil and rock	No asbestos detected at the reporting limit of 0.001% w/w.* Synthetic mineral fibre detected. Organic fibre detected. No trace asbestos detected.
TP03 0.3	22-Ap0003222	Mar 31, 2022	Approximate Sample 1177g Sample consisted of: Fine grained soil and rock	No asbestos detected at the reporting limit of 0.001% w/w.* Synthetic mineral fibre detected. Organic fibre detected. No trace asbestos detected.
TP05 0.3	22-Ap0003226	Mar 31, 2022	Approximate Sample 1071g Sample consisted of: Fine grained soil and rock	No asbestos detected at the reporting limit of 0.001% w/w.* Synthetic mineral fibre detected. Organic fibre detected. No trace asbestos detected.
TP06 0.2	22-Ap0003228	Mar 31, 2022	Approximate Sample 1007g Sample consisted of: Fine grained soil and rock	No asbestos detected at the reporting limit of 0.001% w/w.* Synthetic mineral fibre detected. Organic fibre detected. No trace asbestos detected.
TP07 0.2	22-Ap0003230	Mar 31, 2022	Approximate Sample 1008g Sample consisted of: Fine grained soil and rock	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
TP08 0.2	22-Ap0003232	Mar 31, 2022	Approximate Sample 1023g Sample consisted of: Fine grained soil and rock	No asbestos detected at the reporting limit of 0.001% w/w.* Synthetic mineral fibre detected. Organic fibre detected. No trace asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Christchurch	Apr 04, 2022	Indefinite

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IANZ # 1327

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IANZ # 1290

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NATA # 1261 Site # 18217

Brisbane
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Newcastle
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PO Box 60 Wickham 2293
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Perth
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Phone : +61 8 6253 4444
NATA # 2377 Site # 2370

Company Name: ENGEO Ltd - NI
Address: 8 Greydene Place
Takapuna
Auckland 0622

Project Name: APIRANA AVENUE
Project ID: 18308.000.001

Order No.:
Report #: 876768
Phone: 0011 64 9 9722 205
Fax:

Received: Apr 4, 2022 12:10 PM
Due: Apr 11, 2022
Priority: 5 Day
Contact Name: Jamie Rhodes

Eurofins Analytical Services Manager : Karishma Patel

Sample Detail						Asbestos - WA guidelines	HOLD	Moisture Set	Organochlorine Pesticides (NZ MfE)	Metals M8 (NZ MfE)	Polycyclic Aromatic Hydrocarbons (NZ MfE)
Auckland Laboratory - IANZ# 1327							X	X	X	X	X
Christchurch Laboratory - IANZ# 1290						X					
External Laboratory											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	TP01 0.3	Mar 31, 2022		Soil	K22-Ap0003220	X					
2	TP01 0.6	Mar 31, 2022		Soil	K22-Ap0003221			X	X	X	
3	TP03 0.3	Mar 31, 2022		Soil	K22-Ap0003222	X					
4	TP03 0.7	Mar 31, 2022		Soil	K22-Ap0003223			X	X	X	X
5	TP04 0.3	Mar 31, 2022		Soil	K22-Ap0003224			X		X	X
6	TP04 0.7	Mar 31, 2022		Soil	K22-Ap0003225			X	X	X	
7	TP05 0.3	Mar 31, 2022		Soil	K22-Ap0003226	X					

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Due: Apr 11, 2022
Priority: 5 Day
Contact Name: Jamie Rhodes

Eurofins Analytical Services Manager : Karishma Patel

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Auckland Laboratory - IANZ# 1327							X	X	X	X	X
Christchurch Laboratory - IANZ# 1290						X					
External Laboratory											
8	TP05 0.7	Mar 31, 2022		Soil	K22-Ap0003227			X	X	X	
9	TP06 0.2	Mar 31, 2022		Soil	K22-Ap0003228	X		X		X	X
10	TP06 0.7	Mar 31, 2022		Soil	K22-Ap0003229			X	X	X	
11	TP07 0.2	Mar 31, 2022		Soil	K22-Ap0003230	X		X		X	X
12	TP07 0.6	Mar 31, 2022		Soil	K22-Ap0003231			X	X	X	
13	TP08 0.2	Mar 31, 2022		Soil	K22-Ap0003232	X					
14	TP08 0.4	Mar 31, 2022		Soil	K22-Ap0003233			X	X	X	
15	TP01 1.5	Mar 31, 2022		Soil	K22-Ap0003234		X				

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Auckland Laboratory - IANZ# 1327							X	X	X	X	X
Christchurch Laboratory - IANZ# 1290						X					
External Laboratory											
16	TP03 1.3	Mar 31, 2022		Soil	K22-Ap0003235		X				
17	TP03 2.2	Mar 31, 2022		Soil	K22-Ap0003236		X				
18	TP04 1.6	Mar 31, 2022		Soil	K22-Ap0003237		X				
19	TP04 2.3	Mar 31, 2022		Soil	K22-Ap0003238		X				
20	TP05 1.3	Mar 31, 2022		Soil	K22-Ap0003239		X				
21	TP06 1.9	Mar 31, 2022		Soil	K22-Ap0003240		X				
22	TP07 1.3	Mar 31, 2022		Soil	K22-Ap0003241		X				
23	TP08 0.8	Mar 31, 2022		Soil	K22-Ap0003242		X				

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Company Name: ENGEO Ltd - NI
Address: 8 Greydene Place
Takapuna
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Project Name: APIRANA AVENUE
Project ID: 18308.000.001

Order No.:
Report #: 876768
Phone: 0011 64 9 9722 205
Fax:

Received: Apr 4, 2022 12:10 PM
Due: Apr 11, 2022
Priority: 5 Day
Contact Name: Jamie Rhodes

Eurofins Analytical Services Manager : Karishma Patel

Sample Detail	Asbestos - WA guidelines	HOLD	Moisture Set	Organochlorine Pesticides (NZ MfE)	Metals M8 (NZ MfE)	Polycyclic Aromatic Hydrocarbons (NZ MfE)
Auckland Laboratory - IANZ# 1327		X	X	X	X	X
Christchurch Laboratory - IANZ# 1290	X					
External Laboratory						
Test Counts	6	9	10	7	10	4

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. Information identified on this report with the colour **orange** indicates sections of the report not covered by the laboratory's scope of NATA accreditation.
6. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (**% w/w**)
F/fld	Airborne fibre filter loading as Fibres (**N**) per Fields counted (**n**)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (**C**)
g, kg	Mass, e.g. of whole sample (**M**) or asbestos-containing find within the sample (**m**)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (**V** = **r** x **t**)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (**r**)
min	Time (**t**), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration: $C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$

Asbestos Content (as asbestos): $\%\, w/w = \frac{(m \times P_A)}{M}$

Weighted Average (of asbestos): $\%_{WA} = \sum \frac{(m \times P_A)_x}{x}$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix. May be derived from knowledge or experience of the material, informed by HSG264 *Appendix 2*, else assumed to be 15% in accordance with WA DOH *Appendix 2* (**P_A**).
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to "non-bonded / friable".
AFM	Airborne Fibre Monitoring, e.g. by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total % w/w asbestos content in asbestos-containing finds in a soil sample (**% w/w**).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory's remit to assess degree of friability.
HSG248	UK HSE HSG248, *Asbestos: The Analysts Guide*, 2nd Edition (2021).
HSG264	UK HSE HSG264, *Asbestos: The Survey Guide* (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (**K**) as derived from the effective filter area of the given AFM membrane used for collecting the sample (**A**) and the projected eyepiece graticule area of the specific microscope used for the analysis (**a**).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (updated 2021), including Appendix Four: *Laboratory analysis*
Weighted Average	Combined average % w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (**$\%_{WA}$**).

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Asbestos Counter/Identifier:

Kate Stuart	Senior Analyst-Asbestos (NZS)

Authorised by:

Katyana Gausel	Senior Analyst-Asbestos (Key Technical Personnel) (NZS)

Destiny Cruickshanks
Senior Analyst-Asbestos (Key Technical Personnel)

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates ISO/IEC 17025:2017 accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

ENGEO Ltd
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Takapuna
Auckland 0622

Attention: **Jamie Rhodes**

Report **876768-S**
Project name APIRANA AVENUE
Project ID 18308.000.001
Received Date Apr 04, 2022

Client Sample ID			**TP01 0.6**	**TP03 0.7**	**TP04 0.3**	**TP04 0.7**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**K22-Ap0003221**	**K22-Ap0003223**	**K22-Ap0003224**	**K22-Ap0003225**
Date Sampled			**Mar 31, 2022**	**Mar 31, 2022**	**Mar 31, 2022**	**Mar 31, 2022**
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
2.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
2.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
4.4'-DDD	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
4.4'-DDE	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
4.4'-DDT	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
DDT + DDE + DDD (Total)*	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
a-HCH	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Aldrin	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
b-HCH	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Chlordanes - Total	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
cis-Chlordane	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
d-HCH	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Dieldrin	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Endosulfan sulphate	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Endrin	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Endrin aldehyde	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Endrin ketone	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
g-HCH (Lindane)	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Heptachlor	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Heptachlor epoxide	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Hexachlorobenzene	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Methoxychlor	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
trans-Chlordane	0.01	mg/kg	< 0.01	< 0.01	-	< 0.01
Dibutylchlorendate (surr.)	1	%	108	119	-	80
Tetrachloro-m-xylene (surr.)	1	%	98	104	-	116
Metals M8 (NZ MfE)						
Arsenic	0.1	mg/kg	4.3	3.9	3.3	4.1
Cadmium	0.01	mg/kg	0.03	0.07	0.13	0.01
Chromium	0.1	mg/kg	69	66	77	55
Copper	0.1	mg/kg	19	29	49	15
Lead	0.1	mg/kg	8.9	6.8	4.5	7.1

Client Sample ID			TP01 0.6	TP03 0.7	TP04 0.3	TP04 0.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			K22-Ap0003221	K22-Ap0003223	K22-Ap0003224	K22-Ap0003225
Date Sampled			Mar 31, 2022	Mar 31, 2022	Mar 31, 2022	Mar 31, 2022
Test/Reference	LOR	Unit				
Metals M8 (NZ MfE)						
Mercury	0.01	mg/kg	0.11	0.06	0.02	0.03
Nickel	0.1	mg/kg	39	77	110	31
Zinc	5	mg/kg	33	76	110	35
% Moisture	1	%	14	19	22	21
Polycyclic Aromatic Hydrocarbons (NZ MfE)						
Acenaphthene	0.03	mg/kg	-	< 0.03	< 0.03	-
Acenaphthylene	0.03	mg/kg	-	< 0.03	< 0.03	-
Anthracene	0.03	mg/kg	-	< 0.03	< 0.03	-
Benz(a)anthracene	0.03	mg/kg	-	< 0.03	< 0.03	-
Benzo(a)pyrene	0.03	mg/kg	-	< 0.03	< 0.03	-
Benzo(a)pyrene TEQ (lower bound)*	0.03	mg/kg	-	< 0.03	< 0.03	-
Benzo(a)pyrene TEQ (medium bound)*	0.03	mg/kg	-	0.04	0.04	-
Benzo(a)pyrene TEQ (upper bound)*	0.03	mg/kg	-	0.08	0.08	-
Benzo(b&j)fluoranthene[N07]	0.03	mg/kg	-	< 0.03	< 0.03	-
Benzo(g.h.i)perylene	0.03	mg/kg	-	< 0.03	< 0.03	-
Benzo(k)fluoranthene	0.03	mg/kg	-	< 0.03	< 0.03	-
Chrysene	0.03	mg/kg	-	< 0.03	< 0.03	-
Dibenz(a.h)anthracene	0.03	mg/kg	-	< 0.03	< 0.03	-
Fluoranthene	0.03	mg/kg	-	< 0.03	< 0.03	-
Fluorene	0.03	mg/kg	-	< 0.03	< 0.03	-
Indeno(1.2.3-cd)pyrene	0.03	mg/kg	-	< 0.03	< 0.03	-
Naphthalene	0.1	mg/kg	-	< 0.1	< 0.1	-
Phenanthrene	0.03	mg/kg	-	< 0.03	< 0.03	-
Pyrene	0.03	mg/kg	-	< 0.03	< 0.03	-
p-Terphenyl-d14 (surr.)	1	%	-	70	78	-
2-Fluorobiphenyl (surr.)	1	%	-	115	119	-

Client Sample ID			TP05 0.7	TP06 0.2	TP06 0.7	TP07 0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			K22-Ap0003227	K22-Ap0003228	K22-Ap0003229	K22-Ap0003230
Date Sampled			Mar 31, 2022	Mar 31, 2022	Mar 31, 2022	Mar 31, 2022
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
2.4'-DDD	0.01	mg/kg	< 0.01	-	< 0.01	-
2.4'-DDE	0.01	mg/kg	< 0.01	-	< 0.01	-
2.4'-DDT	0.01	mg/kg	< 0.01	-	< 0.01	-
4.4'-DDD	0.01	mg/kg	< 0.01	-	< 0.01	-
4.4'-DDE	0.01	mg/kg	< 0.01	-	< 0.01	-
4.4'-DDT	0.01	mg/kg	< 0.01	-	< 0.01	-
DDT + DDE + DDD (Total)*	0.01	mg/kg	< 0.01	-	< 0.01	-
a-HCH	0.01	mg/kg	< 0.01	-	< 0.01	-
Aldrin	0.01	mg/kg	< 0.01	-	< 0.01	-
b-HCH	0.01	mg/kg	< 0.01	-	< 0.01	-
Chlordanes - Total	0.01	mg/kg	< 0.01	-	< 0.01	-
cis-Chlordane	0.01	mg/kg	< 0.01	-	< 0.01	-
d-HCH	0.01	mg/kg	< 0.01	-	< 0.01	-

Client Sample ID			TP05 0.7	TP06 0.2	TP06 0.7	TP07 0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			K22-Ap0003227	K22-Ap0003228	K22-Ap0003229	K22-Ap0003230
Date Sampled			Mar 31, 2022	Mar 31, 2022	Mar 31, 2022	Mar 31, 2022
Test/Reference	LOR	Unit				
Organochlorine Pesticides (NZ MfE)						
Dieldrin	0.01	mg/kg	< 0.01	-	< 0.01	-
Endosulfan I	0.01	mg/kg	< 0.01	-	< 0.01	-
Endosulfan II	0.01	mg/kg	< 0.01	-	< 0.01	-
Endosulfan sulphate	0.01	mg/kg	< 0.01	-	< 0.01	-
Endrin	0.01	mg/kg	< 0.01	-	< 0.01	-
Endrin aldehyde	0.01	mg/kg	< 0.01	-	< 0.01	-
Endrin ketone	0.01	mg/kg	< 0.01	-	< 0.01	-
g-HCH (Lindane)	0.01	mg/kg	< 0.01	-	< 0.01	-
Heptachlor	0.01	mg/kg	< 0.01	-	< 0.01	-
Heptachlor epoxide	0.01	mg/kg	< 0.01	-	< 0.01	-
Hexachlorobenzene	0.01	mg/kg	< 0.01	-	< 0.01	-
Methoxychlor	0.01	mg/kg	< 0.01	-	< 0.01	-
Toxaphene	0.5	mg/kg	< 0.5	-	< 0.5	-
trans-Chlordane	0.01	mg/kg	< 0.01	-	< 0.01	-
Dibutylchlorendate (surr.)	1	%	66	-	55	-
Tetrachloro-m-xylene (surr.)	1	%	108	-	114	-
Metals M8 (NZ MfE)						
Arsenic	0.1	mg/kg	6.1	1.3	4.6	2.6
Cadmium	0.01	mg/kg	< 0.01	0.06	0.04	0.02
Chromium	0.1	mg/kg	17	60	53	47
Copper	0.1	mg/kg	4.6	48	12	21
Lead	0.1	mg/kg	3.9	1.9	8.4	2.5
Mercury	0.01	mg/kg	0.16	0.01	0.14	0.03
Nickel	0.1	mg/kg	8.2	130	27	63
Zinc	5	mg/kg	< 5	54	23	28
% Moisture	1	%	26	9.6	18	15
Polycyclic Aromatic Hydrocarbons (NZ MfE)						
Acenaphthene	0.03	mg/kg	-	< 0.03	-	< 0.03
Acenaphthylene	0.03	mg/kg	-	< 0.03	-	< 0.03
Anthracene	0.03	mg/kg	-	< 0.03	-	< 0.03
Benz(a)anthracene	0.03	mg/kg	-	< 0.03	-	< 0.03
Benzo(a)pyrene	0.03	mg/kg	-	< 0.03	-	< 0.03
Benzo(a)pyrene TEQ (lower bound)*	0.03	mg/kg	-	< 0.03	-	< 0.03
Benzo(a)pyrene TEQ (medium bound)*	0.03	mg/kg	-	0.04	-	0.04
Benzo(a)pyrene TEQ (upper bound)*	0.03	mg/kg	-	0.08	-	0.08
Benzo(b&j)fluoranthene[N07]	0.03	mg/kg	-	< 0.03	-	< 0.03
Benzo(g.h.i)perylene	0.03	mg/kg	-	< 0.03	-	< 0.03
Benzo(k)fluoranthene	0.03	mg/kg	-	< 0.03	-	< 0.03
Chrysene	0.03	mg/kg	-	< 0.03	-	< 0.03
Dibenz(a.h)anthracene	0.03	mg/kg	-	< 0.03	-	< 0.03
Fluoranthene	0.03	mg/kg	-	< 0.03	-	< 0.03
Fluorene	0.03	mg/kg	-	< 0.03	-	< 0.03
Indeno(1.2.3-cd)pyrene	0.03	mg/kg	-	< 0.03	-	< 0.03
Naphthalene	0.1	mg/kg	-	< 0.1	-	< 0.1
Phenanthrene	0.03	mg/kg	-	< 0.03	-	< 0.03
Pyrene	0.03	mg/kg	-	< 0.03	-	< 0.03
p-Terphenyl-d14 (surr.)	1	%	-	70	-	73
2-Fluorobiphenyl (surr.)	1	%	-	109	-	103

Client Sample ID			TP07 0.6	TP08 0.4
Sample Matrix			Soil	Soil
Eurofins Sample No.			K22-Ap0003231	K22-Ap0003233
Date Sampled			Mar 31, 2022	Mar 31, 2022
Test/Reference	LOR	Unit		
Organochlorine Pesticides (NZ MfE)				
2.4'-DDD	0.01	mg/kg	< 0.01	< 0.01
2.4'-DDE	0.01	mg/kg	< 0.01	< 0.01
2.4'-DDT	0.01	mg/kg	< 0.01	< 0.01
4.4'-DDD	0.01	mg/kg	< 0.01	< 0.01
4.4'-DDE	0.01	mg/kg	< 0.01	< 0.01
4.4'-DDT	0.01	mg/kg	< 0.01	< 0.01
DDT + DDE + DDD (Total)*	0.01	mg/kg	< 0.01	< 0.01
a-HCH	0.01	mg/kg	< 0.01	< 0.01
Aldrin	0.01	mg/kg	< 0.01	< 0.01
b-HCH	0.01	mg/kg	< 0.01	< 0.01
Chlordanes - Total	0.01	mg/kg	< 0.01	< 0.01
cis-Chlordane	0.01	mg/kg	< 0.01	< 0.01
d-HCH	0.01	mg/kg	< 0.01	< 0.01
Dieldrin	0.01	mg/kg	< 0.01	< 0.01
Endosulfan I	0.01	mg/kg	< 0.01	< 0.01
Endosulfan II	0.01	mg/kg	< 0.01	< 0.01
Endosulfan sulphate	0.01	mg/kg	< 0.01	< 0.01
Endrin	0.01	mg/kg	< 0.01	< 0.01
Endrin aldehyde	0.01	mg/kg	< 0.01	< 0.01
Endrin ketone	0.01	mg/kg	< 0.01	< 0.01
g-HCH (Lindane)	0.01	mg/kg	< 0.01	< 0.01
Heptachlor	0.01	mg/kg	< 0.01	< 0.01
Heptachlor epoxide	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobenzene	0.01	mg/kg	< 0.01	< 0.01
Methoxychlor	0.01	mg/kg	< 0.01	< 0.01
Toxaphene	0.5	mg/kg	< 0.5	< 0.5
trans-Chlordane	0.01	mg/kg	< 0.01	< 0.01
Dibutylchlorendate (surr.)	1	%	63	91
Tetrachloro-m-xylene (surr.)	1	%	109	114
Metals M8 (NZ MfE)				
Arsenic	0.1	mg/kg	3.1	3.6
Cadmium	0.01	mg/kg	< 0.01	0.05
Chromium	0.1	mg/kg	20	53
Copper	0.1	mg/kg	6.0	26
Lead	0.1	mg/kg	4.4	5.7
Mercury	0.01	mg/kg	0.10	0.06
Nickel	0.1	mg/kg	18	64
Zinc	5	mg/kg	8.2	60
% Moisture	1	%	18	22

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Organochlorine Pesticides (NZ MfE)	Auckland	Apr 04, 2022	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water by GCMSMS			
Metals M8 (NZ MfE)	Auckland	Apr 04, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Polycyclic Aromatic Hydrocarbons (NZ MfE)	Auckland	Apr 04, 2022	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water by GC MSMS			
% Moisture	Auckland	Apr 04, 2022	14 Days
- Method: LTM-GEN-7080 Moisture Content in Soil by Gravimetry			

eurofins | Environment Testing

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Company Name: ENGEO Ltd - NI
Address: 8 Greydene Place
Takapuna
Auckland 0622

Project Name: APIRANA AVENUE
Project ID: 18308.000.001

Order No.:
Report #: 876768
Phone: 0011 64 9 9722 205
Fax:

Received: Apr 4, 2022 12:10 PM
Due: Apr 11, 2022
Priority: 5 Day
Contact Name: Jamie Rhodes

Eurofins Analytical Services Manager : Karishma Patel

Sample Detail						Asbestos - WA guidelines	HOLD	Moisture Set	Organochlorine Pesticides (NZ MfE)	Metals M8 (NZ MfE)	Polycyclic Aromatic Hydrocarbons (NZ MfE)
Auckland Laboratory - IANZ# 1327							X	X	X	X	X
Christchurch Laboratory - IANZ# 1290						X					
External Laboratory											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	TP01 0.3	Mar 31, 2022		Soil	K22-Ap0003220	X					
2	TP01 0.6	Mar 31, 2022		Soil	K22-Ap0003221			X	X	X	
3	TP03 0.3	Mar 31, 2022		Soil	K22-Ap0003222	X					
4	TP03 0.7	Mar 31, 2022		Soil	K22-Ap0003223			X	X	X	X
5	TP04 0.3	Mar 31, 2022		Soil	K22-Ap0003224			X		X	X
6	TP04 0.7	Mar 31, 2022		Soil	K22-Ap0003225			X	X	X	
7	TP05 0.3	Mar 31, 2022		Soil	K22-Ap0003226	X					

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Auckland Laboratory - IANZ# 1327							X	X	X	X	X
Christchurch Laboratory - IANZ# 1290						X					
External Laboratory											
8	TP05 0.7	Mar 31, 2022		Soil	K22-Ap0003227			X	X	X	
9	TP06 0.2	Mar 31, 2022		Soil	K22-Ap0003228	X		X		X	X
10	TP06 0.7	Mar 31, 2022		Soil	K22-Ap0003229			X	X	X	
11	TP07 0.2	Mar 31, 2022		Soil	K22-Ap0003230	X		X		X	X
12	TP07 0.6	Mar 31, 2022		Soil	K22-Ap0003231			X	X	X	
13	TP08 0.2	Mar 31, 2022		Soil	K22-Ap0003232	X					
14	TP08 0.4	Mar 31, 2022		Soil	K22-Ap0003233			X	X	X	
15	TP01 1.5	Mar 31, 2022		Soil	K22-Ap0003234		X				

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Auckland Laboratory - IANZ# 1327							X	X	X	X	X
Christchurch Laboratory - IANZ# 1290						X					
External Laboratory											
16	TP03 1.3	Mar 31, 2022		Soil	K22-Ap0003235		X				
17	TP03 2.2	Mar 31, 2022		Soil	K22-Ap0003236		X				
18	TP04 1.6	Mar 31, 2022		Soil	K22-Ap0003237		X				
19	TP04 2.3	Mar 31, 2022		Soil	K22-Ap0003238		X				
20	TP05 1.3	Mar 31, 2022		Soil	K22-Ap0003239		X				
21	TP06 1.9	Mar 31, 2022		Soil	K22-Ap0003240		X				
22	TP07 1.3	Mar 31, 2022		Soil	K22-Ap0003241		X				
23	TP08 0.8	Mar 31, 2022		Soil	K22-Ap0003242		X				

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Sample Detail	Asbestos - WA guidelines	HOLD	Moisture Set	Organochlorine Pesticides (NZ MfE)	Metals M8 (NZ MfE)	Polycyclic Aromatic Hydrocarbons (NZ MfE)
Auckland Laboratory - IANZ# 1327		X	X	X	X	X
Christchurch Laboratory - IANZ# 1290	X					
External Laboratory						
Test Counts	6	9	10	7	10	4

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

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QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Organochlorine Pesticides (NZ MfE)							
2.4'-DDD	mg/kg	< 0.01			0.01	Pass	
2.4'-DDE	mg/kg	< 0.01			0.01	Pass	
2.4'-DDT	mg/kg	< 0.01			0.01	Pass	
4.4'-DDD	mg/kg	< 0.01			0.01	Pass	
4.4'-DDE	mg/kg	< 0.01			0.01	Pass	
4.4'-DDT	mg/kg	< 0.01			0.01	Pass	
a-HCH	mg/kg	< 0.01			0.01	Pass	
Aldrin	mg/kg	< 0.01			0.01	Pass	
b-HCH	mg/kg	< 0.01			0.01	Pass	
Chlordanes - Total	mg/kg	< 0.01			0.01	Pass	
cis-Chlordane	mg/kg	< 0.01			0.01	Pass	
d-HCH	mg/kg	< 0.01			0.01	Pass	
Dieldrin	mg/kg	< 0.01			0.01	Pass	
Endosulfan I	mg/kg	< 0.01			0.01	Pass	
Endosulfan II	mg/kg	< 0.01			0.01	Pass	
Endosulfan sulphate	mg/kg	< 0.01			0.01	Pass	
Endrin	mg/kg	< 0.01			0.01	Pass	
Endrin aldehyde	mg/kg	< 0.01			0.01	Pass	
Endrin ketone	mg/kg	< 0.01			0.01	Pass	
g-HCH (Lindane)	mg/kg	< 0.01			0.01	Pass	
Heptachlor	mg/kg	< 0.01			0.01	Pass	
Heptachlor epoxide	mg/kg	< 0.01			0.01	Pass	
Hexachlorobenzene	mg/kg	< 0.01			0.01	Pass	
Methoxychlor	mg/kg	< 0.01			0.01	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
trans-Chlordane	mg/kg	< 0.01			0.01	Pass	
Method Blank							
Metals M8 (NZ MfE)							
Arsenic	mg/kg	< 0.1			0.1	Pass	
Cadmium	mg/kg	< 0.01			0.01	Pass	
Chromium	mg/kg	< 0.1			0.1	Pass	
Copper	mg/kg	< 0.1			0.1	Pass	
Lead	mg/kg	< 0.1			0.1	Pass	
Mercury	mg/kg	< 0.01			0.01	Pass	
Nickel	mg/kg	< 0.1			0.1	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons (NZ MfE)							
Acenaphthene	mg/kg	< 0.03			0.03	Pass	
Acenaphthylene	mg/kg	< 0.03			0.03	Pass	
Anthracene	mg/kg	< 0.03			0.03	Pass	
Benz(a)anthracene	mg/kg	< 0.03			0.03	Pass	
Benzo(a)pyrene	mg/kg	< 0.03			0.03	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.03			0.03	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.03			0.03	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.03			0.03	Pass	
Chrysene	mg/kg	< 0.03			0.03	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.03			0.03	Pass	
Fluoranthene	mg/kg	< 0.03			0.03	Pass	
Fluorene	mg/kg	< 0.03			0.03	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.03			0.03	Pass	
Naphthalene	mg/kg	< 0.1			0.1	Pass	
Phenanthrene	mg/kg	< 0.03			0.03	Pass	
Pyrene	mg/kg	< 0.03			0.03	Pass	
LCS - % Recovery							
Organochlorine Pesticides (NZ MfE)							
2.4'-DDD	%	92			70-130	Pass	
2.4'-DDE	%	91			70-130	Pass	
2.4'-DDT	%	89			70-130	Pass	
4.4'-DDD	%	71			70-130	Pass	
4.4'-DDE	%	80			70-130	Pass	
4.4'-DDT	%	82			70-130	Pass	
a-HCH	%	82			70-130	Pass	
Aldrin	%	114			70-130	Pass	
b-HCH	%	101			70-130	Pass	
Chlordanes - Total	%	105			70-130	Pass	
cis-Chlordane	%	127			70-130	Pass	
d-HCH	%	93			70-130	Pass	
Dieldrin	%	93			70-130	Pass	
Endosulfan I	%	110			70-130	Pass	
Endosulfan II	%	90			70-130	Pass	
Endosulfan sulphate	%	116			70-130	Pass	
Endrin	%	84			70-130	Pass	
Endrin aldehyde	%	92			70-130	Pass	
Endrin ketone	%	109			70-130	Pass	
g-HCH (Lindane)	%	79			70-130	Pass	
Heptachlor	%	87			70-130	Pass	
Heptachlor epoxide	%	113			70-130	Pass	
Hexachlorobenzene	%	113			70-130	Pass	
Methoxychlor	%	96			70-130	Pass	
trans-Chlordane	%	84			70-130	Pass	
LCS - % Recovery							
Metals M8 (NZ MfE)							
Arsenic	%	95			80-120	Pass	
Cadmium	%	94			80-120	Pass	
Chromium	%	98			80-120	Pass	
Copper	%	97			80-120	Pass	
Lead	%	90			80-120	Pass	
Mercury	%	92			80-120	Pass	
Nickel	%	98			80-120	Pass	
Zinc	%	104			80-120	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons (NZ MfE)							
Acenaphthene	%	111			70-130	Pass	
Acenaphthylene	%	115			70-130	Pass	
Anthracene	%	104			70-130	Pass	
Benz(a)anthracene	%	106			70-130	Pass	
Benzo(a)pyrene	%	79			70-130	Pass	
Benzo(b&j)fluoranthene	%	80			70-130	Pass	
Benzo(g.h.i)perylene	%	88			70-130	Pass	
Benzo(k)fluoranthene	%	90			70-130	Pass	
Chrysene	%	86			70-130	Pass	
Dibenz(a.h)anthracene	%	72			70-130	Pass	
Fluoranthene	%	79			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluorene			%	104			70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	71			70-130	Pass	
Naphthalene			%	113			70-130	Pass	
Phenanthrene			%	106			70-130	Pass	
Pyrene			%	92			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Organochlorine Pesticides (NZ MfE)				Result 1					
cis-Chlordane	K22-Ap00410	NCP	%	114			70-130	Pass	
Endrin aldehyde	K22-Ap00410	NCP	%	75			70-130	Pass	
Endrin ketone	K22-Ap00410	NCP	%	95			70-130	Pass	
Hexachlorobenzene	K22-Ap00410	NCP	%	117			70-130	Pass	
Spike - % Recovery									
Metals M8 (NZ MfE)				Result 1					
Chromium	Z22-Ap0003557	NCP	%	91			75-125	Pass	
Spike - % Recovery									
Organochlorine Pesticides (NZ MfE)				Result 1					
2.4'-DDD	K22-Ap0003223	CP	%	70			70-130	Pass	
2.4'-DDE	K22-Ap0003223	CP	%	107			70-130	Pass	
2.4'-DDT	K22-Ap0003223	CP	%	79			70-130	Pass	
4.4'-DDD	K22-Ap0003223	CP	%	85			70-130	Pass	
4.4'-DDE	K22-Ap0003223	CP	%	88			70-130	Pass	
4.4'-DDT	K22-Ap0003223	CP	%	88			70-130	Pass	
a-HCH	K22-Ap0003223	CP	%	99			70-130	Pass	
Aldrin	K22-Ap0003223	CP	%	103			70-130	Pass	
b-HCH	K22-Ap0003223	CP	%	108			70-130	Pass	
Chlordanes - Total	K22-Ap0003223	CP	%	113			70-130	Pass	
d-HCH	K22-Ap0003223	CP	%	107			70-130	Pass	
Dieldrin	K22-Ap0003223	CP	%	71			70-130	Pass	
Endosulfan I	K22-Ap0003223	CP	%	96			70-130	Pass	
Endosulfan II	K22-Ap0003223	CP	%	86			70-130	Pass	
Endosulfan sulphate	K22-Ap0003223	CP	%	107			70-130	Pass	
Endrin	K22-Ap0003223	CP	%	100			70-130	Pass	
g-HCH (Lindane)	K22-Ap0003223	CP	%	87			70-130	Pass	
Heptachlor	K22-Ap0003223	CP	%	110			70-130	Pass	
Heptachlor epoxide	K22-Ap0003223	CP	%	74			70-130	Pass	
Methoxychlor	K22-Ap0003223	CP	%	102			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons (NZ MfE)				Result 1					
Acenaphthene	K22-Ap0003223	CP	%	118			70-130	Pass	
Acenaphthylene	K22-Ap0003223	CP	%	127			70-130	Pass	
Anthracene	K22-Ap0003223	CP	%	120			70-130	Pass	
Benz(a)anthracene	K22-Ap0003223	CP	%	122			70-130	Pass	
Benzo(a)pyrene	K22-Ap0003223	CP	%	87			70-130	Pass	
Benzo(b&j)fluoranthene	K22-Ap0003223	CP	%	88			70-130	Pass	
Benzo(g.h.i)perylene	K22-Ap0003223	CP	%	98			70-130	Pass	
Benzo(k)fluoranthene	K22-Ap0003223	CP	%	104			70-130	Pass	
Chrysene	K22-Ap0003223	CP	%	93			70-130	Pass	
Dibenz(a.h)anthracene	K22-Ap00410	NCP	%	73			70-130	Pass	
Fluoranthene	K22-Ap0003223	CP	%	102			70-130	Pass	
Fluorene	K22-Ap0003223	CP	%	124			70-130	Pass	
Indeno(1.2.3-cd)pyrene	K22-Ap0003223	CP	%	94			70-130	Pass	
Naphthalene	K22-Ap0003223	CP	%	123			70-130	Pass	
Phenanthrene	K22-Ap0003223	CP	%	113			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Pyrene	K22-Ap0003223	CP	%	102			70-130	Pass	
Spike - % Recovery									
Metals M8 (NZ MfE)				Result 1					
Arsenic	K22-Ap0003225	CP	%	85			75-125	Pass	
Cadmium	K22-Ap0003225	CP	%	96			75-125	Pass	
Copper	K22-Ap0003225	CP	%	88			75-125	Pass	
Lead	K22-Ap0003225	CP	%	91			75-125	Pass	
Mercury	K22-Ap0003225	CP	%	101			75-125	Pass	
Nickel	K22-Ap0003225	CP	%	90			75-125	Pass	
Zinc	K22-Ap0003225	CP	%	90			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Organochlorine Pesticides (NZ MfE)				Result 1	Result 2	RPD			
2.4'-DDD	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDE	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
2.4'-DDT	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDD	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDE	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
4.4'-DDT	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
a-HCH	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Aldrin	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
b-HCH	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Chlordanes - Total	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
cis-Chlordane	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
d-HCH	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Dieldrin	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan I	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan II	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endosulfan sulphate	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin aldehyde	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Endrin ketone	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
g-HCH (Lindane)	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Heptachlor	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Heptachlor epoxide	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Hexachlorobenzene	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Methoxychlor	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Toxaphene	K22-Ap0003221	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-Chlordane	K22-Ap0003221	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons (NZ MfE)				Result 1	Result 2	RPD			
Acenaphthene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Acenaphthylene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Anthracene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benz(a)anthracene	K22-Ap0003221	CP	mg/kg	< 0.03	0.04	36	30%	Fail	Q15
Benzo(a)pyrene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(b&j)fluoranthene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(g.h.i)perylene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(k)fluoranthene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Chrysene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Dibenz(a.h)anthracene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Fluoranthene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Fluorene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons (NZ MfE)				Result 1	Result 2	RPD			
Naphthalene	K22-Ap0003221	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Phenanthrene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Pyrene	K22-Ap0003221	CP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons (NZ MfE)				Result 1	Result 2	RPD			
Acenaphthene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Acenaphthylene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Anthracene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benz(a)anthracene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(a)pyrene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(b&j)fluoranthene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(g.h.i)perylene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Benzo(k)fluoranthene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Chrysene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Dibenz(a.h)anthracene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Fluoranthene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Fluorene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Naphthalene	Z22-Ap0006663	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Phenanthrene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Pyrene	Z22-Ap0006663	NCP	mg/kg	< 0.03	< 0.03	<1	30%	Pass	
Duplicate									
Metals M8 (NZ MfE)				Result 1	Result 2	RPD			
Arsenic	K22-Ap0003224	CP	mg/kg	3.3	3.6	8.0	30%	Pass	
Cadmium	K22-Ap0003224	CP	mg/kg	0.13	0.13	<1	30%	Pass	
Chromium	K22-Ap0003224	CP	mg/kg	77	81	6.0	30%	Pass	
Copper	K22-Ap0003224	CP	mg/kg	49	47	4.0	30%	Pass	
Lead	K22-Ap0003224	CP	mg/kg	4.5	4.7	6.0	30%	Pass	
Mercury	K22-Ap0003224	CP	mg/kg	0.02	0.02	16	30%	Pass	
Nickel	K22-Ap0003224	CP	mg/kg	110	120	6.0	30%	Pass	
Zinc	K22-Ap0003224	CP	mg/kg	110	110	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	K22-Ap0003224	CP	%	22	21	5.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Karishma Patel	Analytical Services Manager
Michael Ritchie	Senior Analyst
Katyana Gausel	Senior Analyst-Asbestos (Key Technical Personnel) (NZS)

Michael Ritchie
Head of Semi Volatiles (Key Technical Personnel)

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates IANZ accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

APPENDIX 5:

Redevelopment Plans

Printed on Monday, 11 January 2021

PLANNING SUMMARY

ZONE: Business-Light Industrial

ACTIVITY STATUS:

- Industrial activities:	*Permitted*
- Storage and lock-up facilities:	*Permitted*
- Offices: (accessory to primary activity on site and office GFA does not exceed 30% of all buildings on the site)	*Permitted*
- New buildings:	*Permitted*

UNITARY PLAN CONTROL	COMPLIANCE
BUILDING HEIGHT: Must not exceed 20m	√
HIRB: Not Applicable	√
YARDS: Front yard: 2m (planting to front yard required)	√

CAR PARKING REQUIREMENTS

ACTIVITY	AREA (m^2)	#CP (req'd)	TOTAL #CP (req'd)	TOTAL #CP (provided)
LIGHT INDUSTRIAL	3542.26	1:100 - 35		
OFFICES	1393.20	1:45 - 30	65	83
CAFE	81.68	1 : > 350		

SITE INFORMATION

ADDRESS:	333 APIRANA AVENUE
LEGAL DESCRIPTION: LOT / DP	1 / 86427
SITE AREA:	8233m²
TERRITORIAL AUTHORITY ZONE:	Business - Light Industry
EARTHQUAKE ZONE:	Zone 1
CORROSION ZONE:	Zone C
CLIMATE ZONE:	1
WIND REGION:	A
RAINFALL INTENSITY:	90-100
WIND ZONE:	Low

SITE NOTES

1. BOUNDARY INFORMATION PROVIDED BY #Surveyor
2. Address
3. SITE SURVEY INFORMATION PROVIDED BY #Surveyor
   Address
   SITE LEVELS IN TERMS OF MEAN SEA LEVEL
   OWNER & CONTRACTOR TO COMPY WITH ANY
4. CONDITIONS AS ISSUED BY THE RESOURCE AND/OR BUILDING CONSENT
5. CONTRACTOR TO LOCATE ALL SERVICE CONNNECTIONS ON SITE PRIOR TO COMMENCEMENT OF EARTHWORKS
6. CONTRACTOR TO CONFIRM ALL BOUNDARIES, SETBACKS & RESTRICTIONS ON SITE PRIOR TO THE COMMENCEMENT OF THE FOUNDATIONS.
7. REFER TO ####'s DRAWINGS FOR ALL DRAINAGE.
8. FALLS, KERB & CHANNEL, SUMPS, LEVELS, RETAINING WALL DETAILS AND EXTENT OF ROADWORKS
9. DO NOT SCALE OFF DRAWING
   CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE
10. FOR ALL DIMENSIONS ON SITE
    ARCHITECTS TO BE NOTIFIED OF ANY VARIATION BETWEEN SITE DIMENSIONS AND THOSE ON PLANS
    ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH
11. THE REQUIREMENTS OF THE CURRENT NEW ZEALAND BUILDING CODE AND APPROPRIATE NEW ZEALAND STANDARDS

APIRANA AVE

NORTH ISLAND MAINTRUNK RAILWAY

BLOCK A · BLOCK B · BLOCK C · BLOCK D · BLOCK E

2m setback · 2m setback

COUNCIL LANDSCAPE

NEW ENTRY 2

144°04'50" 46.98

156°57'20" 258.50

173°24'10" 87.83

169°53'20" 87.16

165°42'50" 56.04

254°13'30" 21.81

RUBBISH ENCLOSURE 42.83 m²

RUBBISH ENCLOSURE 23.59 m²

20ft Container side loaded drop off

20ft Container side loaded drop off

Access to Rubbish Enclosure

CAFE 81.68 m²

8,232.63 m²

Work in Progress

Issue	Date	Description
01	Work in Progress	

Project

PROPOSED LIGHT INDUSTRIAL DEVELOPMENT

333 APIRANA AVENUE
AUCKLAND

Sheet Title

Proposed Site Plan

bsw architects

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Auckland, New Zealand
PO Box 2558 Auckland

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Email studio@bsw.net.nz

Project No. 639-01

Scale 1:300 @A1
Half scale @ A3

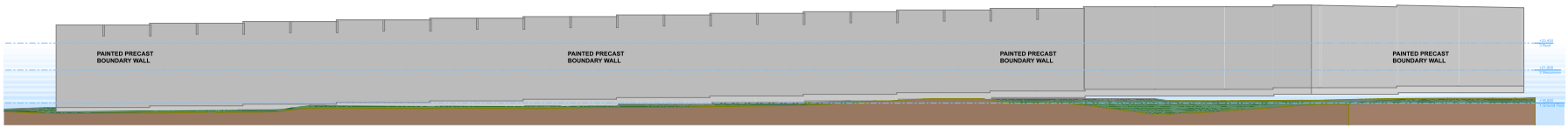
Date Work in Progress

sheet RC-102

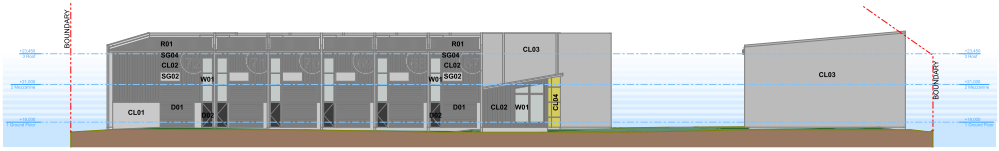
revision 01 - WIP

1 Proposed Site Plan 1:300

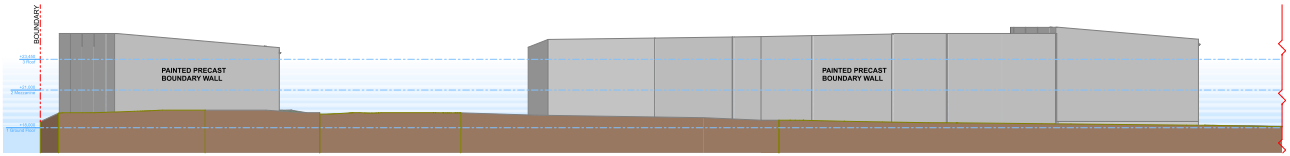
Printed on Monday, 11 January 2021



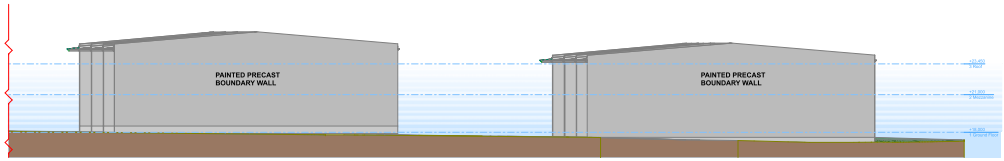
1 External Elevation Block A 1:200



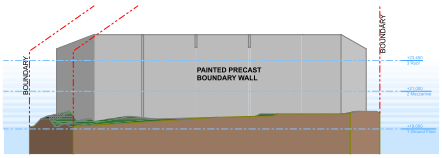
2 External Elevation Blocks B and A 1:200



3 External Elevation Blocks E and D 1:200



4 External Elevation Block C and B 1:200



5 External Elevation Block E 1:200

LEGEND

WINDOWS

W01 - SELECTED POWDER COATED ALUMINIUM WINDOW JOINERY

DOORS

D01 - POWDER COATED ROLLER DOORS 3.5m(H) x 2.7m(W)
D02 - METAL FACED SOLID CORE PEDESTRIAN DOOR

ROOF

R01 - COLORSTEEL PROFILED METAL ROOFING

WALL CLADDINGS

CL01 - FIBRE CEMENT BOARD CLADDING (PAINT FINISH) TO LIGHTWEIGHT STEEL FRAMING
CL02 - VERTICAL PROFILED METAL COLORSTEEL CLADDING
CL03 - 150 mm THICK PAINTED PRECAST CONCRETE
CL04 - FIBRE CEMENT BOARD CLADDING PANELS

FLOOR

FL01 - CONCRETE WITH SEALER FINISH
FL02 - PLYWOOD FLOORING
FL03 - SELECTED NON-SLIP VINYL

SIGNAGE

SG01 - TENANT ADVERTISING SIGNAGE 750m(H) x 1400mm(W)
SG02 - TENANT ADVERTISING SIGNAGE 750m(H) x 1600mm(W)
SG03 - TENANT ADVERTISING SIGNAGE 750m(H) x 2700mm(W)
SG04 - TENANT UNIT NUMBER SIGNAGE
SG05 - LOT SIGNAGE

Work in Progress

Issue	Date	Description
01	Work in Progress	

Project

PROPOSED LIGHT INDUSTRIAL DEVELOPMENT

333 APIRANA AVENUE
AUCKLAND

Sheet Title

Proposed Elevations

bsw architects

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Project No. 639-01

Scale 1:200, 1:100 @A1
Half scale @ A3

Date Work in Progress

sheet RC-141

revision 01 - WIP

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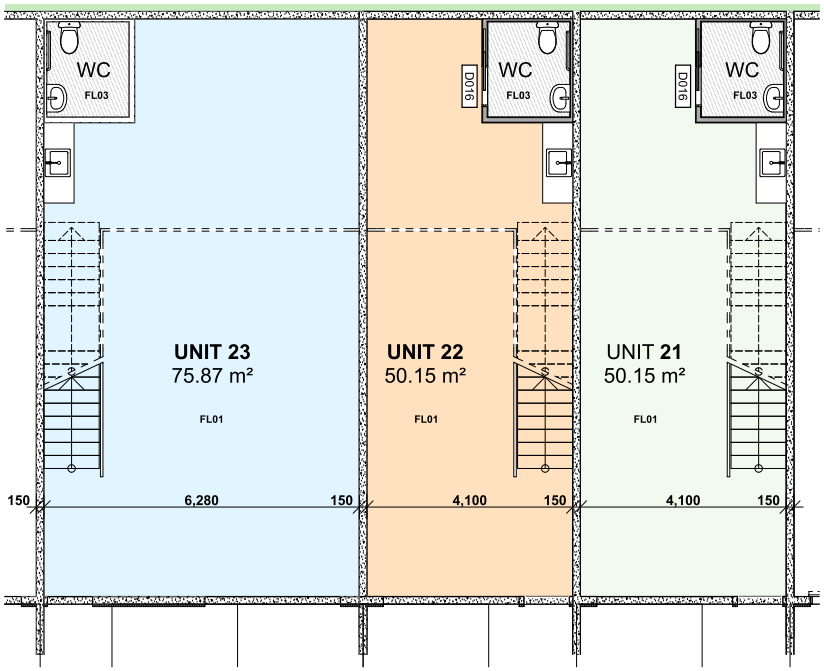
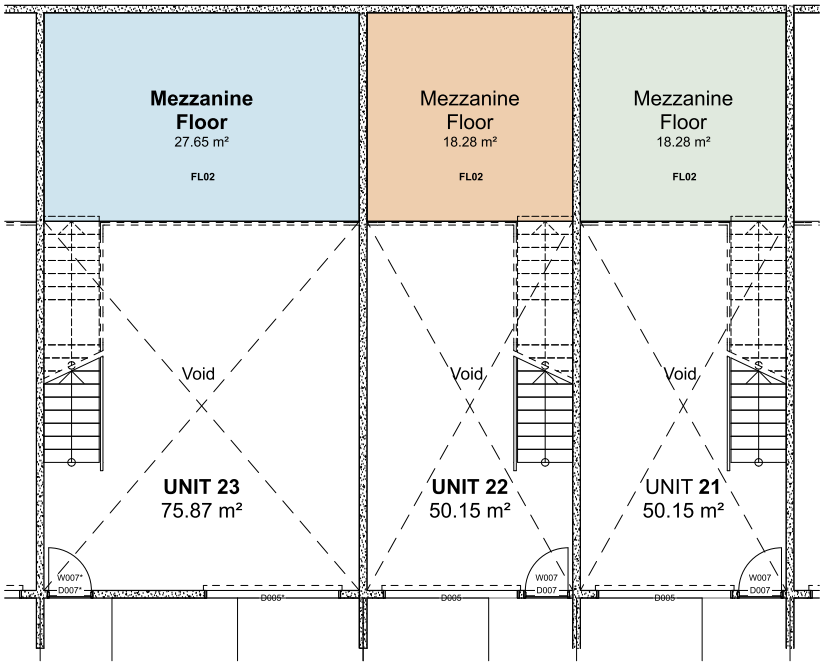
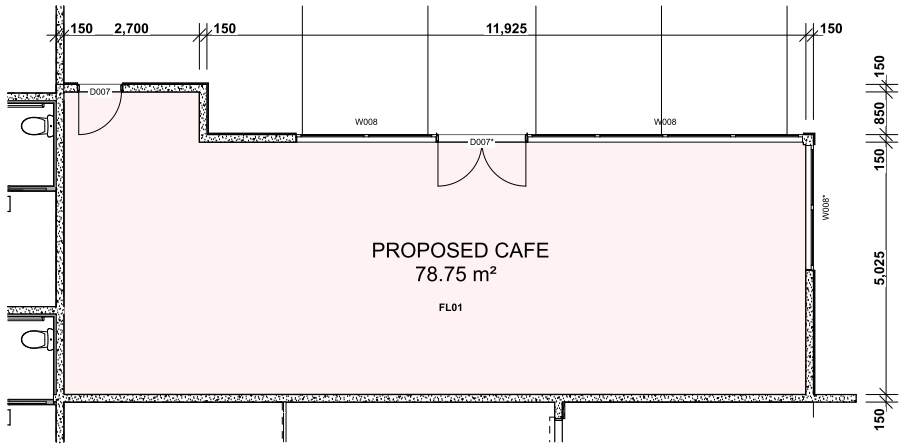


1 TYPICAL UNIT - GROUND LEVEL 1:50



2 TYPICAL UNIT - MEZZANINE LEVEL 1:50



3 CAFE PLAN 1:50

LEGEND

FL01 - CONCRETE WITH SEALER FINISH
FL02 - PLYWOOD FLOORING
FL03 - SELECTED NON-SLIP VINYL

SIGNAGE

SG01 - TENANT ADVERTISING SIGNAGE 750mm(H) x 1400mm(L)

FLOOR PLAN NOTES

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL SPECIFICATION AND ALL OTHER CONSULTANTS DOCUMENTATION.
2. THE CONTRACTOR IS TO FAMILIARISE THEMSELVES WITH ALL MANUFACTURERS INSTALLATION DETAILS AND REQUIREMENTS FOR CLADDINGS, SPECIFIC SYSTEMS ETC BEFORE BEGINNING CONSTRUCTION. ANY DISCREPANCIES SHOULD BE RAISED TO THE ARCHITECT PRIOR TO COMMENCING WORK.
3. DO NOT SCALE OFF DRAWING
4. CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS ON SITE
5. ARCHITECTS TO BE NOTIFIED OF ANY VARIATION BETWEEN SITE DIMENSIONS AND THOSE ON PLANS
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT NEW ZEALAND BUILDING CODE AND APPROPRIATE NEW ZEALAND STANDARDS.
7. ALL WORKMANSHIP AND MATERIALS ,SHALL BE OF THE HIGHEST QUALITY AND CURRENT TRADE PRACTICES.

Work in Progress

Issue	Date	Description
01	Work in Progress	

Project

PROPOSED LIGHT INDUSTRIAL DEVELOPMENT

333 APIRANA AVENUE
AUCKLAND

Sheet Title

Typical Unit Floor Plans & Cafe Plan

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Project No. 639-01

Scale 1:50, 1:100 @A1
Half scale @ A3

Date Work in Progress

sheet RC-201

revision 01 - WIP

APPENDIX 6:

Summary Results Table

Sample ID	Soil Depth (m bgl)	Analyte	Heavy metals / metalloids								PAHs	OCPs	Asbestos	
			Arsenic	Cadmium[4]	Chromium[5]	Copper	Lead	Mercury	Nickel	Zinc	Total[8]	Total[8]	ACM	FA / AF
		Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%w/w	%w/w
TP01	0.3	31/03/2022	-	-	-	-	-	-	-	-	-	-	ND	ND
	0.6	31/03/2022	4.3	0.03	69	19	8.9	0.11	39	33	-	<LOR	-	-
TP03	0.3	31/03/2022	-	-	-	-	-	-	-	-	-	-	ND	ND
	0.7	31/03/2022	3.9	0.07	66	29	6.8	0.06	77	76	<LOR	<LOR	-	-
TP04	0.3	31/03/2022	3.3	0.13	77	49	4.5	0.02	110	110	<LOR	-	-	-
	0.7	31/03/2022	4.1	0.01	55	15	7.1	0.03	31	35	-	<LOR	-	-
TP05	0.3	31/03/2022	-	-	-	-	-	-	-	-	-	-	ND	ND
	0.7	31/03/2022	6.1	0.01	17	4.6	3.9	0.16	8.2	5	-	<LOR	-	-
TP06	0.2	31/03/2022	1.3	0.06	60	48	1.9	0.01	130	54	<LOR	-	ND	ND
	0.7	31/03/2022	4.6	0.04	53	12	8.4	0.14	27	23	-	<LOR	-	-
TP07	0.2	31/03/2022	2.6	0.02	47	21	2.5	0.03	63	28	<LOR	-	ND	ND
	0.6	31/03/2022	3.1	0.01	20	6	4.4	0.1	18	8.2	-	<LOR	-	-
TP08	0.2	31/03/2022	-	-	-	-	-	-	-	-	-	-	ND	ND
	0.4	31/03/2022	3.6	0.05	53	26	5.7	0.06	64	60	-	<LOR	-	-
Assessment Criteria														
Human Health Criteria - Commercial / Industrial Land Use[1]			70	1,300	6,300	>10,000	3,300	4,200	1,200[6]	60,000[6]	-	-	0.005[7]	0.001[7]
Environmental Discharge Criteria[2]			100	7.5	400	325	250	0.75	320	1,160	-	-	NGV	NGV
Background Criteria for Inorganic Elements (volcanic)[3]			0.4 - 12	0.1 - 0.65	3 - 125	20 - 90	5 - 65	0.03 - 0.45	4 - 320	54 - 1,160	-	-	Present	Present

Notes:
1 Human Health Criteria from the NES, except where noted. No exceedances detected.
2 Environmental discharge criteria from the AUP (AC, 2016a). No exceedances detected.
3 Background Concentrations for the Auckland Region (AC, 2001). No exceedances detected.
4 Assumes soil pH of 5.
5 Criteria for Chromium VI were conservatively selected.
6 Criteria sourced from National Environment Protection (Assessment of Site Contamination) Measure (NEPM, 2013).
7. Criteria sourched from BRANZ, 2017
8. Criteria for individual compounds not presented as no results were detected above the LOR. Laboratory report included in Appendix 4.
- indicates 'not tested'
NGV indicates 'no guideline value'
ND indicates 'not detected'

Samples that were not selected for analysis have not been included in the table.
Only detectable concentrations were included in the table. Full analytical laboratory reports are included in Appendix 4.