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Precinct Properties Ltd
Via email

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31 July 2024 WWLA1219

Dominion Road and Valley Road Apartments, Mt Eden – Ground Contamination Review

Williamson Water & Land Advisory Ltd (WWLA) are pleased to provide this ground contamination review of available data for 198-202 and 214-222 Dominion Road and 113-117 Valley Road, Mt Eden, Auckland (the site, see **Figure 1** in **Section 1**). This letter supports a resource consent application for an apartment development by Precinct Properties Ltd (PPL).

WWLA was engaged to review and assess the applicability of previous ground contamination investigations for PPL's proposed apartment development at the site. The main findings of this assessment are:

- ***Our site walkover found no significant changes have occurred onsite as compared to the land use documented a Preliminary Site Investigation (PSI) in 2016 by Tonkin & Taylor (T+T). No new HAIL activities[1] were noted.***
- ***A detailed site investigation (DSI) has been completed for the central portion of the site, 214-222 Dominion Road (T+T, 2017). No intrusive investigation information is available for the balance of the landholding.***
- ***Soil quality information for 214-222 Dominion Road shows that fill materials are present and these contain contaminants, predominantly metals and hydrocarbons with trace levels of asbestos present where tested. It is considered possible similar fill may be present over the balance of the landholding, and thus contaminants could be reasonably expected to occur on the other allotments.***
- ***The background values used in the T+T report are conservative given the geological setting (volcanic) and thus naturally occurring higher levels of metals such as nickel which is consistently elevated at typical volcanic levels. Similarly, the future land use criteria considered is high density residential but given the apartment development commercial could be considered more applicable.***
- ***Under the NESCS, consent for soil disturbance and subdivision as a discretionary activity is required. For soil disturbance under the AUP the activity status is also discretionary as the investigation does not cover the entire site. The site management plan (SMP), appended to this letter, supports the resource consent application.***
- ***As existing soil quality information is only available for a portion of the site further investigation will be required by a SQEP following demolition of the buildings, as a condition of the resource consent.***
- ***As indicated in the SMP Attached standard earthworks controls are expected to be appropriate to mitigate risks from heavy metals in soil during bulk earthworks. The need for asbestos controls will be confirmed by the further soil testing, with contingency procedures included in the event further underground fuel tanks or hydrocarbon impacted soil associated with former features is encountered.***

[1] Potentially contaminating land uses as listed on the Ministry for the Environment's Hazardous Activities and Industries List (HAIL)

1. Background

Precinct Properties Ltd proposes to construct three five-storey apartment buildings over the site, featuring a single-level interconnected basement. Construction will require excavations between 0.5 m and 4 m below current ground level.

The property includes four land parcels (refer Section 3). Contamination investigations were undertaken by Tonkin and Taylor Ltd (T+T) in 2016-2017, including a preliminary site investigation report (PSI)[2] that included all four land parcels and a detailed site investigation report (DSI)[3] for one of the land parcels. The PSI report confirmed that land uses included in MfE's Hazardous Activities and Industries List (HAIL), i.e. those with potential to cause ground contamination, have occurred across all land parcels.

Land where HAIL activities have occurred and redevelopment is proposed is subject to the requirements of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (the NESCS). The contamination investigations completed to date indicate that there are potential risks to human health and the environment during soil disturbance due to contaminants in fill material that is present at variable depths across the site.

Figure 1. Site location with individual lots comprising the site outlined in red. (Source: LINZ).

[2] T+T, May 2016. *Preliminary Site Investigation, Valley Road Apartments, Mt Eden.* Prepared for Panuku Development Auckland.
[3] T+T, April 2017. *Detailed Site Investigation, Valley Road Apartments, Mt Eden*. Prepared for Panuku Development Auckland.

2. Objective and Scope of Work

This letter has been prepared to 1) assess the current contamination status of the site and the applicability of the previous contamination reports; 2) to understand the associated implications for managing soil during earthworks; and 3) to support consent applications for the proposed development. The following was undertaken in preparation of this letter:

- Review of the T+T PSI (2016) and DSI (2017) contamination reports.
- A site walkover by a WWLA suitably qualified and experienced practitioner (SQEP) to document the current site uses and conditions.
- Assessment of the applicability of the previous contamination reports including identification of any data gaps, and the requirements for consenting, further investigation, and earthworks management.
- Preparation of a site management plan (SMP, **Attached**) that describes the testing required and interim earthworks and health and safety controls specific to contamination management.

3. Site Identification

The site covers several commercial properties located at the corner of Dominion and Valley Roads as shown in **Figure 1** above. Site identification details as recorded on Auckland Council Geomaps are presented in **Table 1**.

Table 1. Site identification

Address	Legal description	Area (m^2)
198-202 Dominion Road, Mount Eden, Auckland 1024	Lot 1 DP 51797, Pt Lot 4 DP 182, Pt Lot 5 DP 182	1,376
214-222 Dominion Road, Mount Eden, Auckland 1024	Lot 2 DP 54203, Pt Lot 1 DP 31896, Pt Lot 3 ALLOT 8 SEC 10 Suburbs AUCKLAND	2,284
115-117 Valley Road, Mount Eden, Auckland 1024	Pt Lot 3 DP 1, Pt Lot 3 DP 1, Pt Lot 3 DP 1	950
113 Valley Road, Mount Eden, Auckland 1024	Lot 1 DP 54203	642
	Combined site area (approx.)	5,252

4. Site Walkover

A WWLA scientist visited the site on 10 July 2024. **Table 2** shows a summary of observations made during the visit with key site features and they relate to the definition of the extent of HAIL areas are illustrated on **Figure 2**.

Table 2. Site observations, July 2024.

198-202 Dominion Road (Photographs 1-4)
• The property has three adjoined double-storey buildings, constructed of concrete block with some portions covered in texture plaster and fibrolite. Joinery is mixed timber and aluminium, and where flaking paint is noted there is a red primer (indicating potential use of lead-based paint). • Current occupants of the buildings include a boxing studio, Salvation Army store, and clothing manufacturer. A vacant space was most recently occupied by the Red Cross. • The driveway and carpark surrounding the buildings are asphalt, with only very minimal exposed soil for decorative planting. Asphalt is in moderate condition. • Our inspection of the location of an underground fuel storage tank (UST) described in the PSI and DSI as having been removed, suggest some of the associated structure such as the concrete lined pit may be present (**Photo 4**).

Photograph 1: 198-202 Dominion Road (street frontage).

Photograph 2: Rear of Salvation Army building. Fibrolite visible.

Photograph 3: Paint flaking on joinery indicating possible lead based primer.

Photograph 4: Location of possible UST or separator.

214-222 Dominion Road (Photographs 5-8)

- This property contains four buildings, generally of brick or concrete block construction. Textured plaster cover and cladding repairs are frequent throughout all buildings. Repair materials include fibre cement sheeting and corrugated metal.
- Current and former (recently vacated) occupants include a café, tattoo shop, architect, coffee shop and cosmetics retailer. The coffee shop is located in the former automotive engineering building and contains a workshop at the eastern end of the building.
- Exposed soil is visible underneath the staircase at the rear of 214-216 Dominion Road. Fragments of potential ACM were observed at the ground surface.

Photograph 5: 214 Dominion Road (street frontage)

Photograph 6: 218 Dominion Road (street frontage).

Photograph 7: Staircase at rear of 214 Dominion Road with small amount of exposed soil and suspected ACM fragments.

Photograph 8: Coffee shop at 222 Dominion Road in the former automotive workshop.

115-117 Valley Road (Photograph 9)

- This property contains a single-storey building that was vacant at the time of the inspection. The most recent occupant was the commercial laundry and a hairdresser.
- The building is of concrete block construction with texture plaster, and a mix of timber and aluminium joinery.
- Concrete and asphalt surrounds the building on all sides and was in moderately good condition.

113 Valley Road, Mount Eden (Photograph 10)

- This property contains a two-storey building which appeared to be used for residential purposes.
- The building is of concrete block construction clad in fibre cement board.
- Most of the site surfaces were covered with concrete excluding small decorative gardens. All vegetation was in good condition.

Photograph 9: The rear (northern side) of the commercial laundry at 115-117 Valley Road.

Photograph 10: Street frontage of 113 Valley Road (looking north).

5. Prior Contamination Investigation Findings

A summary of the findings of both the PSI and DSI are presented in **Table 3** along with our comment on the applicability of the findings. HAIL areas discussed in our review and shown on **Figure 2**.

*We note: The PSI and DSI use different addresses for the northern part of the site as follows: 198-202 Dominion Road is described in these reports as 216 Dominion Road and 17 Carrick Place; and 214-222 Dominion Road is described as 216b, 218 and 222 Dominion Road. We have amended the PSI/ DSI addresses in our summary below to be consistent with the site as described in this letter (refer **Section 3** and in **Figure 1**).*

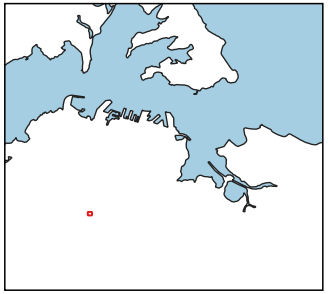
Building occupants

1. Salvation Army/ Boxing studio
2. Salvation Army
3. Clothing manufacturer
4. Former Red Cross retail/ residential units
5. Skincare retail and storage
6. Cafe/Tattoo parlour
7. Cafe/former automotive workshop
8. Paint workshop//former automotive workshop
9. Formerly boxing studio
10. Former laundry mat/ hair dresser
11. Commercial building

Map Title:
Site Features Plan

Project:
198-202, 214-222 Dominion Road and 113, 115-117 Valley Road, Mt Eden

Client:
Precinct Properties Ltd



Legend

- Site boundary
- Feature

HAIL Activities

- Approximate extent of automotive activities
- Approximate extent of commercial laundry
- Chemical storage for skincare retailer
- Extent of fill placement
- Possible historical location of underground storage tanks
- Suspected location of boilers and furnaces
- UST (known)

Data Provenance
Aerial imagery and land parcels from Land Information New Zealand

Drawn by: Cherise Martin
01/08/2024

Layout Name
Site Features Plan G:\Shared drives\Projects\Initia Geotechnical\WWLA1219_Precinct Dominion Rd CL\Technical\GIS\Precinct Dominion.qgz

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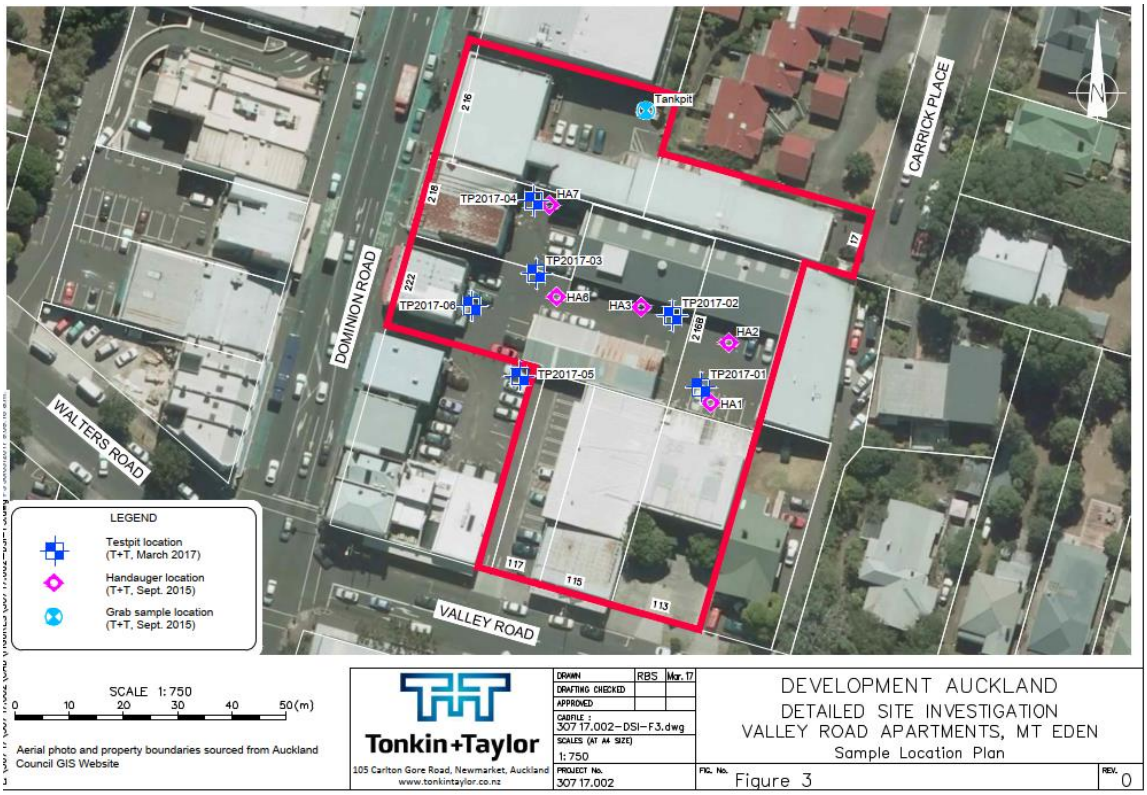
Figure 2.

Table 3. Assessment of prior contamination investigations and correlation with current land use observations.

T+T, 2016. Preliminary Site Investigation	
Current and historical land uses and potential HAIL activities (refer Figure 2)	The site has mostly been used for commercial (retail, offices) or light industrial activity since the 1930s-1940s. Potentially contaminating (HAIL) activities identified by the T+T desk study were: • **198-202 Dominion Rd**: Used as a car sales yard prior to 1953 with potential for a service workshop, and a knitwear factory. Contained an oil-fired boiler, underground fuel storage tanks (UST) removed in 1975 and potentially additional USTs still present along the northern boundary. An aboveground storage tank (AST) may also have been present at one time, and due to the age of construction/alterations of buildings asbestos-containing building materials (ACM) may have been used. (Potential HAIL Activities, F4, A13, E1). • **214-222 Dominion Road**: Records for a motor vehicle workshops and panel beaters present on these lots date from 1932 through to the 1990s. An auto engineering workshop was operating at the time of the investigation. ACM materials may also have been used in building construction. (HAIL Activities F4 and E1). • **115-117 Valley Road**: Used for clothing manufacture from the 1970s and as a commercial laundry (without drycleaning facilities) from the 1990s onwards. ACM materials may have been used in building construction (Potential HAIL activity E1). • **113 Valley Road**: Used as a private residence from at least the 1950s, then converted into offices in the 1970s. ACM materials may have been used in building construction (Potential HAIL activity E1). • **Whole site:** There is potential for imported fill to have been placed during development. This is expected to large be over the western part of the site. (HAIL Activity I).
Comparison with current site conditions observed by WWLA	• Since the time of the PSI (2016) the automotive engineering business has vacated the site and the building is now occupied by a coffee shop. No other significant changes in land use since 2016 were observed. • Due to the age of many of the buildings across the landholdings, lead-based paint is expected to have been used in the past, although given the extensive pavement coverage the potential for it to have impacted soil is low. HAIL Activity I (accidental release of contaminants) may apply if lead levels exceed human health and/ or environmental levels.
WWLA comment	In our view the PSI fulfils the requirements as defined in the CLMG1[4], with the WWLA site inspection (July 2024) filling the information gap between 2016 and current day. We concur with the HAIL activities identified with the addition of potential for impacts on soil associated with lead-based paint use.
T+T, 2017. Detailed Site Investigation	
Investigation scope (see DSI sampling plan below)	The DSI utilises results from a 2015 hand auger investigation (no report provided) and test pits in 2017. The investigation extent was as follows: • **214-222 Dominion Road:** A total of 5 hand augers (2015) and 6 test pits (2017) were advanced on this lot for sample collection. Sampling was on a semi-systematic grid basis, impeded by current buildings and accessways. • **198-202 Dominion Rd**: A sample of the backfill material in the former UST pit was analysed in 2015 and included in the 2017 DSI.
Observations, laboratory testing and evaluation	• Variable depths of fill were encountered at all investigation locations, ranging in depth from 0.7-2 m thick. Fill often contained demolition waste such as bricks and concrete, and in one location an ACM fragment was observed. • A total of 22 samples of fill were submitted for analysis of metals and/or total petroleum hydrocarbons (TPH), and/or polycyclic aromatic hydrocarbons (PAH) and/or asbestos. • In all samples (fill) contaminants were above background. Exceedances of the NESCS high-density residential land use standards occurred in 5 samples (for arsenic and lead) and there were several more exceedances of Auckland Unitary Plan (AUP) discharge criteria for lead,

[4] MfE, 2021. *Contaminated Land Management Guidelines No 1: Reporting on Contaminated Sites in New Zealand*.

	nickel and zinc. Asbestos was detected in all six samples analysed, but concentrations of fibres were <0.001% w/w. • T+T advised a restricted discretionary activity status under the NESCS, and a controlled activity status under the AUP was applicable.
	
WWLA comment	We note the following: • The requirements of a DSI as described in the CLMG5[5] were achieved for 214-222 Dominion Road only, i.e. a DSI has not been completed for the full site. • We note that the asbestos results are not tabulated against any assessment criteria although they are described accurately in the report as evidenced by transcripts. • Results in the DSI were compared to non-volcanic background levels even though the site is located on volcanic soil. When considering volcanic background levels there are fewer exceedances of the AUP discharge criteria for nickel and zinc than was reported. However, the six exceedances of the AUP lead criterion are accurate. • Results have also been compared to NESCS high-density land use criteria. Given the current development plans, which show no potential for exposed soil due to basement excavations and site paving, the commercial criteria may be more applicable[6]. There is only a single NESCS exceedance (in fill) when compared to commercial criteria (arsenic at TP201701 0.4 m). • Despite the above points, soil testing results do indicate that there is potential for soil in untested areas of the site to contain contaminants at concentrations that may exceed human and ecological health acceptance values. • Although development plans show that all fill will be removed from site to facilitate a basement level, additional testing in untested areas of the site (3 land parcels) will be necessary to understand appropriate asbestos health controls during the excavation works, and to potentially allow segregation of materials to minimise materials sent to licensed landfill.

[5] MfE, 2021. *Contaminated Land Management Guidelines No 5: Site Investigation and Analysis of Soils*.
[6] In accordance with the scenarios described in MfE's *Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health* (2011).

6. Resource Consent Requirements

The summary of ground contamination rule triggers is presented below and discussed in detail in the following sections:

Regulatory framework	Rule	Consent required (Y/N and type)
NESCS	8(1) Removal of a fuel storage system (permitted activity)	If a UST(s) are identified on 198-202 Dominion Road land parcel it is expected permitted activity provisions for its removal can be met given the expected site conditions and likely singular nature of any USTs found.
	8(2) Soil sampling (permitted activity)	N/A
	11 Disturbing soil (Permitted activity rule 8(3), Controlled rule 9 and Restricted discretionary rule 10 cannot be met).	The extent of the DSI does not cover the entire site and HAIL activities occur outside of the investigated area, thus a Discretionary Activity status is appropriate.
	11 Subdivision and land use change (Permitted activity 8(4), Controlled activity rule 9(3) and Restricted discretionary rule 10 cannot be met).	As above, a full DSI has not been prepared.
AUP	Activity A7 (Controlled activity standards in E30.6.1.2 Discharges of contaminants from soil disturbance activities cannot be met)	As above because the DSI does not cover the full site. A Discretionary Activity status is applicable.

6.1 NESCS

HAIL activity I (accidental contamination in fill) is confirmed for the entire site, and additional testing is needed beneath building footprints in potential HAIL areas identified in the DSI. Under the NESCS:

- Consent for soil disturbance and subdivision is required as a Discretionary Activity because a full DSI for the site has not been completed.
- The consent application should be supported by the T+T PSI, DSI, this letter, and the **Attached** SMP.
- The SMP outlines the interim soil management procedures and earthworks controls and the requirements for further soil sampling. The SMP will be updated on receipt of results of additional soil testing. We consider the additional testing can be a condition of the resource consent to allow for demolition activities to occur first.
- The proposed apartment buildings will decrease the opportunity for exposure to contaminated ground, but as the development results in a change in the potential exposure scenario for site users it is defined as a change in land use under the NESCS.

6.2 AUP

Under the Auckland Unitary Plan, soil disturbance will a Discretionary Activity because the DSI does not cover all land parcels. As with the NESCS, the consent application should be supported by the T+T PSI, DSI, this letter, and the **Attached** SMP.

It is expected, based on the development plans and the findings of the DSI on the central portion of the site that a long-term discharge consent will not be required because all fill materials (where contaminants are present) will be removed from the site to facilitate the basement construction.

7. Development Implications

Our review of the available PSI and DSI reports indicate fill containing demolition waste, confirmed in the centre of the site and anticipated to be present within the northern and southern land parcels, contains contaminants above background levels. Considering a high-density or commercial land use criteria, we expect most contaminants will generally be below these standards but exceedance of the AUP discharge criteria could be noted. Available data shows that levels of asbestos in fill are not a human health risk. The implications of these findings for the proposed development are explained in **Table 4**.

Table 4. Development implications.

Demolition	Prior to demolition, an asbestos survey should be undertaken by a Worksafe-licenced asbestos surveyor. If asbestos is present then its removal must be undertaken in accordance with the Health and Safety at Work (Asbestos) Regulations 2016. It is not completely clear whether all historical underground fuel tanks have been removed from site given our observations at 198-202 Dominion Road (**Photograph 4**). Procedures for managing discovery of unexpected contamination including removal of tanks are described in the SMP **Attached**.
Further soil testing	Soil in building footprints and across the open areas of 198-202 Dominion Road and 113-117 Valley Road has not been subject to contamination testing, so additional investigation by a SQEP will be required following demolition of the buildings. The results will need to reported in a DSI addendum that is provided to Council. This can be a condition of the resource consent. While all fill material will be removed from the site as part of the development (which would remediate any areas with unacceptable contamination), the additional soil testing will confirm appropriate offsite soil disposal locations and if any additional measures are needed to mitigate risks from contaminated soil during and following construction.
Earthworks controls	Standard earthworks controls are expected to be suitable to mitigate risks from heavy metals in soil during bulk earthworks. This will need to be confirmed prior to work beginning via additional soil testing. Interim controls and procedures for earthworks have been outlined in the **Attached** SMP.
Soil disposal	As noted above, all fill must be disposed offsite to licensed landfill due to elevated lead unless further testing allows segregation of less contaminated material that is suitable for managed fill or cleanfill disposal. Soil disposal options can be reassessed and updated in the SMP once additional soil testing is completed.
Unexpected contamination	There is potential for unexpected contamination, particularly underground tanks given the age of development on the site and given that site and Council records do not confirm whether some USTs were removed or not. A procedure for appropriately removing USTs is provided in the SMP to demonstrate how their removal will occur. However, it is expected that additional investigations undertaken during demolition will be able to target these areas and define control requirements more clearly for the bulk earthworks.

8. Closure

Please do not hesitate to contact us if you have any questions or require further advice.

Yours sincerely.

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Attached:

T+T Preliminary Site Investigation (2016)
T+T Detailed Site Investigation (2017)
Interim Site Management Plan(Ground Contamination)

REPORT

Tonkin+Taylor

Preliminary Site Investigation

Valley Rd Apartments, Mt Eden

Prepared for
Panuku Development Auckland
Prepared by
Tonkin & Taylor Ltd
Date
May 2016
Job Number
30717.001.v4

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Table of contents

1 Introduction

Tonkin & Taylor Ltd (T+T) has been commissioned by Panuku Development Auckland (formerly known as Auckland Council Property Ltd) to undertake a geotechnical and ground contamination investigation for the Valley Rd Apartment development, at 198-222 Dominion Road, 113-117 Valley Road and 17 Carrick Place, Mt Eden (referred to below as the site). The location of the site is presented in Map 1 below.

The results of the ground contamination investigation are presented in this report. The results of the geotechnical investigation are presented separately[1].

This report has been prepared in general accordance with the requirements for a PSI (Preliminary Site Investigation) referred to in the NES Soil regulations[2] , and as outlined in the MfE's Contaminated Land Management Guidelines[3].

The persons undertaking, managing, reviewing and certifying this investigation are suitably qualified and experienced practitioners as defined in the NES Soil.

This investigation was undertaken in accordance with our proposal of 21 July 2015.

Map 1: Site location plan (Source: LINZ)

[1] T+T ref: 30717.001, September 2015, Geotechnical consultancy services – Valley Rd Apartments, Mt Eden, prepared for Auckland Council Property Limited.
[2] Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.
[3] Ministry for the Environment, updated 2011, Contaminated land management guidelines No. 1: *Reporting on Contaminated Sites in New Zealand*.

1.1 Background

The past land uses at the site are known to have included activities which have the potential to cause land contamination. These activities are defined by the Ministry for the Environment in the Hazardous Activities and Industries List (HAIL). If an activity or industry on the HAIL is, or has occurred on a site, the NES Soil applies to proposed soil disturbance and/or land development activities.

T+T has undertaken this investigation to assess whether HAIL activities have occurred at the site, and the potential for these activities to have resulted in ground contamination. This report also assesses the need for further investigation and resource consents for the proposed soil disturbance and/or land development activities with regard to ground contamination as required under the NES Soil, and other relevant regulations.

1.2 Description of proposal

We understand that the proposal is for a mixed use development comprising of 97 residential units, 7 retail units, and basement car parking. The development involves the construction of four buildings (buildings A to D) each 4 to 5 storeys high and spread across the site.

We understand that Development Auckland is currently in the process of preparing resource consent applications for the proposed development and that our investigations will support the resource consents.

1.3 Objective and scope of work

The scope of work for this investigation has comprised:

- Review of Auckland Council property files and planning maps.
- Review of a "Site Contamination Enquiry" and Council records of pollution incidents.
- Review of selected historical aerial photographs.
- Review of current and historical certificates of title.
- A site walkover inspection.
- Preparation of this report.

This report documents our findings and comments on the potential for ground contamination at the site, in the context of the proposed development, including potential resource consent implications with regard to ground contamination.

2 Site description

2.1 Site identification

The L-shaped site is located near the northeast corner of Dominion Road and Valley Road in Mt Eden, with road frontage onto both roads. The site includes ten land parcels as described in Table 2.1. The layout of the site is presented in Figure 1 (Appendix A).

The site currently contains a number of different land uses, including retail, commercial and industrial. All of the land parcels are currently owned by Auckland Council, and zoned as Business Activity Zone in the Auckland City District Plan – Isthmus section, except for 17 Carrick Place, which is zoned for Residential Activity. Under the Proposed Auckland Unitary Plan (PAUP) the properties are zoned as Local Centre – Eden Valley, with the exception of 17 Carrick Place, which is zoned as Mixed Housing Urban.

Table 2.1: Site identification

Street address	Legal description	Site area	Current land use
17 Carrick Place	Pt Lot 5 DP 182	0.05 ha	Retail of dance wear.
216 Dominion Road	Pt Lot 4 DP 182	0.09 ha	Salvation Army family store (road front) and furniture store (back of the property), Red Cross store (road front) and City Lee Gar Thai boxing studio (under road front building). 214 Dominion Rd contains a temporary travel agent and an appliance repair shop (bottom floor), and a photography studio and a draughting business (top floor).
216b Dominion Road	Lot 2 DP 54203	0.06 ha	Pacifica Skincare – store for seconds and end of line products, and possibly manufacturing too.
218 Dominion Road	Pt Lot 3 DP 1	0.04 ha	A café and a collectables store.
222 Dominion Road	Pt Lot 1 DP 31896	0.13 ha	Auto engineering workshop.
	Lot 1 DP 51797	0.0005 ha	Very small land parcel on northern boundary of 222 Dominion Road.
113 Valley Road	Lot 1 DP 54203	0.06 ha	Offices for City Parks
115 Valley Road	Pt Lot 3 DP 1	0.05 ha	Commercial and domestic laundry (road front) and a boxing studio (rear of property).
117 Valley Road	Pt Lot 3 DP 1	0.04 ha	
	Pt Lot 3 DP 1	0.0081 ha	Accessway to west of 117 Valley Road.

There is some inconsistency in the street numbers used to describe the Dominion Road properties across historical and current documents and databases. For clarity, this report has used the street addresses currently listed on Terraview and the land parcels have been related back to these numbers where possible.

2.2 Site condition

A contaminated land specialist completed a site walkover inspection on 31 August 2015. Relevant observations made at the time of the inspection (and interviews) are summarised below. Key site features are shown on Figure 2 (Appendix A) and selected photographs are included as Photographs

1-6 in Appendix B. Current site workers were interviewed where possible. Information provided by site workers is referenced below.

The property is currently used for a variety of commercial, retail and industrial uses, and contains the following features:

- The majority of the site is relatively flat, and level with Valley Road. Dominion Road slopes downward from north to south along the western boundary of the site, and this boundary is elevated above the rest of the site. The buildings facing onto Dominion Road are situated on a slope downwards from west to east (Photograph 1). Carrick Place is also elevated above the site area, with the top storey of the building located on 216 Dominion Road and 17 Carrick Place accessed from Carrick Place street level.
- The vast majority of the site is sealed with asphalt. The condition of the asphalt is poor in some areas, including the accessway at 216 Dominion Road and the accessway and parking area at 117 Valley Road, which are extensively cracked and patched with asphalt and concrete (Photographs 2 and 3). The asphalt covering the central area of the site (218 and 222 Dominion Road, Photograph 1) and the concrete car park outside 113 Valley Road are in relatively good condition.
- Eight buildings are located on the site. Most of the building are concrete or concrete block, with wooden or aluminium joinery. The south facing wall of 218 Dominion Road is constructed of brick. Metal roofing is present on the roof of buildings at 216 and 216b Dominion Road, and as cladding on the top story of 217 Valley Road (Photograph 4). No asbestos containing materials were observed during the site walkover, although it was noted that the rooves of most of the buildings were not visible from ground level.
- Most buildings on the site are bounded by roads or the walls of neighbouring buildings. A chain link fence is present on the northern edge of the site, along the boundary with 15 Carrick Place. A low (approximately 1 m high) concrete block wall borders the front of 113 Valley Road. Both the chain link fence and the concrete wall are in good condition.
- In a brief interview with the manager of the commercial laundry at 115 Valley Road, it was explained that chemicals (likely to include detergents, disinfectants and optical whiteners) are used in the laundry in small volumes. Chemicals are delivered in 5 L containers or 20 L bags, and stored on a bench in a locked room with limited access. The chemicals are then decanted into spray bottles (approximately 1 L) for use in the commercial laundry. Access to the back part of the commercial laundry building was not available.
- 222 Dominion Road is occupied by an auto engineering business (Photograph 1). Access to the workshop was not available. The business' signage and website indicate that regular car servicing and warranting is carried out, along with specialist performance car builds and modifications. Operations appeared to be confined to the workshop, and there was no evidence of staining around the perimeter of the building.
- A chain link cage locked with a combination lock was located behind the auto engineering workshop at 222 Dominion Rd (Photograph 5). This cage contained piles of tyres tidily stacked and at least one drum. No surface staining was evident around this caged area.
- Underground storage tanks (USTs) are known to have been located at 216 Dominion Road, however this area was covered by a skip bin and parked cars during the site walkover and the presence or absence of the USTs was not confirmed.
- Stormwater drains are present across the car park areas of the site (Photograph 1), but the layout of the stormwater system could not be identified.
- Vegetation was present in raised garden beds at 216 Dominion Road and in landscaped gardens at 113 Valley Road. The gardens at 113 Valley Road contained mature trees along

with some shrubs, while the vegetation at 216 Dominion Road was mostly ferns, juvenile trees and weeds (Photograph 6). The vegetation did not show any signs of stress.

- No significant discolouration or staining of site surfaces was noted.
- 216 Dominion Road contained a large rubbish skip and a cardboard recycling container. Most of the other buildings had wheelie bins and similar receptacles stored tidily at their rear, and general rubbish management seemed effective.
- No unique or special environmental receptors requiring particular attention or protection have been identified during the site walkover.

2.3 Surrounding land use

The site is bordered by Dominion Road and Valley Roads to the west and south respectively, and is almost entirely surrounded by commercial land use, including food outlets, retail and parking. Pensioner housing units are located north of the site, and the wider surrounding area is residential.

2.4 Geology

A summary of available geological information for the area is presented in this section.

2.4.1 Published geology

The published geology beneath the site is described by Edbrooke (2001)[4] as Basalt lava from the Auckland Volcanic Field. This material was erupted from the nearby Mount Eden volcano, located approximately 1 km east of the site. The geology of the area surrounding the site is shown in Map 2.

Map 2: Published geology of the Mt Eden area (source: Edbrooke, 2001) as per footnote.

[4] Edbrooke, S. W. (2001). Geology of the Auckland area. Institute of Geological and Nuclear Sciences 1:250 000 geological map 3. 1 sheet + 74p. Lower Hutt, New Zealand. Institute of Geological and Nuclear Sciences Limited.

2.4.2 Site geological information

The subsurface profile obtained from a previous T+T geotechnical investigation[5] conducted at the site is shown in Table 2.2. This investigation found that the site contained up to 0.4 m of pavement and basecourse, overlying rubbly basalt and competent basalt rock. One borehole, located in the northwest of the site at 218 Dominion Road, encountered 2 m of fill under the basecourse. Further description of the site geology is contained within the T+T geotechnical report.

Table 2.2: Observed soil profile

Depth below ground level to top of layer (m)	Unit thickness (m)	Geological unit	Description
0-0.1	Up to 0.4	Pavement and basecourse	Predominantly asphalt.
0.1-2.1 (one location only)	0-2.0	Fill	Dark brown, stiff gravelly silt containing fragments of brick and red scoria.
2.1-4.8	2.7	Rubbly basalt	High to moderately weathered, highly vesicular, dark grey basalt with dark reddish brown non-plastic silt.
4.8-8.5	-	Competent basalt	Slightly weathered, dark grey, highly to slightly vesicular, strong basalt.

2.5 Hydrogeology and hydrology

Groundwater was encountered at 20m below ground level at the site during the T+T geotechnical investigation. Groundwater is expected to discharge flow in an approximately north-easterly direction and ultimately discharge to the Waitemata Harbour, located approximately 4.5 km northwest of the site.

[5] T+T ref 30717, May 2015, Geotechnical investigation for proposed apartment building, 214-222 Dominion Road, Mount Eden, prepared for Auckland Council Property Limited.

3 Site history

Historical information relating to the site was collected from a variety of sources. The information presented documents on-site activities, except for the aerial photograph review where comments are also provided on readily observable surrounding land use. The information that has been reviewed is summarised in this section. A more detailed review of the available information is included in Appendix C.

The site has contained a variety of different land uses, including residential, commercial, manufacturing and light industrial uses. The properties facing onto Dominion Road have primarily been commercial and industrial since at least 1940, while the properties facing onto Valley Road and Carrick Place were initially developed from residential use (prior to 1940) and converted to commercial and industrial around the 1960s.

The commercial and industrial land uses have included: fabric and clothing manufacture; food outlets; a hairdressers; office and administrative space; automotive sales, repairs and servicing; manufacture of skincare products; boxing studios; a large scale laundry; manufacture of leather goods; storage space and car parking areas servicing these operations. Several of these activities are HAIL activities which have the potential to have resulted in ground contamination at the site. A summary of the information available about these activities is provided below.

- Automotive industrial activities

  Numerous automotive industrial activities have occurred on the central and western parts of the site, including:

  - 216 Dominion Road: Car sales yard prior to 1953;
  - 218 and 222 Dominion Road: Motor repair garage (consented 1932, still existed in 1981); general automotive repairs (consented 1956) and Dominion Panelbeaters (referenced in documents from the 1990s); and
  - 222 Dominion Road: Currently an auto engineering workshop.
- Oil fired boilers

  Two properties within the site area have contained boilers or furnaces:

  - 216 Dominion Road: An oil fired furnace and boiler were present prior to 1963, but were removed prior to 2003. Generators were converted to natural gas in 1975; and
  - 115 Valley Road: Plans indicate that this building contains a 'boiler/heater'. The type is unspecified and it is unknown if it still exists.
- Fuel storage tanks and dangerous goods storage

  References to storage of fuel and dangerous goods were limited to the northern part of the site, and included:

  - 216 Dominion Road:
    - Underground storage tanks for fuel oil were removed by the fuel company in 1975. The fuel was described as Class 3 (flammable liquids).
    - A 2003 T+T report identified underground storage tanks in the car park area of 216 Dominion Road, near the northern boundary of the site. The age and contents of these tanks are unknown; and
    - Undated plans for a proposed boiler house, including a 50 gallon roof-mounted oil tank, against the southern boundary of the Victoria Knitwear property. The plans are inconsistent with the current building layout and this information is thought to relate to a building which has since been removed from the site.
  - 218 Dominion Road:

  - In 1981, when the site was a motor repairs garage, unspecified dangerous goods were stored on the site, but not in sufficient quantity to warrant a dangerous goods licence.

- Asbestos-containing materials (ACM)

  Many of the buildings on the site were constructed or altered during the years in which the use of asbestos-containing building materials was common and therefore ACM may be present at the site. Super 6 asbestos roofing was identified at 216 Dominion Road in the 2003 T+T report, and again in 2005 during consenting for a residential dwelling on top of the existing building. It is unclear if this material, or any other ACM, remains at the site.

- Commercial laundry

  A commercial laundry is located at 115 Valley Road. It is not clear when this business was established, however it has been present since at least 1991. A brief interview with the manager indicated that current laundry activities involve only small volumes of chemicals (likely to include detergents, disinfectants and optical whiteners). Although the business is labelled as a dry cleaners on its road front signage, the businesses website indicates that it is merely an agent for a dry cleaning service, and that dry cleaning activities do not occur at the site. Throughout the historical information the business is referred to as a commercial laundry and no evidence of dry cleaning activities occurring at the site has been found.

- Manufacture of leather goods

  An application to construct a factory for the manufacture of leather goods at 200 Dominion Road was submitted in 1962. As no further reference to this land use was found, it is not clear whether the factory existed and what the manufacturing process entailed. No evidence of the processing of skins or the production of leather having occurred at the site was found.

4 Site characterisation

This section characterises the likely and potential contamination status of the site based on the available information as presented in Sections 3 of this report.

4.1 Potential for contamination

This investigation has identified that HAIL activities are and were historically (or are likely to have been) undertaken at the site. The activities, potential contaminants and an assessment of the likelihood, potential magnitude and possible extent of contamination are presented in Table 4.1 below. The inferred locations of these activities are presented on Figure 2 (Appendix A).

Table 4.1: Potential for contamination

Land use/activity	Potential contaminants	Likelihood, magnitude and possible extent of contamination	HAIL reference
Uncontrolled fill	A variety of contaminants are possible depending on the source of the fill material. Common contaminants in such urban sites include hydrocarbons and metals.	The extent of fill on the site is likely to be limited with only one location, on the western side of the site, found to contain any fill. Any contamination is likely to be limited to the fill material itself.	I
Automotive industrial activities	Hydrocarbons including PAHs, solvents and metals contained in waste oil.	Contamination may be present due to the extensive historical presence of automotive activities on the site. It is likely to be confined to the central and northern parts of the site where these activities were located (refer Figure 2). Any contamination is likely to be limited to the surface material.	F4
Underground fuel storage tanks	Dependant on the contents of the tanks, could include hydrocarbons (BTEX, PAHs, and solvents) and metals.	Contamination may be present in the vicinity of the underground fuel storage tanks if a breach or spills have occurred. USTs are known to have been located at 216 Dominion Road. The exact location of the USTs removed in 1975 is unknown. Contamination may extend to depth, beyond the base of the USTs.	A13
Above ground fuel storage tank	Dependant on the contents of the tanks, could include hydrocarbons (BTEX, PAHs, and solvents) and metals.	A roof top fuel storage tank is understood to have been present at 216 Dominion Road. This tank is thought to have been removed and is unlikely to have resulted in significant ground contamination at the site. Other references to fuel storage/ dangerous goods storage from the historical information indicate that small volumes of chemicals were used, or that the storage occurred inside buildings, therefore the potential for ground contamination to have occurred is considered to be low.	A13

Land use/activity	Potential contaminants	Likelihood, magnitude and possible extent of contamination	HAIL reference
Buildings containing asbestos products known to be in a deteriorated condition	Asbestos	Many of the buildings on the site were constructed or altered during the years in which ACMs were commonly used in building. While no ACM was identified on the site walkover, it is likely to be or to have previously been present on the site. Super 6 roofing was documented at 216 Dominion Road in 2003 and 2005, and appears to have been removed. If the removal and disposal of ACM containing building material was not undertaken appropriately, this may have resulted in fibres being released into surface soil.	E1

Other land uses, including the use of boilers/ furnaces, commercial laundry activities, and the manufacture of leather goods, are not included in the HAIL list and are considered unlikely to have resulted in ground contamination at the site.

4.2 Preliminary conceptual site model

A conceptual model as defined by the Ministry for the Environment in the contaminated land management guidelines[6], sets out known and potential sources of contamination, potential exposure pathways, and potential receptors. For there to be an effect from the proposed activity there has to be a contamination source and a mechanism (pathway) for contamination to affect human health or the environment (receptor).

A preliminary conceptual site model has been developed for the proposed redevelopment which takes into account the available information about the site, and our understanding of the potential effects on human health and the environment. The model is presented below.

[6] Ministry for the Environment, updated 2011, *Contaminated Land Management Guidelines No. 5 Site Investigation and Analysis of Soils*

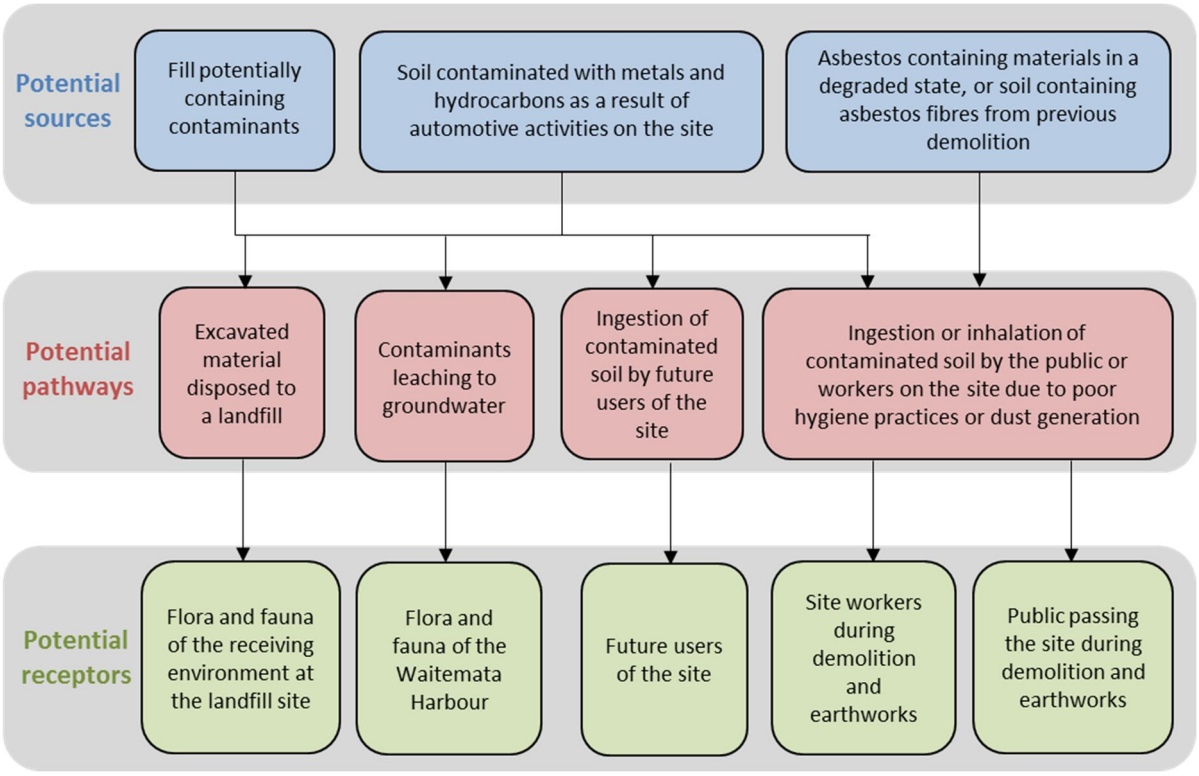

Figure 4.1: Conceptual site model for the proposed site redevelopment

The conceptual site model identifies that there is a potential risk to human health and the environment if the potential HAIL activities identified in this investigation have resulted in soil contamination. Soil potentially contaminated by fill materials and automotive activities may impact the environment if it is not managed or disposed of appropriately during earthworks. This soil could also pose a risk to human health if it was ingested or inhaled by site workers, members of the public or future users of the site.

Asbestos containing materials or soil containing asbestos fibres could pose a risk to human health if fibres in the respirable range were to become airborne during building demolition or soil disturbance.

5 Regulatory implications

The rules and associated assessment criteria relating to the control of contaminated sites in the Auckland region are specified in the following documents:

- NES Soil;
- Auckland Regional Plan: Air, Land and Water (ALW Plan);
- Proposed Auckland Unitary Plan (PAUP); and
- Auckland District Plan.

The NES Soil and District Plan consider issues relating to land use and the protection of human health while the Regional Plans (ALW Plan and PAUP) has regard to issues relating to the protection of the general environment, including ecological receptors. The need, or otherwise, for contamination related resource consents for the site redevelopment has been evaluated against these regulatory requirements.

5.1 NES Soil

5.1.1 Applicability

The NES Soil came into effect on 1 January 2012. This legislation sets out nationally consistent planning controls appropriate to district and city councils for assessing contaminants in soil with regard to human health. As a result, the NES Soil prevails over the rules in the District Plan, except where the rules permit or restrict effects that are not dealt with in the NES Soil.

The NES Soil applies to specific activities on land where a HAIL activity has, or is more likely than not to have occurred. Activities covered under the NES Soil include soil disturbance, soil sampling, fuel systems removal, subdivision and land use change.

5.1.2 NES Soil activity status

An assessment against the relevant permitted activity standards of the NES Soil is provided in Tables 5.1 and 5.2.

Based on our understanding of the proposed activity, the proposed works do not meet the provisions of a Permitted Activity under the NES Soil Regulations 8(3) and 8(4), and will require a resource consent under the NES Soil.

The proposed activity will be a Controlled Activity, or a Restricted Discretionary Activity under the NES Soil depending on the degree of ground contamination present at the site.

Table 5.1: NES Soil Permitted Activity assessment for soil disturbance (Regulation 8(3))

NES Soil – Soil disturbance permitted activity conditions (Regulation 8(3))	Assessment
a Implementation of controls to minimise exposure of humans to mobilised contaminants.	CAN COMPLY- Controls will be in place to prevent mobilisation of contamination.
b The soil must be reinstated to an erosion free state within one month of completing the land disturbance.	CAN COMPLY - The area of land disturbance will be reinstated to an erosion free state on completion of the works as the area of works will be a developed switchyard on completion.

NES Soil – Soil disturbance permitted activity conditions (Regulation 8(3))	Assessment
c The volume of the disturbance of the piece of land must be no more than 25 m^3 per 500 m^2.	UNLIKELY TO COMPLY - The volume of disturbance is currently unknown, but is likely to exceed this threshold.
d Soil must not be taken away unless it is for laboratory testing or, for all other purposes combined, a maximum of 5 m^3 per 500 m^2 of soil may be taken away per year.	UNLIKELY TO COMPLY – Given that a basement is proposed as part of the development it is likely that the removal of soil from the site will exceed this threshold.
e Soil taken away must be disposed of at an appropriately licensed facility.	CAN COMPLY - Soil removed from site will be disposed to an approved facility.
f The duration of land disturbance must be no longer than two months.	LIKELY TO COMPLY- The duration of the earthworks is likely to be less than 2 months.
g The integrity of a structure designed to contain contaminated soil or other contaminated materials must not be compromised.	NOT APPLICABLE - There are no structures containing contamination within the area subject to land disturbance.

Table 5.2: NES Soil Permitted Activity assessment for subdividing or changing use (Regulation 8(4))

NES (Soil) subdivision and land use change Permitted Activity conditions	Assessment
a A preliminary site investigation of the land or piece of land must exist.	CAN COMPLY- This report is generally consistent with the requirements of a preliminary site investigation.
b The report on the preliminary site investigation must state that it is highly unlikely that there will be a risk to human health if the activity is carried out on the piece of land.	DOES NOT COMPLY – This investigation has found several HAIL activities carried out across a large area of the site. Ground contamination in these area of the site may present a risk to human health if not managed appropriately.
c The report must be accompanied by a relevant site plan to which the report is referenced.	CAN COMPLY- The figures will be appended to the report as shown in Appendix A.
d The consent authority must have the report and the plan.	CAN COMPLY- This report will be provided to Auckland City Council.

5.2 Regional Plan

5.2.1 Auckland Regional Plan: Air Land and Water applicability

The (ALW Plan) includes a series of rules related to contaminated sites. The ALW Plan was made operative on 30th April 2012 (with the exception of some minor sections still subject to appeals). The ground contamination rules in Chapter 5 (Discharges to Land and Water, and Land Management) are now operative and thus are considered for this project.

The relevant Permitted Activity (PA) rules can be briefly summarised as follows:

- Small scale earthworks on land containing contaminants are a PA (Rule 5.5.40) providing the volume of earthworks open at any one time is less than 200 m^3 and works are completed within one month (this rule is principally to allow the installation of services, or similar minor

works, without the need for consent). There are a number of other requirements relating to notification and appropriate stormwater and erosion controls along with appropriate off-site soil disposal; and

- Rule 5.5.41 states that if soil concentrations or the 95% upper confidence limit (UCL) of soil concentrations are below the relevant guidelines for the current (or proposed, if change is planned) land use and the land does not contain separate phase hydrocarbons, then a resource consent is not required for the site. If soil contaminant concentrations exceed these relevant guidelines or separate phase is present, then a consent for the ongoing discharge of contaminants and/or for any land disturbance activity is required (Rules 5.5.43 through 5.5.45).
- Rule 4.5.49 states that the discharge of contaminants into air from earthworks is a PA, subject to conditions (a) to (c) of Rule 4.5.1. Rule 4.5.1 requires that there shall be no discharge into air of hazardous air pollutants that may cause adverse effects on human health, ecosystems or property, including noxious, dangerous, offensive or objectionable odour, dust, particulate, smoke or ash.

The proposed development is unlikely to comply with the permitted activity requirements due to the volume of soil disturbance likely to be required. In addition, compliance with Rule 5.5.41 cannot be determined as no information regarding contaminant concentrations is currently available.

5.2.2 Proposed Auckland Unitary Plan

The Proposed Auckland Unitary Plan (PAUP) was notified on 30 September 2013. The rules relating to contaminated land are identified as having immediate legal effect and so now need to be considered. These provisions need to be considered in addition to the provisions set out in the operative ALW Plan. Submissions on the PAUP are currently being heard and submissions are subject to change.

The contaminated land rules are set out in Section H.4.5 Contaminated Land and are broadly similar to those of the ALW Plan. To be a permitted activity under the PAUP rules for disturbance of land, the controls in Rule H.4.5 Contaminated Land 2.1.1 must be complied with. The controls (in summary) are that Council must be advised prior to commencing the work, appropriate stormwater and erosion controls must be in place, the land is not to contain separate phase liquid contaminants and any water that is discharged to surface water must meet ANZECC guidelines for protection of 95% of species or is to be disposed of without causing more than minor adverse effects on the environment. Under this rule there is no restriction on the volume of soil that can be disturbed or duration of land disturbance. If the PAUP requirements cannot be met, then a resource consent for land disturbance is required as a controlled activity under Rule H.4.5 Contaminated Land 1 and the controls in Rule H.4.5 Contaminated Land 2.2.2 must be complied with. These include the requirement for a DSI and remedial action plan (RAP, also known as a SMP) to be provided to the Council to support the consent application.

The proposed development is likely to comply with the contaminated land permitted activity rule and no resource consent with regard to contaminated land would therefore be required under the PAUP.

5.3 District Plan applicability

As noted in Section 5 the NES Soil now prevails over the rules in the District Plan, except where the rules permit or restrict effects that are not dealt with in the NES Soil.

The District Plan does not include any rules more restrictive than those set out in the NES Soil thus District Plan provisions have not been considered further.

6 Conclusions

This PSI was undertaken to investigate the current and historic land uses and activities carried out at the site of the proposed Valley Rd Apartment development. The key findings of the investigation are:

- HAIL activities have occurred or are occurring across much of the site. These include various automotive activities, uncontrolled filling, above ground and underground fuel storage tanks and asbestos-containing building materials;
- A conceptual site model developed for the proposed development indicates that if contamination is present on the site it could pose a risk to human health and the environment;
- The NES Soil applies to the proposed development because HAIL activities have occurred on the site, and soil disturbance and land use change are proposed;
- Resource consent will be required under the NES Soil due to the likely volume of soil disturbance and offsite disposal likely to be required, and due to the potential for human health to be affected if the proposed development
- Resource consent will be required under the ALW Plan due to the likely volume of soil disturbance required.
- No resource consent is likely to be required under the PAUP under the ground contamination provisions.
- To determine the activity status of the resource consent under the NES Soil, a detailed site investigation (DSI) is required. The DSI report, as well as a Site Management Plan (SMP), will be required to support the resource consent application.

7 Applicability

This report has been prepared for the benefit of Panuku Development Auckland with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

Alex Beattie
Environmental Scientist

Authorised for Tonkin & Taylor Ltd by:

Gerard Bird
Project Director

Reviewed by Joanne Ferry – Suitably Qualified Environmental Practitioner

1-Jun-16

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Appendix A: Figures

- Figure 1 – Site layout plan
- Figure 2 – Extent of land use

SCALE 1: 750

0 10 20 30 40 50 (m)

Aerial photo and property boundaries sourced from Auckland Council GIS Website

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Tonkin+Taylor

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APPROVED	SMC	9/15
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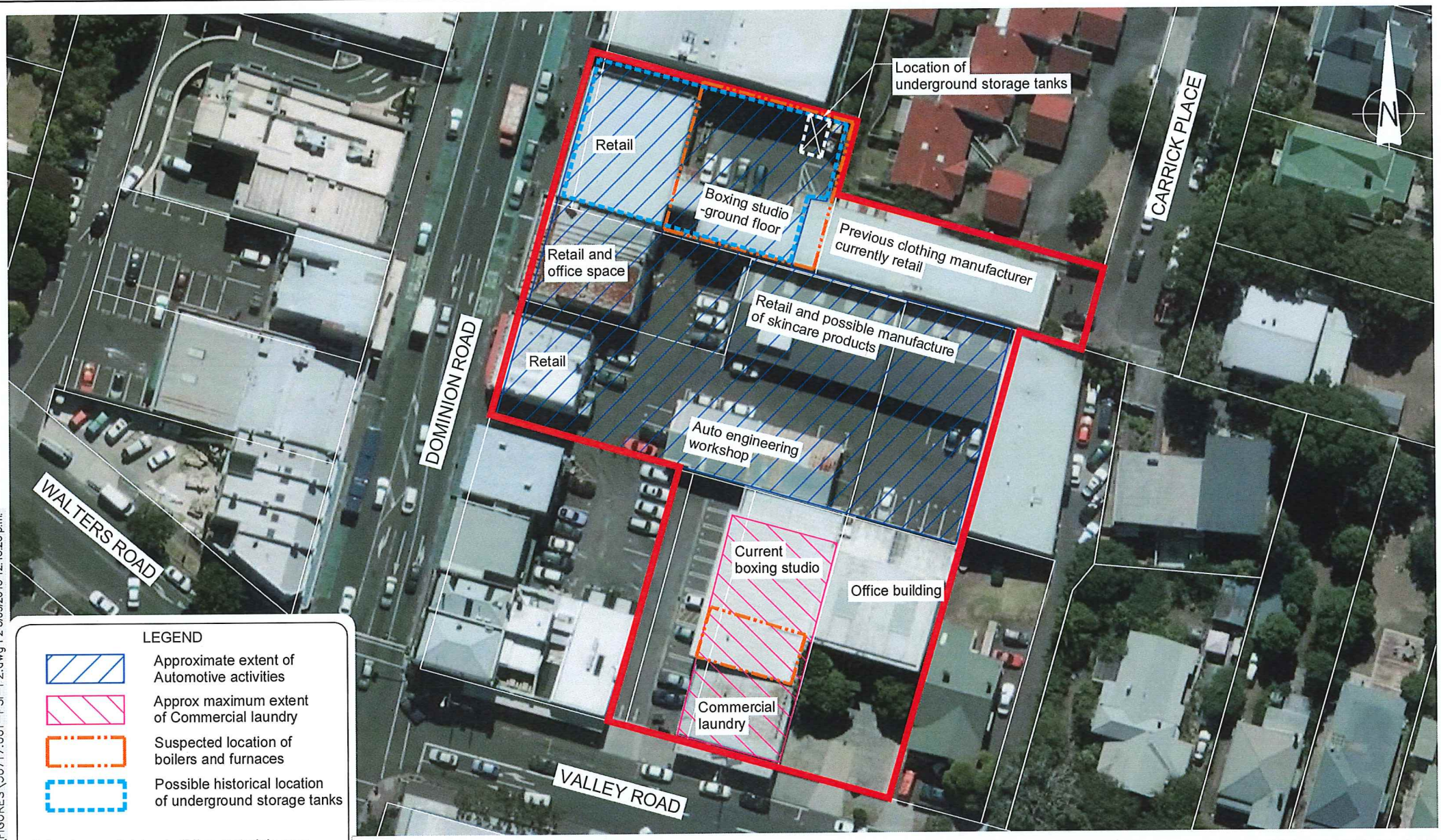
PRELIMINARY SITE INVESTIGATION
VALLEY ROAD APARTMENTS, MT EDEN

Site Plan

FIG. No. Figure 1

REV. 0



LEGEND

- Approximate extent of Automotive activities
- Approx maximum extent of Commercial laundry
- Suspected location of boilers and furnaces
- Possible historical location of underground storage tanks

Asbestos containing building materials may have been used/present across the whole site.

SCALE 1:750

0 10 20 30 40 50 (m)

Aerial photo and property boundaries sourced from Auckland Council GIS Website

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105 Carlton Gore Road, Newmarket, Auckland

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PROJECT No. 30717.001		

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PRELIMINARY SITE INVESTIGATION
VALLEY ROAD APARTMENTS, MT EDEN

Summary of Land Uses

FIG. No. Figure 2

REV. 0

Appendix B: Site photographs

Photograph 1: The central area of the site, looking south from the boundary of 216 and 218 Dominion Road. On the right, the site slopes upwards towards Dominion Road (west). The auto engineering workshop located at 222 Dominion Road is visible on the left. A stormwater drain and manhole are visible in the foreground.

Photographs 2 and 3: Areas of cracked and patched asphalt at the 216 Dominion Road accessway (left) and the 117 Valley Road accessway (right).

Photograph 4: The buildings on 115 and 117 Valley Road, occupied by a boxing studio (far left) and a commercial laundry (blue building on the road front).

Photograph 5: The chain link cage containing tyres and an oil drum, located outside the rear of the auto engineering workshop (right).

Photograph 6: 216 Dominion Road looking west from the boundary with 17 Carrick Place. Vegetation in raised beds is visible along the side of the buildings.

Appendix C: Site history information

Historical information relating to the site has been collected from a variety of sources. The information presented documents on-site activities, except for the aerial photograph review where comments are also provided on readily observable surrounding land use. The information that has been reviewed is summarised in this appendix.

C 1 Certificates of title

Current and historical certificates of titles for the site have been reviewed. A summary of the information reviewed is presented below.

- In 1877 an area of land approximately the size of the present site was transferred to John Buchanan.
- Various mortgages, discharges, subdivisions and transfers were made between individuals since 1877. The land appears to have been initially subdivided in 1897, after which subdivisions became more frequent.
- The proprietor of 218 Dominion Road (Pt Lot 3 Allotment 8 of Section 10) was recorded as Auckland Council in 1903.
- The proprietor of 115-117 Valley Road (Pt Lot 3 DP1) was recorded as Auckland Council in 1911.
- The proprietor of 17 Carrick Place (Pt Lot 5 DP 182) was recorded as Auckland Council in 1917.
- In 1964 216 Dominion Road (Lot 1 Plan 51797) was transferred to Victoria Knitwear Ltd. In the same year, Lot 1 DP 51797 and Pt Lot 4 DP 182 were then transferred to Auckland Council.
- The proprietor of 222 Dominion Road (Lot 1 DP 54203) and 113 Valley Road (Lot 1 DP 54203) was recorded as Auckland Council in 1965.

The current certificates of title show Auckland Council as the proprietor of all eight land parcels.

C 2 Historical aerial photographs

Historical aerial photographs from the T+T library and the Auckland Council GIS Viewer have been reviewed as stated in Table C.1. Relevant features of the site and surrounding land are summarised from each aerial photograph in Table C.1.

Table C.1: Summary of aerial photograph review

Date, run number and source	Key site features	Surrounding land features
1940 Auckland Council	The site is largely developed for residential land use with occasional larger buildings which may be for commercial use. The houses appear to be typically single story dwellings on large sections. The central area of the site appears to be a mixture of backyard space and undeveloped land: it contains areas of grass, mature trees and shrubs. The central and western area of the site, approximately 222 Dominion Road, is used for vehicle access, and a number of small sheds or workshops are located in the centre of the site.	The surrounding area is a residential neighbourhood generally containing single story dwellings on quarter acre sections. South of Valley Road, Dominion Road intersection contains mixed commercial and residential land, with shop fronts facing onto the street. Tram lines run down the centre of Dominion Road. Eden Park Stadium is located approximately 250 m west of the site, and Mt Eden is located approximately 900 m east of the site.
1959 Auckland Council	The site appears similar to the 1940 photograph with some infill and	The tram lines have been removed from Dominion Road.

Date, run number and source	Key site features	Surrounding land features
	replacement of buildings on Valley Road. The mature trees in the centre of the site have been removed and this space is more clearly divided into separate sections, most of which are grassed and contain some small shrubs.	
1961 T+T Library Run: 3235/16	No significant change from the previous photograph.	No significant change from the previous photograph.
1972 T+T Library Run: 4602/11	The residential buildings at 115 and 117 Valley Road have been replaced by two large commercial buildings spanning both properties. Three large warehouse buildings have been constructed in the central area of the site, backing on to the commercial buildings on Dominion Road. One warehouse/factory is located at 17 Carrick Place, having replaced the residential dwelling.	No significant change from the previous photograph.
1980 T+T Library Run: 5783N/13	The buildings facing onto Dominion Road appear in a similar condition, however some may have been rebuilt. The rest of the site contains a number of large commercial or industrial buildings. A sealed access/service way is located between 117 and 119 Valley Road, providing access to car parking areas and the buildings which don't have a road frontage.	No significant change from the previous photograph.
1988 T+T Library Run: 8772M/3	No significant change from the previous photograph.	No significant change from the previous photograph.
1996 Auckland Council	No significant change from the previous photograph.	The residential buildings north of 17 Carrick Place have been replaced with a number of semi-detached units. Immediately west of this, the land facing onto Dominion Road (north of the site) appears to have been cleared and earthworks are underway.
2006 Auckland Council	No significant change from the previous photograph. The rooves of the buildings on the site are in various conditions; some appear well maintained while others appear older and rusting. The surface of the site is sealed with asphalt and concrete.	A large L-shaped commercial building and car park have been constructed on the area to the north of the site. The surrounding area facing Dominion Road has become more intensively developed for commercial use. The area east of the site remains residential, and many properties have been subdivided for infill residential development.
2008 Auckland Council	No significant change from the previous photograph.	No significant change from the previous photograph.

Date, run number and source	Key site features	Surrounding land features
2010 Auckland Council	No significant change from the previous photograph.	No significant change from the previous photograph.

C 3 Previous ground investigations

A T+T report titled *198 Dominion Road, Mt Eden - Phase 1 Environmental Site Investigation* from 2003 (T+T ref: 20484) regarding the proposed construction of a residential building on top of an existing commercial building at 216 Dominion Road, in the northern part of the site, makes reference to a number of activities and land uses on the property and surrounding properties. The report made the following observations about the subject site with potential relevance to ground contamination:

- A car sales yard was constructed at 198 Dominion Road prior to 1953. This might have been part of the motor services business located on the neighbouring property (214-216 Dominion Road).
- 216 Dominion Road was converted to a clothing factory in 1953, and various additions were made to the building over the subsequent 50 years.
- At the time of writing the report (2003), 216 Dominion Road was listed on the Auckland Council database of potentially contaminated sites, but the type of potential contamination was unknown.
- A site inspection of 216 Dominion Road identified Super 6 asbestos roofing on a building, and noted that NOSH Health and Safety procedures should to be complied with when removing roofing.
- Two underground storage tanks were identified on the 216 Dominion Road property. The report observes that it is possible that these tanks may have powered a boiler but that there was no evidence of a boiler present at the time of inspection. The tanks could also have been associated with the motor garage and repair business at 200-202 Dominion Road.
- A residential flat and restaurant were constructed at 218-220 Dominion Road in 1930.
- The buildings at 214-222 Dominion Road were constructed prior to 1957. Activities on this property included a motor repair garage (consented 1932), general repairs (consented 1956), and a panel beaters (Dominion Panelbeaters).
- Between 1957 and 1961 buildings were constructed on the western half of 200-202 Dominion Road, with car parking at the rear.
- In 2003 the building at 200-202 Dominion Road was occupied by a Salvation Army outlet store and a children's bookshop.
- 200-202 Dominion Rd was in the process of being purchased for light rail development by Auckland City Council at the time the report was written in 2003.

C 4 Council property files

The Auckland Council property files for the properties included in the site area were reviewed in August 2015. A summary of the relevant information from the file records is set out for each property in Table C.2 below.

Table C.2: Auckland Council property file review

17 Carrick Place	
1963	Documents relating to a hearing process for the extension of the Victoria Knitwear Limited factory, requiring a specific departure of the property from the District Scheme. Notes include alleged nuisance of fumes from an oil-fired furnace. The departure was allowed, with conditions regarding noise and traffic.
1964	Application for a building permit to demolish a wooden dwelling.
216 Dominion Road	
1953	Alterations to factory.
1960	Application for building permit to add second storey to the factory building.
1961	Application for the installation of a new water service relating to proposed dye works.
1975	Letter to the Mt Eden Borough Council advising that the generators on this property have been converted to natural gas so they no longer store fuel oil. Underground tanks have been removed by the fuel company. The fuel was classified as Class 3.
1978	Property sold to Roma Properties Limited, intention is to continue manufacturing knitwear.
1980	Letter regarding an application to convert the ground floor to commercial use.
1981	Letter from the Town Clerk indicating that the premises constitute a factory under the Factories Act 1946. The activity described for the site is motor repairs.
1981	Letter to the Department of Labour stating that no Dangerous Goods Licence is held by the occupier as the quantity of dangerous goods stored on the premises is insufficient to warrant it.
No date	Plans for a proposed boiler house, including 50 gallon roof-mounted oil tank, against the southern boundary of the Victoria Knitwear property.
2001	Occupant of 216a Dominion Rd was Eden Coffee and Bake.
2003	Copy of a T+T report investigated the potential for contamination on this property. Refer to Appendix C.3 for details.
2005	Consent granted to construct a residential dwelling on top of the commercial building. A garage was also proposed. A recommended condition of the consent included managing removal of the asbestos (Super 6) roof in accordance with OSH 1999 provisions, and advising Council in the event soil contamination was encountered.
218 Dominion Road	
1932	Application for consent for a motor repair garage shop and office.
1944,1949	Application for a building permit for some additions to the existing building.
1951	Plan for a proposed car sales building and basement.
1980	Letter from the Department of Labour describing the land use as a bakery.
2001	Occupied by Corsa Café
222 Dominion Road	
1945, 1962, 1964, 1965	Alterations to building.
1945	Permits to rebuild storage sheds.
1955	Application to remove partitions to enlarge shop premises.
1962	Application to construct a factory on the site for the manufacture of leather goods.
1962	Letter stating that Council has approved subdivision of this property.
1962	Permits for the erection of a commercial building.

1966	Application to use the existing factory to manufacture dairy cleaner, washing creams and bath salts.
1978	Letter describes the change of land use from clothing factory to an unspecified new use, which would require parking for cars and truck loading facilities.
1990s	Property contains a panel beaters.
1992	Letter from Council advising of substandard gully trap allowing stormwater into sewage drain.
2001	Final compliance for BurgerFuel to open a food outlet.
2011	Occupant of 214-222 Dominion Road was Vinyl Coffee Shop (eating house).
115-117 Valley Road	
1938	Plan to divide existing residential villa into two separate flats.
1975	Letter from Council to the occupiers (Pumperdink Fashions Limited) stating that the property zoned as commercial was being used solely for manufacture.
No date	Plan shows proposed buildings for washers and dryers, and an existing hairdressing salon.
1991	Application to install a waste wash system to service a laundromat. Wastewater discharges directly into a 100mm pipe and into a gully trap. Plan shows proposed drain located halfway down western boundary of the building, just east of a trade waste service. The plan also indicates that the back end of the building is used for storage by a tenant.
1997	Inspection report identified cracking in block walls of the building, likely caused by settlement of the ground. This settlement was probably caused by the close proximity of drains to this part of the site.
1999	Plan shows an existing commercial laundry at the back of the building, boiler/heater room in centre of the building and a proposed new tenancy (laundromat) on the street front along with an existing hairdresser.
1999	Application for new internal wall to separate commercial laundry from laundrette.
No date	Handwritten note stating that the hairdressers had permanently closed.
113 Valley Road	
1957	Application to construct a garage.
1959	Application to construct a tool shed.
1971	Application to build a two storey warehouse and office block.
1996	Plans indicate that the two storey building is occupied by Greenpeace and used primarily for office space.

C 5 Council contamination enquiry

A contamination enquiry was placed with Auckland Council on 12 August 2015. The information provided is included in Appendix D and states that two pollution incident files are available for the site and adjacent properties. The incident files include the following information:

- A water/land pollution incident was logged at 117 Valley Road in September 2009. The incident involved wastewater being tipped onto a grassed area near the carpark and into a stormwater drain.
- In October 2013 an incident was logged at 230 Dominion Road, located adjacent to the site, involving cooking oil being poured down a stormwater drain. The catchpit reportedly contained cooking waste.

Resource consents related to the site or properties immediately surrounding the site (including existing, superseded and surrendered consents) are summarised in

Table C. below. The consents identified in Table C.3 are considered unlikely to have resulted in soil contamination at the site. This is because of their location, distance, the direction of groundwater flow and/or nature and likely extent of the contaminants at those locations.

Table C.3: Ground contamination-related resource consents

Location	Type of consent	Activity description	Holder	Status
20 Marlborough St, Kingsland, approximately 150 m west of the site	Contaminated Site Discharge	Remediation of residential site due to contaminating activities on neighbouring site.	-	Assessment completed
22 Marlborough St, Kingsland, approximately 150 m west of the site	Contaminated Site Discharge	WBS set up req 2/3/06	Richard Clarke Limited c/- Murray Clarke	Occurring
Corner of Lisnoe and Alderley Streets, approximately 300 m NE of the site	Bore permit	100 mm diameter to approximately 40 m depth. For groundwater level and/or chemistry investigations.	ARC – Environment and Planning Division	Drilled
38 Halston Rd, Balmoral, approximately 1.5 km south of the site	Bore permit	Up to 17 groundwater level and quality monitoring bores.	Metro Water Limited	Expired

Appendix D: Council contamination enquiry

Auckland Council
Te Kaunihera o Tāmaki Makaurau

14th August 2015

Tonkin & Taylor
PO Box 5271 Wellesley Street
Auckland

Attention: Alex Beattie

Dear Alex

Site Contamination Enquiry – *198-202, 214-222 and 224-234 Dominion Road and 113,115-117 Valley Road, Mt Eden 1024*

This letter is in response to your enquiry requesting available site contamination information for the above site. The following details are based on information available from the former Auckland Regional Council records system and information currently held by the Auckland Council Natural Resources and Specialist Input Unit. The details provided below exclude any property information held by the former district/city councils.

The tables below outline the reference for the site files and pollution incident files available for the subject site:

File Reference	09/2866 (T096-03)		
File Name	117 Valley Road		
Pollution Date	22/09/09	**Comment**	Water/Land Pollution – Seen tipping waste water into grassed area near carpark and into a stormwater drain.

File Reference	13/3253 (W224-44)		
File Name	230 Dominion Road		
Pollution Date	16/10/13	**Comment**	Litter/Vehicle in CMA/ Stream – Caller reported cooking oil has been poured down the stormwater drain, catchpit has some cooking waste in it.

The general catchment file and site visit file for the catchment (5-45 and 5-45-SV respectively) were not searched. These files contain pollution incidents where the source of pollution was not traced to a particular site, site visits where no follow-up correspondence was required and some information from archived files.

If the above site is coastal or beside a river, it is possible that historic, unconsented reclamation may have occurred. The Auckland Council, Natural Resources and Specialist Input, Coastal Team may be able to provide further information.

The records reviewed as part of this Site Contamination Enquiry search do not identify individual horticultural sites in the region. However, there is a possibility that horticultural activities may have occurred at the site. The local Auckland Council customer service centre, specific to the area of the site may be able to provide relevant information where former horticultural sites have been mapped.

If you are concerned that a historic land use (such as filling) may have caused the underlying soils to become contaminated, it is recommended that you obtain an independent environmental assessment of the site. Staff from the Auckland Council Earthworks and Contaminated Land Team can provide advice on the results of any evaluation in terms of site remediation and/or potential consent requirements.

The former Auckland Regional Council and current Natural Resources and Specialist Input Unit databases were searched for records of landfill, bore, air discharge, industrial and trade process

consents, contaminated site discharge consents, and environmental assessments within approximately 200 metres of the site. Relevant details of the identified consents are appended to this letter (Attachment A).

The details provided are in accordance with the obligation to make information publicly available upon request. While the Auckland Council has carried out the 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.

In addition, it is recommended that you contact the local customer service centre of the Auckland Council, specific to the site being investigated: 35 Graham Street, Auckland Central as they also may hold files with relevant information.

I trust that this answers your query. If you wish to discuss the matter further, please contact Andrew Kalbarczyk on 301 0101. Should you wish to request any of the files listed above 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 files will be available).

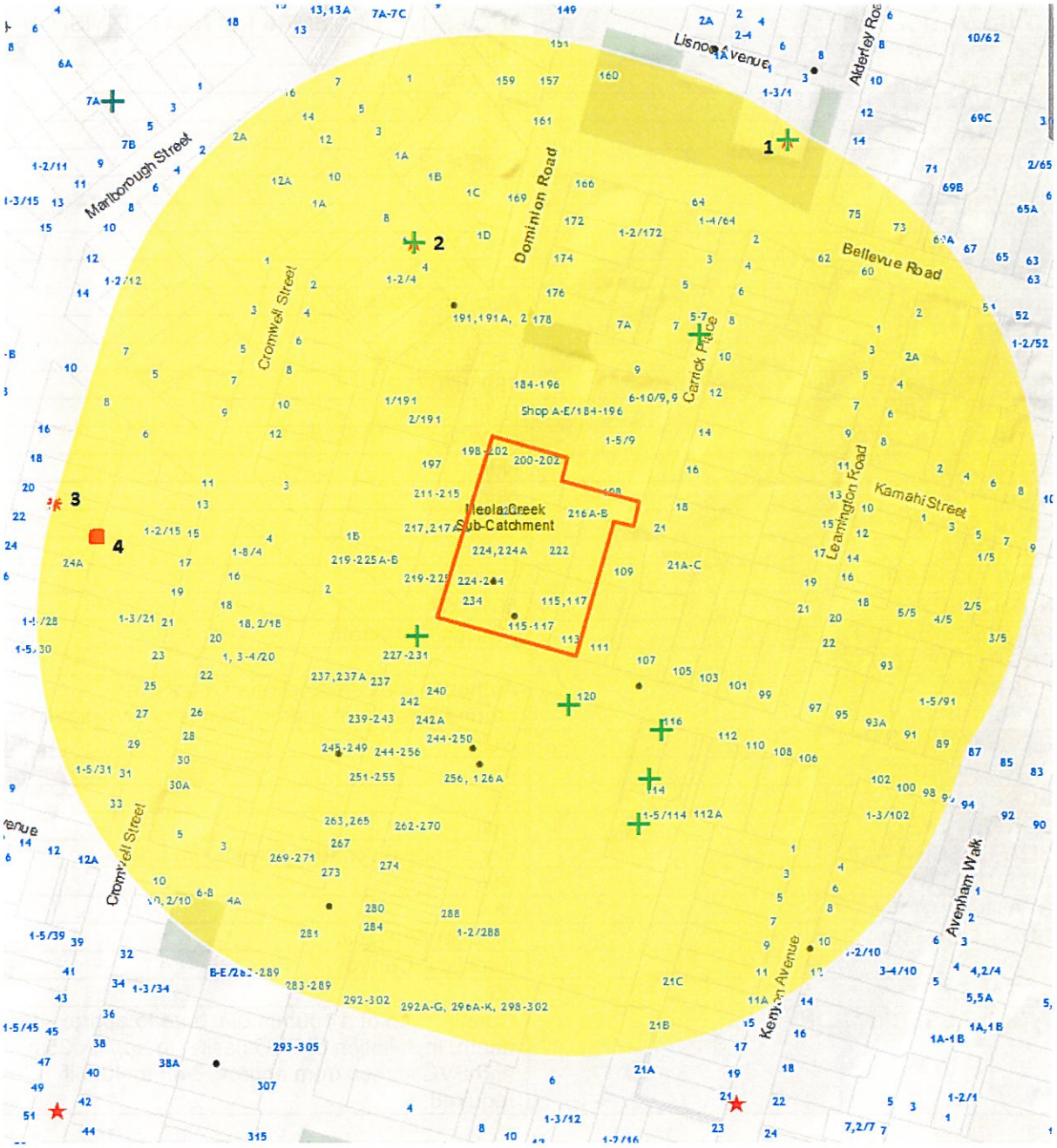
Please note: the Auckland Council cost recovers officer's time for all site enquiries. A basic enquiry takes approximately 1 - 2.5 hours to search the files and databases in which information is held. As such an invoice for the time involved in this enquiry will follow shortly.

Yours sincerely

pp Wood

David Hampson
Team Leader - Earthworks and Contaminated Land
Natural Resources and Specialist Input

Attachment A:



1 ACTIVITY DESCRIPTION:	Construction of a 100mm dia. bore to approx 40m depth. Installation of PVC casing to approx 35m and PVC screen from approx. 34m to 40m if required.
ACTIVITY STATUS:	Drilled
ALW PLAN:	Null
AQUIFER:	Auckland Isthmus Volcanic
AQUIFER TE:	Null
BORE ID:	4865
BORE LOG:	Y
BORE USE:	Observation / Piezo
CASING DIA:	100
CASING FROM:	0

CASING TO:	32
CASING TYPE:	Null
CONSENT HOLDER:	ARC - ENVIRONMENT & PLANNING DIVISI ON
CONSENT NUMBER:	14022
CONSENT STATUS:	Expired
CONSULTANT:	Null
CONTRACTOR:	Null
DATE DRILL:	19950713
DIAMETER:	100
DIAMETER F:	0
DIAMETER T:	36
EASTING:	1756244
ENVIRONMENT:	Auckland Central
EXPIRY DATE:	19960707
FILE REFERENCE:	C512-12-1596
GRANTED DATE:	19950707
GROUND ELE:	Null
HYDSYS NUMBER:	6487003
LAND USE:	Null
LAND USE U:	Null
LAND_USE N:	Null
LOC TYPE:	Point
MAIN AQUIFER:	Volcanic
NORTHING:	5917697
PROCESSING OFFICER:	_Gillian Crowcroft
PROPERTY ADDRESS:	
PURPOSE:	Authorize the construction of a bore for groundwater level and/or Chemistry investigations
REVIEW DATE:	Null
SCREEN FROM:	32
SCREEN TO:	35
SCREEN TYPE:	Null
SITE DESCRIPTION:	Cnr Lisnoe & Alderley Streets, mt Eden
SITE NAME:	Null
STATIC WAT:	Null
SUB AQUIFER:	Mt Eden Volcanic
TLA:	Auckland Central
TOTAL DEPT:	36
WORKS DESCRIPTION:	Construction of a 100mm dia. bore to approx 40m depth. Installation of PVC casing to approx 35m and PVC screen from approx. 34m to 40m if required.

1 ACTIVITY DESCRIPTION:	Construction of a 100mm dia. bore to approx 40m depth. Installation of PVC casing to approx 35m and PVC screen from approx. 34m to 40m if required.
ACTIVITY ID:	4865
ACTIVITY STATUS:	Drilled
ACTIVITY TYPE:	Bore
CONSENT HOLDER:	ARC - ENVIRONMENT & PLANNING DIVISI ON
CONSENT NUMBER:	14022
CONSENT STATUS:	Expired
DATE CREATE:	13/08/2015 7:21:26 p.m.
EXPIRY DATE:	19960707
FILE REFERENCE:	C512-12-1596
GRANTED DATE:	19950707

LOC TYPE:	Point
PROCESSING OFFICER:	_Gillian Crowcroft
PROPERTY ADDRESS:	
PURPOSE:	Authorize the construction of a bore for groundwater level and/or Chemistry investigations
REVIEW DATE:	Null
SITE DESCRIPTION:	Cnr Lisnoe & Alderley Streets, mt Eden
SITE NAME:	Null
WORKS DESCRIPTION:	Construction of a 100mm dia. bore to approx 40m depth. Installation of PVC casing to approx 35m and PVC screen from approx. 34m to 40m if required.

2 ACTIVITY DESCRIPTION:	Null
ACTIVITY STATUS:	Proposed
ALW PLAN:	Null
AQUIFER:	Null
AQUIFER TE:	Null
BORE ID:	21878
BORE LOG:	Null
BORE USE:	Observation / Piezo
CASING DIA:	Null
CASING FROM:	Null
CASING TO:	Null
CASING TYPE:	Null
CONSENT HOLDER:	Metro Water Limited*use 6085 c/- Watercare Services Ltd
CONSENT NUMBER:	27822
CONSENT STATUS:	Expired
CONSULTANT:	Pattle Delamore Partners Limited
CONTRACTOR:	Null
DATE DRILL:	Null
DIAMETER:	Null
DIAMETER F:	Null
DIAMETER T:	Null
EASTING:	1756058
ENVIRONMENT:	Auckland Central
EXPIRY DATE:	20040404
FILE REFERENCE:	C512-12-3093*
GRANTED DATE:	20030403
GROUND ELE:	Null
HYDSYS NUMBER:	Null
LAND USE:	Null
LAND USE U:	Null
LAND_USE N:	Null
LOC TYPE:	Point
MAIN AQUIFER:	Alluvium
NORTHING:	5917646
PROCESSING OFFICER:	_Michelle Ip
PROPERTY ADDRESS:	38 Halston Road Balmoral Auckland Central
PURPOSE:	Authorise the construction of up to seventeen (17) groundwater level and quality monitoring bores.
REVIEW DATE:	Null
SCREEN FROM:	Null
SCREEN TO:	Null
SCREEN TYPE:	Null
SITE DESCRIPTION:	Null

SITE NAME:	Null
STATIC WAT:	Null
SUB AQUIFER:	Null
TLA:	Auckland Central
TOTAL DEPT:	Null
WORKS DESCRIPTION:	Construction of up to seventeen (17) 50mm diameter bores to a depth of approximately between 5m and 70m. Installation of PVC casing to a depth of approximately 6m

2 ACTIVITY DESCRIPTION:	Null
ACTIVITY ID:	21878
ACTIVITY STATUS:	Proposed
ACTIVITY TYPE:	Bore
CONSENT HOLDER:	Metro Water Limited*use 6085 c/- Watercare Services Ltd
CONSENT NUMBER:	27822
CONSENT STATUS:	Expired
DATE CREATE:	13/08/2015 7:21:26 p.m.
EXPIRY DATE:	20040404
FILE REFERENCE:	C512-12-3093*
GRANTED DATE:	20030403
LOC TYPE:	Point
PROCESSING OFFICER:	_Michelle Ip
PROPERTY ADDRESS:	38 Halston Road Balmoral Auckland Central
PURPOSE:	Authorise the construction of up to seventeen (17) groundwater level and quality monitoring bores.
REVIEW DATE:	Null
SITE DESCRIPTION:	Null
SITE NAME:	Null
WORKS DESCRIPTION:	Construction of up to seventeen (17) 50mm diameter bores to a depth of approximately between 5m and 70m. Installation of PVC casing to a depth of approximately 6m

3 ACTIVITY:	Contaminated Site Discharge
ACTIVITY DESCRIPTION:	remediation of residential site due to contaminating activites onneighbouing site
ACTIVITY ID:	20776
ACTIVITY STATUS:	Occurring
CONSENT STATUS:	Assessment Completed
EASTING:	1755879
EXPIRY DATE:	Null
FILE REFERENCE:	5-46-3601
GRANTED DATE:	Null
LOC TYPE:	Point
NORTHING:	5917516
PERMITTED:	Contaminated Site Discharge
PERMITTED ACTIVITY TYPE :	51701
PROCESSING OFFICER:	_Sarah Pinkerton
PROPERTY ADDRESS:	20 Marlborough St Kingsland Auckland Central
PURPOSE:	remediation of contaminated residential site
REVIEW DATE:	Null
SITE DESCR:	Null
SITE NAME:	20 Marlborough Street, Mt Eden
WORKS DESCRIPTION:	5-46-3601 PO peter Kavanagh

4 ACTIVITY:	Contaminated Site Discharge
ACTIVITY DESCRIPTION:	wbs set up req 2/3/06
ACTIVITY ID:	20440
ACTIVITY STATUS:	Occurring
APPLICANT:	Richard Clarke Limited C/- Murray Clarke
APPLICATION:	32302
APPLICATION STATUS:	Lodged
EASTING:	1755900
FILE REFERENCE:	18937
LOC TYPE:	Point
LODGED DATE:	Null
NORTHING:	5917500
PROCESSING OFFICER:	_Sarah Pinkerton
PROPERTY ADDRESS:	22 Marlborough St Kingsland Auckland Central
PURPOSE:	Null
SITE DESCRIPTION:	Null
SITE NAME:	Richard Clarke
WORKS DESCRIPTION:	Null

4 ACTIVITY:	Contaminated Site Discharge
ACTIVITY DESCRIPTION:	wbs set up req 2/3/06
ACTIVITY ID:	20440
ACTIVITY STATUS:	Occurring
CONSENT STATUS:	Assessment Completed
EASTING:	1755900
EXPIRY DATE:	Null
FILE REFERENCE:	5-45-3540
GRANTED DATE:	Null
LOC TYPE:	Point
NORTHING:	5917500
PERMITTED:	Contaminated Site Discharge
PERMITTED ACTIVITY TYPE :	51320
PROCESSING OFFICER:	_Sarah Pinkerton
PROPERTY ADDRESS:	22 Marlborough St Kingsland Auckland Central
PURPOSE:	Null
REVIEW DATE:	Null
SITE DESCR:	Null
SITE NAME:	Richard Clarke
WORKS DESCRIPTION:	PO Peter Kavanagh

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REPORT

Tonkin+Taylor

Detailed Site Investigation

Valley Road Apartments, Mt Eden

Prepared for
Panuku Development Auckland
Prepared by
Tonkin & Taylor Ltd
Date
April 2017
Job Number
30717.002.v4

Exceptional thinking together
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Table of contents

1 Introduction

Tonkin & Taylor Ltd (T+T) has been commissioned by Panuku Development Auckland to undertake a detailed site investigation (DSI) for the Valley Rd Apartment development at 198-222 Dominion Road, 113-117 Valley Road and 17 Carrick Place, Mt Eden (referred to below as the site). The location of the site is presented in Map 1 below.

This report has been prepared in general accordance with the requirements for a DSI referred to in the NES Soil regulations (NES Soil)[1], and as outlined in the MfE's Contaminated Land Management Guidelines[2].

The persons undertaking, managing, reviewing and certifying this investigation are suitably qualified and experienced practitioners as defined in the NES Soil.

This investigation was undertaken in accordance with our proposal dated 21 July 2015 and subsequent variations of 4 September 2015 and 9 March 2017.

Map 1: Site location plan (Source: LINZ)

[1] Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.
[2] Ministry for the Environment, updated 2011, Contaminated land management guidelines No. 1: *Reporting on Contaminated Sites in New Zealand*.

1.1 Background

T+T carried out a preliminary site investigation (PSI) in September 2015[3]. The investigation identified that HAIL[4] activities are and were historically undertaken at the site. These HAIL activities included:

- Placement of uncontrolled fill.
- Automotive industrial activities.
- Underground fuel storage tanks.
- Above ground fuel storage tanks.
- Buildings containing asbestos products.

As the above HAIL activities have occurred on the site, the NES Soil applies to the proposed soil disturbance and land development activities.

1.2 Description of proposal

We understand that the development proposal involves the construction of four new multilevel buildings for a mixed use development. Land uses are proposed to include residential apartments, retail units, and basement car parking.

We understand that the development will require only shallow footings, however excavations are expected to involve the disturbance of more than the Auckland Unitary Plan permitted activity threshold of 200 m^3 (Refer to Section 3.2 for more details).

We understand that Panuku Development Auckland is currently in the process of preparing resource consent applications for the proposed development and that our investigations will support the resource consents.

1.3 Objective and scope of work

The objective of this DSI was to investigate the nature and extent of ground contamination at the site, determine the activity status of the resource consent under the NES Soil and to support the resource consent application.

The scope of work for this investigation was:

- Approximate grid-based intrusive sampling across the areas of the site known or suspected as having been used for HAIL activities. These investigations were undertaken in two stages in September 2015, and in March 2017.
- Collection of samples of fill materials from beneath the asphalt or basecourse at the sample locations.
- Laboratory analysis of selected samples for potential contaminants as identified in the PSI, including heavy metals, total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH) and asbestos.
- Analysis of the sample results with regard to applicable regulations and assessment criteria.
- Preparation of this report detailing the findings of the intrusive investigation and commenting on the regulatory and development implications of any contamination.

[3] Tonkin + Taylor, October 2015. *Preliminary Site Investigation: Valley Rd Apartments, Mt Eden.* Prepared for Panuku Development Auckland. T+T Reference: 30717.001.v3

[4] Hazardous Activities and Industries List, as defined by the Ministry for the Environment

2 Site description

A detailed account of the history of the site is provided in the PSI report, covering the land uses and activities occurring on the site and the general layout and condition of the site. A summary of the site description and history is provided in this section. Refer to the PSI for more detail.

2.1 Site identification

The L-shaped site is located near the northeast corner of Dominion Road and Valley Road in Mt Eden, with road frontage onto both roads. The site includes ten land parcels as described in Table 2.1. The layout of the site is presented in Figure 1 (Appendix A).

The site currently contains a number of different land uses, including retail, commercial and industrial.

Table 2.1: Site identification

Street address	Legal description	Site area	Current land use
17 Carrick Place	Pt Lot 5 DP 182	0.05 ha	Retail of dance wear.
216 Dominion Road	Pt Lot 4 DP 182	0.09 ha	Salvation Army family store (road front) and furniture store (back of the property), Red Cross store (road front) and City Lee Gar Thai boxing studio (under road front building). 214 Dominion Rd contains a temporary travel agent and an appliance repair shop (bottom floor), and a photography studio and a draughting business (top floor).
216b Dominion Road	Lot 2 DP 54203	0.06 ha	Pacifica Skincare – store for seconds and end of line products, and possibly manufacturing too.
218 Dominion Road	Pt Lot 3 DP 1	0.04 ha	A café and a collectables store.
222 Dominion Road	Pt Lot 1 DP 31896	0.13 ha	Auto engineering workshop.
	Lot 1 DP 51797	0.0005 ha	Very small land parcel on northern boundary of 222 Dominion Road.
113 Valley Road	Lot 1 DP 54203	0.06 ha	Offices for City Parks
115 Valley Road	Pt Lot 3 DP 1	0.05 ha	Commercial and domestic laundry (road front) and a boxing studio (rear of property).
117 Valley Road	Pt Lot 3 DP 1	0.04 ha	
	Pt Lot 3 DP 1	0.0081 ha	Accessway to west of 117 Valley Road.

All of the land parcels are currently owned by Auckland Council. Under the Auckland Unitary Plan (AUP) the properties are zoned as Business Local Centre Zone – Eden Valley, with the exception of 17 Carrick Place, which is zoned as Residential Terraced Housing and Apartment Building Zone.

2.2 Site condition and surrounding environment

The site is bordered by Dominion Road and Valley Roads to the west and south respectively, and is almost entirely surrounded by commercial land use, including food outlets, retail and parking. Pensioner housing units are located north of the site, and the wider surrounding area is residential.

The western side of the site slopes downwards towards the east, and the rest of the site is relatively flat and level with Valley Road. The majority of the site is sealed with asphalt and concrete which is

extensively damaged and patched in some areas. Asbestos containing materials were not observed in any of the eight buildings present on the site during the site walkover, however the rooves and interiors were not inspected.

Operations associated with the auto engineering business at 222 Dominion Road appeared to be confined to the workshop area. A small cage containing tyres and a drum was located behind the workshop, and no surface staining was evident around the cage or building.

The PSI identified a former underground fuel storage tank, which was located near the northern boundary of the site. During site investigations for this DSI report, building rubble was observed beneath the access covers for the UST, indicating that the tank had already been removed.

2.3 Geology and hydrology

The published geology beneath the site is described by Edbrooke (2001)[5] as Basalt lava from the Auckland Volcanic Field. This material was erupted from the nearby Mount Eden volcano, located approximately 1 km east of the site. The geology of the area surrounding the site is shown in Map 2.

Map 2: Published geology of the Mt Eden area (source: Edbrooke, 2001) as per footnote.

2.3.1 Site geological information

The subsurface profile obtained from a previous T+T geotechnical investigation[6] conducted at the site is shown in Table 2.2. This investigation found that the site contained up to 0.4 m of pavement and basecourse, overlying rubbly basalt and competent basalt rock. One borehole, located in the northwest of the site at 218 Dominion Road, encountered 2 m of fill under the basecourse. In

[5] Edbrooke, S. W. (2001). Geology of the Auckland area. Institute of Geological and Nuclear Sciences 1:250 000 geological map 3. 1 sheet + 74p. Lower Hutt, New Zealand. Institute of Geological and Nuclear Sciences Limited.
[6] T+T ref 30717, May 2015, *Geotechnical investigation for proposed apartment building, 214-222 Dominion Road, Mount Eden*, prepared for Auckland Council Property Limited.

another borehole no core was recovered from shallow depths which may indicate the presence of fill. Further description of the site geology is contained within the T+T geotechnical report, observations made during investigations for this DSI report are provided in Section 4.3.

Table 2.2: Observed soil profile

Depth below ground level to top of layer (m)	Unit thickness (m)	Geological unit	Description
0.0	0.1 – 0.4	Pavement and basecourse	Predominantly asphalt.
0.1	0.7 – 2.0	Fill	Dark brown, stiff gravelly silt containing fragments of brick and red scoria.
0.1 – 2.1	0.0 – 3.5	Rubbly basalt	High to moderately weathered, highly vesicular, dark grey basalt with dark reddish brown non-plastic silt.
0.2 – 4.8	-	Competent basalt	Slightly weathered, dark grey, highly to slightly vesicular, strong basalt.

2.3.2 Hydrology

Groundwater was encountered at 20 m below ground level at the site during the T+T geotechnical investigation. Groundwater is expected to flow in an approximately north-easterly direction and ultimately discharge to the Waitemata Harbour, located approximately 4.5 km northwest of the site.

2.4 Site history and potentially contaminating activities

The site has contained a variety of different land uses, including residential, commercial, manufacturing and light industrial uses. The properties facing onto Dominion Road have primarily been commercial and industrial since at least 1940, while the properties facing onto Valley Road and Carrick Place were initially developed from residential use (prior to 1940) and converted to commercial and industrial around the 1960s.

The commercial and industrial land uses have included: fabric and clothing manufacture; food outlets; a hairdressers; office and administrative space; automotive sales, repairs and servicing; manufacture of skincare products; boxing studios; a commercial laundry; manufacture of leather goods; storage space and car parking areas servicing these operations. Several of these activities are HAIL activities which have the potential to have resulted in ground contamination at the site. A summary of the information available about the identified HAIL activities is provided below. Approximate locations of these activities are indicated in Figure 2 (Appendix A).

- Automotive industrial activities
  - Numerous automotive industrial activities have occurred on the central and western parts of the site, specifically 216, 218 and 222 Dominion Road.
- Oil fired boilers
  - Two properties within the site area have contained boilers or furnaces:
    - 216 Dominion Road: An oil fired furnace and boiler were removed prior to 2003.
    - 115 Valley Road: Plans indicate that this building contained a ‘boiler/heater’. The type is unspecified and it is unknown if it still exists.

- Fuel storage tanks and dangerous goods storage
  - References to storage of fuel and dangerous goods were limited to the northern part of the site, and included:
    - 216 Dominion Road:
      - Underground storage tanks for fuel oil were removed by the fuel company in 1975.
      - A 2003 T+T report identified an underground storage tank in the car park area of 216 Dominion Road, near the northern boundary of the site. The age and contents of these tanks are unknown. Observations during this DSI confirmed that while the access covers remain at the site, the tank is no longer present. This tank is likely to be the same one removed by the fuel company in 1975; and
      - Undated plans for a proposed boiler house, including a 50 gallon roof-mounted oil tank, against the southern boundary. This information is thought to relate to a building which has since been removed from the site.
    - 218 Dominion Road:
      - In 1981, when the site was a motor repairs garage, unspecified dangerous goods were stored on the site, but not in sufficient quantity to warrant a dangerous goods licence.
- Asbestos-containing materials (ACM)
  - Many of the buildings on the site were constructed or altered during the years in which the use of asbestos-containing building materials was common and therefore ACM may have been used on the site. Super 6 asbestos roofing was identified at 216 Dominion Road in the 2003 T+T report, and again in 2005 during consenting for a residential dwelling within the existing building. No ACM was observed on the site during the site walkover for the PSI; however, a fragment of ACM board was identified in the subsurface materials during the investigation on 21 March 2017, and asbestos fibres were detected in the fill material (discussed further in Section 4).
- Uncontrolled fill
  - Investigations at the site have identified fill material with evidence of building rubble within it in the central part of the site. Uncontrolled fill may contain contaminants such as metals, PAHs or asbestos.

3 Regulatory setting

The rules and associated assessment criteria relating to the control of contaminated sites in the Auckland region are specified in the following documents:

- The NES Soil regulations.
- The Auckland Unitary Plan (herein referred to as the AUP).

The NES Soil regulations and District Plan consider issues relating to land use and the protection of human health while the Unitary Plans have regard to issues relating to the protection of the general environment, including ecological receptors. The need, or otherwise, for contamination related resource consents for the site redevelopment has been evaluated against these regulatory requirements.

3.1 NES Soil applicability

The NES Soil regulations came into effect on 1 January 2012. This legislation sets out nationally consistent planning controls appropriate to district and city councils for assessing contaminants in soil with regard to human health. As a result, the NES Soil regulations prevail over the rules in the District Plan, except where the rules permit or restrict effects that are not dealt with in the NES Soil regulations.

The NES Soil regulations apply to specific activities on land where a HAIL activity has, or is more likely than not to have occurred. As described in Section 2.4, HAIL and potential HAIL activities have been determined to have been undertaken at the site.

Activities covered under the NES Soil regulations include soil disturbance, soil sampling, fuel systems removal, subdivision and land use change, of which the current proposal includes soil disturbance.

The NES Soil regulations provide a set of chemical specific soil contaminant thresholds that define an adequate level of protection for human health for a range of differing land uses in New Zealand (referred to as soil contaminant standards or $SCS_{(health)}$). Standards were derived for 12 contaminants, called "priority contaminants", which must be used if the land use fits within the particular exposure scenario.

For contaminants that are not priority contaminants, and/or for land uses that fall outside the five standard land-use exposure scenarios, the NES mandates that either a site-specific soil guideline value can be derived (in accordance with the prescribed methodology[7]), or a guideline value can be chosen from national and international literature in accordance the *Contaminated Land Management Guideline No.2 – Hierarchy and Application in New Zealand of Environmental Guideline Values*[8] *(herein referred to as MfE Guideline No. 2*). As guideline values exist for the majority of contaminants of concern present in the project area, the hierarchy and principals set out in the MfE Guideline No. 2 have been applied in this assessment.

Guidelines high density residential use have been adopted for the site based on the most sensitive proposed land use. These values are shown in Table 4.3 in Section 4.

[7] Ministry for the Environment, 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health.

[8] Ministry for the Environment. Contaminated Land Management Guidelines No 2: Hierarchy and Application in the New Zealand of Environment Guideline Values (Revised 2011). Published 2003, Revised 2011.

3.2 Auckland Unitary Plan – Operative in part

The Auckland Unitary Plan (AUP) – Operative in part was released on 15 November 2016. This version supersedes the Decisions Version, the Independent Hearings Panel Recommended Version (IHPRV) and the original proposed version.

The contaminated land rules are set out in Chapter E Environmental Risk Section E30. The contaminated land rules are not subject to any appeal, hence, the rules are now operative under Section 86F of the Resource Management Act 1991. Additionally, the provisions in the Auckland Council Regional Plan: Air Land and Water no longer need to be considered.

The relevant Permitted Activity (PA) rules can be briefly summarised as follows:

- Small scale earthworks on land containing contaminants are a PA (Rule E30.6.1.2) providing the volume of earthworks open at any one time is less than 200 m^3 and works are completed within one month (this rule is principally to allow the installation of services, or similar minor works, without the need for consent). There are a number of other requirements relating to notification and appropriate stormwater and erosion controls along with appropriate off-site soil disposal.
- Rule E30.6.1.4 states that if soil concentrations or the 95% upper confidence limit (UCL) of soil concentrations are below the relevant guidelines for the current or proposed land use and the land does not contain separate phase hydrocarbons, then a resource consent is not required for the site. If soil contaminant concentrations exceed these relevant guidelines or separate phase is present, then a consent for the ongoing discharge of contaminants and/or for any land disturbance activity is required (Rule E30.6.2.1).

If the PA rules can not be complied with, the activity is deemed to be a Controled Activity under Rule E30.6.2.1.

3.3 Health and Safety at Work (Asbestos) Regulations 2016

In order to help achieve compliance with the Health and Safety at Work (Asbestos) Regulations 2016, WorkSafe New Zealand has prepared an Approved Code of Practice: Management and Removal of Asbestos (September 2016) (CoP). The key requirements of the regulations and CoP are that works involving asbestos contaminated soils must be undertaken with appropriate asbestos controls in place and that contaminated soil removed from site must be taken to an approved disposal site. However, some details, such as the standards that will apply to asbestos-in-soils, are subject to further guidance which is currently being prepared. At this time industry is generally continuing to apply the standards and principles set out in the *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*[9] (WA Guideline).

[9] Department of Health, May 2009, Guidelines for the Assessment Mitigation and Management of Asbestos Contaminated Sites in Western Australia

Table 3.1: Worksafe requirements for asbestos-contaminated sites

Asbestos fines/fibres in soil	Interpretation of CoP Airborne contamination	Interpretation of Worksafe requirements
Greater than 0.001%	Likely to lead to airborne contamination that exceeds trace level	Works will need to be undertaken and supervised by a "Licensed Asbestos Removalist" as Class A works.
Less than 0.001%	Not likely to lead to airborne contamination that exceeds trace level	· Works do not need to be undertaken and supervised by a "Licensed Asbestos Removalist" · Works in these areas will still require all the appropriate controls, including separation of the work areas, signage, dust suppression, decontamination facilities etc.

3.4 Disposal criteria

In addition to specifying investigation / consenting criteria, an assessment of offsite disposal options for any excess spoil generated during site development works has been conducted. Dependant on the contamination conditions of the spoil, off-site disposal options range from disposal to "cleanfill" sites (lowest cost) through managed fill sites to licensed landfills (highest cost).

Cleanfill is defined in the AUP as follows:

Means natural material such as clay, gravel, sand, soil and rock which has been excavated or quarried from areas that are not contaminated with manufactured chemicals or chemical residues as a result of industrial, commercial, mining or agricultural activities.

Excludes:

- Hazardous substances and material (such as municipal solid waste) likely to create leachate by means of biological breakdown.
- Product and materials derived from hazardous waste treatment, stabilisation and disposal practices.
- Materials such as medical and veterinary waste, asbestos, and radioactive substances.
- Soil and fill material which contain any trace element specified in Table E30.6.1.4.2 at a concentration greater than the background concentration in Auckland soils specified.
- Sulfidic ores and soils.
- Combustible components.
- More than 5% by volume of inert manufactured materials (e.g. concrete, brick, tiles).
- More than 2% by volume of attached biodegradable material (e.g. vegetation).

The acceptance criteria for managed and licensed landfills are typically defined by the consent conditions issued for the individual landfill sites and have therefore not been assessed in detail here.

4 Field investigations

4.1 Sampling rationale

Intrusive field investigations were undertaken at the site on 14 September 2015 and 21 March 2017. Sample locations were established based on the potentially contaminating activities identified in Section 2.4. The sample locations are indicated in Figure 3 (Appendix A). The rationale for the sampling locations and the activities targeted by the locations are outlined in Table 4.1.

Table 4.1: Rationale for sample locations

Land use/activity	Potential contaminants	Sampling rationale	Sample locations
Uncontrolled fill	A variety of contaminants are possible depending on the source of the fill material. Common contaminants in such urban sites include hydrocarbons, metals and asbestos.	Fill encountered in intrusive sampling was sampled. Approximately grid-based sample locations ensured coverage of fill across much of the site.	All samples
Automotive industrial activities	Hydrocarbons including PAHs, solvents and metals contained in waste oil.	Automotive activities were confined to the central and northern parts of the site (refer Figure 2). Approximately grid based sample locations were established across these areas to allow for the impact of these activities to be assessed.	2015 samples
Underground fuel storage tanks (UST)	Dependant on the contents of the tanks, could include hydrocarbons (BTEX, PAHs, and solvents) and metals.	Given that the USTs have been removed, sampling was limited to the tankpit backfill at 216 Dominion Road.	2015 Tankpit sample
Above ground fuel storage tank (AST)	Dependant on the contents of the tanks, could include hydrocarbons (BTEX, PAHs, and solvents) and metals.	These activities are considered unlikely to have resulted in significant ground contamination at the site and therefore were not targeted specifically.	N/A
Buildings containing asbestos products known to be in a deteriorated condition	Asbestos	If the removal of ACM containing building material was not undertaken appropriately, this may have resulted in fibres being released into surface soil however as the site is fully sealed it is considered unlikely that asbestos fibres would be present in the underlying soil.	N/A

Excavations were undertaken by first cutting through the asphalt, then subsurface materials were excavated with hand held tools to natural ground, or until no further progress could be made (refusal). Five hand dug pits were excavated in September 2015 (HA1, HA2, HA3, HA6 and HA7) and six pits were excavated in March 2017 (TP2017-01, TP2017-02, TP2017-03, TP2017-04, TP2017-05, TP2017-06). Samples were collected at various depths from each location. A sample was also

collected from the fill inside the tankpit of the removed UST near the northern boundary of the site during the 2015 investigation phase.

4.2 Soil sampling procedures

Samples were collected in general accordance with the MfE Contaminated Land Management Guidelines[10] using the following procedure:

- Surface seal was removed using manual equipment and a hand held jack hammer.
- The materials encountered in the pits was logged in accordance with the NZ Geotechnical Society guidelines[11].
- Samples for organic and metal analyses were collected with freshly gloved hands and placed immediately in laboratory-provided glass jars with screw lids.
- Equipment used to collect the samples was decontaminated between sampling locations using Decon 90 (a phosphate-free detergent) and fresh water rinses.
- Six samples were collected in accordance with Western Australian guidelines for analysis for fibrous asbestos (FA) and asbestos fines (AF). This included:
  - A 10 L bucket was filled with soil from the fill material within the sampling pit and weighed.
  - Material was passed through a 7 mm aperture sieve. 500 mL of the <7 mm material was collected in a laboratory-provided plastic jar.
  - All material >7 mm was visually inspected. Suspect ACM fragments were collected in a zip-lock plastic bag and included with the plastic jar sample for analysis.
  - Decontamination of the sieve between samples was achieved using alcohol wipes and a fresh water rinse. Disposable (single-use) plastic bags were used to line the bucket for each sample.
  - The trowel was decontaminated between each sample using Decon-90 (a phosphate-free detergent) and fresh water rinses.
- The samples were shipped in chilled containers to Hills Laboratories in Hamilton under chain of custody documentation.
- On completion of the excavations the test pits were backfilled in reverse order of excavation to the original surface.

4.3 Investigation observations

All pits encountered fill material beneath the asphalt and basecourse, with the exception of HA2 (2015) in which natural scoria gravels and basalt were encountered immediately under layers of asphalt and concrete. In the remaining pits, the base of the fill material was not encountered due to the nature of the hardfill preventing further drilling. The fill material was generally described as gravel and sand, ranging in colour from light and dark grey, to brown and reddish brown. Evidence of building rubble in the form of bricks, concrete and asbestos fibreboard fragments (TP2017-03 only) were observed in most locations.

[10] Ministry for the Environment, Contaminated land management guidelines No. 5: *Site Investigation and Analysis of Soils* (Revised 2011).
[11] NZ Geotechnical Society Inc., December 2005. *Field description of soil and rock: Guideline for the field classification and description of soil and rock for engineering purposes.*

4.4 Laboratory analyses

4.4.1 Scheduled analyses

A total of 22 samples were scheduled for laboratory analysis of the likely organic and inorganic contaminants identified in the PSI, including asbestos.

Seven of these samples were from shallow fill (between depths of 0.1 m-0.4 m), and one from shallow backfill (0.2 m depth) in the tankpit. The remaining eight samples were from fill located at greater depths (between 0.5m and 1.2m)

Nine samples were tested for metals, seven were tested for total petroleum hydrocarbons (TPH), and four samples were tested for polycyclic aromatic hydrocarbons (PAH). Additionally, six samples were tested for fibrous asbestos (FA) and asbestos fines (AF). One suspected ACM fibreboard fragment was identified in soil during the investigation and was also analysed for asbestos.

4.4.2 Assessment criteria

The results of laboratory analyses have been evaluated according to the requirements of the regulatory framework (refer Section 3) applicable to the site as follows:

- For the protection of human health
  - The NES Soil requires soil results to be assessed against published background concentrations and soil contaminant standards (SCS) that define an adequate level of protection for human health. SCS for high density residential land use have been used based on the proposed future site use. In accordance with MfE Guidelines[12], in cases where an SCS does not exist, criteria have been sourced from the following documents.
    - Guidelines for assessing and managing petroleum hydrocarbon contaminated sites in New Zealand (Ministry for the Environment, 1999): Tier 1 soil acceptance criteria for TPH.
    - National Environment Protection Council, updated 2013, National Environment Protection (Assessment of Site Contamination) Measure 1999.
- For the protection of environmental related receptors
  - The AUP permitted activity soil acceptance criteria Schedule 10.
- Soil disposal criteria
  - In the absence of publish background concentrations of PAH and TPH compounds in soils, cleanfill disposal criteria has been assumed to be below the laboratory detection limit.

The assessment criteria adopted for the project are shown together with the analytical results in Table 4.3.

4.5 Quality control

A quality assurance and quality control (QA/QC) programme was implemented as part of field procedures to confirm data was fit for purpose and included:

- Decontamination of sampling equipment between sampling locations.
- Preservation of samples with ice during transport from the field to the laboratory.
- Transportation of samples with accompanying Chain of Custody documentation.

[12] Ministry for the Environment, updated 2011, Contaminated land management guidelines No. 2: *Hierarchy and Application in New Zealand of Environmental Guideline Values* (Revised 2011).

- Compliance with sample holding times.

The laboratory testing was undertaken by Hills Laboratories Ltd, which is accredited and audited annually by International Accreditation New Zealand (IANZ). The laboratory's quality control measures include testing of blanks with all batches of samples and frequent replicates and spikes, along with peer review of worksheets. Standard laboratory QA/QC reports were not examined as part of this project, but are available from the laboratory on request.

4.5.1 Duplicate sample

A duplicate soil sample was collected from TP2017-06 and submitted blind to the laboratory for analysis. A quantitative measure of the variability in the results was undertaken independently of the laboratory by calculating the Relative Percentage Difference (RPD) values between metal concentrations reported in the original sample and in its duplicate. The RPD value was calculated as follows:

$$RPD := \frac{(Co - Cs)}{\left(\frac{Co + Cs}{2}\right)} \times 100$$

Where Co = concentration of the original sample

Cs = concentration of the duplicate sample

A summary of the QA/QC analytical results are presented in Table 4.2. It is typically considered acceptable if an RPD value of approximately 50% or less is achieved[13].

Table 4.2: QA/QC analysis – soil samples

Sample:	TP2017-03-0.65m	TP2017-DUP	RPD %
Arsenic	33	35	5.9
Cadmium	3.3	6.0	58.1%
Chromium	83	89	7.0%
Copper	270	192	33.8%
Lead	580	530	9.0%
Nickel	121	125	2.4%
Zinc	1,540	2,200	35.3%

The results have a measured RPD of generally less than 50%. The laboratory carried out in-house quality assurance procedures on sample TP2017-06-0.6. They noted higher than expected variability in the sample results for both lead and zinc. This variability is likely to be a result of the heterogeneous nature of the fill material and will need to be considered when interpreting the laboratory results.

[13] Ministry for the Environment. Contaminated Land Management Guidelines No. 5, Site Investigation and Analysis of Soils. Published 2004, Revised 2011.

4.6 Analytical results

Laboratory results are provided in full in Appendix B and are summarised in Table 4.3 and below:

- Five samples contained concentrations above standards for the protection of human health including:
  - Arsenic in one sample (TP2017-01-0.4m) and
  - Lead in four samples (TP2017-03-0.65m, TP2017-05-0.9m & 1.2m, TP2017-06-0.6m).
- Several samples exceeded standards for the protection of the environment as per the AUP environmental discharge criteria set for lead, copper and zinc.
- PAH compounds were detected in all samples selected for testing, and heavy end TPH (C_{15}-C_{30}) compounds were present in all analysed samples except for one (HA3 at 0.3 m). No organic contaminants exceeded the selected guidelines for the protection of human health or the environment.
- The presence of PAH, TPH compounds and also metals that exceed established background criteria in the fill material, mean it is unlikely to be accepted as cleanfill.
- Asbestos was detected in all 6 samples that were analysed. The asbestos included loose fibres and ACM debris. All samples recorded total asbestos concentrations of less than 0.001 %.
- The fibreboard fragment that was recovered from TP2017-03 tested positive for asbestos fibres.

4.7 Summary

The intrusive investigation identified the presence of uncontrolled fill material within the central part of the site. This fill was described as grey or reddish brown gravel with some sand. Some building rubble was also noted within the fill material, including bricks, concrete and one asbestos fibreboard fragment. The depth of the fill was not determined in this investigation however during previous geotechnical investigations by T+T, very little fill was identified (with the exception of two locations). This suggests that the fill is likely to be discontinuous and not very thick in most parts of the site. The fill appears to be filling in the undulating surface of the underlying basalt. Up to 2.1m of fill material was encountered at one location during the geotechnical investigation, near HA7. This is the lowest part of the site.

Investigations at 216 Dominion Road were limited, however it was confirmed that the UST had been removed from this part of the site. The available information suggests that this was undertaken in 1975. Given that this activity occurred 40 years ago, significant ground contamination as a result of the UST is considered unlikely. Information from the geotechnical investigation identified up to 0.8m of fill in this area, however the fill depth may be up to 3-4m, if the tankpit for the UST was excavated into the basalt, or is located within fill material.

The analytical results indicate that PAH, TPH compounds and metals above background concentrations are present within the subsurface fill materials, likely as a result of HAIL activities on the site. Arsenic concentrations in one sample and lead concentrations in four samples tested above standards for the protection of human health. Several samples exceeded the standards for environmental protection.

Asbestos fibres are present within the fill material however these are present below the guideline for residential use of 0.001 %.

The presence of PAH, TPH compounds, asbestos fibres and metals above background concentrations in the subsurface materials indicates that the materials are unlikely to be accepted as cleanfill. These materials are likely to be accepted as managed fill subject to approval from the disposal facility.

Table 4.3: Analytical results of soil testing

Sample	High-density residential use (NES Soil)	AUP Permitted Activity Criteria (discharge)	Non-volcanic background for the Auckland Region[5]	HA1	HA3	HA3	HA6	HA7	HA7	Tankpit	TP2017-01	TP2017-02	TP2017-03	TP2017-03	TP2017-04	TP2017-04	TP2017-05	TP2017-05	TP2017-06
Depth (m)				0.3	0.3	0.5	0.3	0.3	1.0	0.2	0.4	0.3	0.15	0.65	0.1	1.1	0.9	1.2	0.6
Date				14/09/2015	14/09/2015	14/09/2015	14/09/2015	14/09/2015	14/09/2015	14/09/2015	21/03/2017	21/03/2017	21/03/2017	21/03/2017	21/03/2017	21/03/2017	21/03/2017	21/03/2017	21/03/2017
Heavy Metals																			
Arsenic	45	100	12	-	-	-	-	-	-	-	*83*	17	5	33	14	5	13	8	29
Cadmium	230	7.5	0.65	-	-	-	-	-	-	-	0.37	0.48	0.64	3.3	0.2	0.19	1.13	1.0	1.13
Chromium	NL	400	55	-	-	-	-	-	-	-	25	32	111	83	17	119	76	99	72
Copper	NL	325	45	-	-	-	-	-	-	-	40	55	94	270	47	61	161	84	104
Lead	500	250	65	-	-	-	-	-	-	-	350	167	370	*580*	99	22	*830*	*560*	*570* [#1]
Nickel	1,200 [3]	105	35	-	-	-	-	-	-	-	65	90	134	121	78	141	126	145	136
Zinc	60,000 [3]	400	180	-	-	-	-	-	-	-	390	220	520	1540	118	98	830	890	2000 [#2]
Polycyclic Aromatic Hydrocarbons Screening in Soil																			
Acenaphthene	-	-	<LD	-	< 0.04	-	< 0.03	< 0.03	-	< 0.03	-	-	-	-	-	-	-	-	-
Acenaphthylene	-	-	<LD	-	< 0.04	-	0.10	< 0.03	-	< 0.03	-	-	-	-	-	-	-	-	-
Anthracene	-	-	<LD	-	< 0.04	-	0.12	< 0.03	-	< 0.03	-	-	-	-	-	-	-	-	-
Benzo[a]anthracene	-	-	<LD	-	0.06	-	1.37	0.13	-	0.03	-	-	-	-	-	-	-	-	-
Benzo[a]pyrene (BAP)	-	-	<LD	-	0.14	-	1.63	0.16	-	0.03	-	-	-	-	-	-	-	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	-	-	<LD	-	0.18	-	2.2	0.29	-	0.05	-	-	-	-	-	-	-	-	-
Benzo[g,h,i]perylene	-	-	<LD	-	0.23	-	1.45	0.18	-	0.05	-	-	-	-	-	-	-	-	-
Benzo[k]fluoranthene	-	-	<LD	-	0.08	-	0.94	0.09	-	< 0.03	-	-	-	-	-	-	-	-	-
Chrysene	-	-	<LD	-	0.10	-	1.10	0.12	-	< 0.03	-	-	-	-	-	-	-	-	-
Dibenzo[a,h]anthracene	-	-	<LD	-	< 0.04	-	0.19	0.03	-	< 0.03	-	-	-	-	-	-	-	-	-
Fluoranthene	-	-	<LD	-	0.12	-	2.4	0.22	-	0.04	-	-	-	-	-	-	-	-	-
Fluorene	-	-	<LD	-	< 0.04	-	< 0.03	< 0.03	-	< 0.03	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	-	-	<LD	-	0.15	-	1.47	0.17	-	0.05	-	-	-	-	-	-	-	-	-
Naphthalene	58 [2]	NL [5]	<LD	-	< 0.2	-	< 0.13	< 0.13	-	< 0.12	-	-	-	-	-	-	-	-	-
Phenanthrene	-	-	<LD	-	< 0.04	-	0.50	0.06	-	< 0.03	-	-	-	-	-	-	-	-	-
Pyrene	1,600 [2]	NL [5]	<LD	-	0.21	-	2.9	0.27	-	0.04	-	-	-	-	-	-	-	-	-
BaP equivelant	24 [1]	20	<LD	-	0.23	-	2.45	0.26	-	0.08	-	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons																			
TPH C_7-C_9	120 [2]	NL [5]	<LD	< 9	< 12	< 12	< 8	< 8	< 8	< 8	-	-	-	-	-	-	-	-	-
TPH C_{10}-C_{14}	470 [2]	NL [5]	<LD	< 20	< 30	< 30	< 20	< 20	< 20	< 20	-	-	-	-	-	-	-	-	-
TPH C_{15}-C_{30}	NL [2]	NL [5]	<LD	153	< 50	199	250	152	40	118	-	-	-	-	-	-	-	-	-
Total hydrocarbons (C_7 - C_{36})	-	-	<LD	153	< 90	199	250	152	< 70	118	-	-	-	-	-	-	-	-	-

Notes:

Red italicised text exceeds high density residential criteria

Orange highlighted text exceeds discharge criteria

All concentrations reported in mg/kg (ppm)

BaP eq calculated using the lab detection limit where applicable (eg <0.003 becomes 0.003)

<LD = Below laboratory detection level

NL = No limit

1 - Soil contaminant standards for high density residential land use. MfE, April 2012, Users Guide: National Environmental Standard for assessing and managing contaminants in soil to protect Human Health.

2 - Soil acceptance criteria for residential land use, all pathways, sand, surface contamination. MfE 1999. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand.

3 - Health investigaiton levels for residential B land use. NEPC, updated 2013, National Environment Protection (Assessment of Site Contamination) Measure 1999

4 - Permitted activity soil acceptance criteria. Auckland Unitary Plan (AUP).

5 - Soil acceptance criteria for protection of groundwater quality, sand, surface contamination, groundwater at 8m depth. MfE 1999. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand

6 - Auckland Regional Council, Technical Publication 153, October 2001. Background Concentrations of inorganic elements in soils from the Auckland Region.

#1, #2 - Replicate analyse performed on this sample as part of laboratory in-house Quality Assurance procedures showed greater variation than would normally be expected. This may reflect the heterogeneity of the sample.

5 Regulatory and development implications

The contaminated site rules and associated assessment criteria relevant to the proposed site redevelopment are presented in Section 3 of this report. The need, or otherwise, for contamination related resource consents for the site redevelopment has been evaluated against these regulatory requirements and the results of the intrusive site investigation.

5.1 NES Soil

The PSI identified that the NES Soil applies to the site as HAIL activities have occurred at the site, and that a resource consent is likely to be required for the proposed redevelopment in relation to soil disturbance and the land use change. Based on the results of the intrusive site investigation, which indicate that contaminant concentrations at the site may exceed standards for the proposed future land use, the redevelopment of the site will be a restricted discretionary activity.

5.2 AUP

Soil disturbance for the proposed redevelopment is unlikely to comply with the PA requirements under the AUP contaminated land rules due to the volume limit of 200 m^3. Therefore a Controlled Activity consent will be required under Rule E30.6.2.1.

In addition, the elevated levels of contaminants mean that, if fill material remains at the site following the development, a consent will be required under the same rule for long term discharges as the contaminant concentrations in the fill material exceed the PA criteria.

5.3 Development implications

Earthworks controls will be required to protect worker and public heath, manage discharges from the site and prevent contamination from entering the surrounding environment during redevelopment of the site. If all fill material is removed from the site, no controls will be required in relation to the ongoing future use of the site.

All fill material removed from site will require disposal to a managed fill or landfill facility as contaminant concentrations exceed the default cleanfill criteria. Based on the presence of asbestos fibres in the material, disposal to landfill is likely to be required however this should be discussed with the managed fill sites to confirm if they can accept the material. All managed fill/ landfill dockets should be retained as a record of delivery.

6 Conclusions

The objective of this investigation was to assess the nature and extent of ground contamination at the site from the identified HAIL activities.

Analysis of soil samples collected across the site indicated that shallow subsurface fill materials contain detectable concentrations of PAHs, heavy end TPH compounds and asbestos, and metal concentrations which may exceed guidelines for the proposed future land use. The concentrations of organic contaminants and asbestos are below the applicable assessment criteria for the protection of human health and the environment. Laboratory results identified concentrations of heavy metals in the fill material that exceed criteria for the protection of human health, protection of the environment and background criteria.

These results have the following implications for the site development:

- A restricted discretionary activity resource consent is required under the NES Soil for soil disturbance and land use change.
- A controlled activity resource consent is required under the AUP for soil disturbance on land containing elevated levels of contaminants.
- To support these resource consent applications, a site management plan and remediation action plan (which can be included in the site management plan) are required.
- All fill materials that are to be removed from the site as part of the redevelopment are likely to require disposal to a managed fill or landfill facility.

7 Applicability

This report has been prepared for the benefit of Panuku Development Auckland with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

.....

Alex Beattie
Environmental Scientist

Report prepared by:

.....

Joanne Ferry
Senior Contaminated Land Specialist

Authorised for Tonkin & Taylor Ltd by:

.....

Gerard Bird
Project Director

7-Apr-17

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Appendix A: Figures

- Figure 1: Site Plan
- Figure 2: Summary of Land Uses
- Figure 3: Sample Location Plan

SCALE 1: 750

0 10 20 30 40 50 (m)

Aerial photo and property boundaries sourced from Auckland Council GIS Website

L:\30717\30717.001\CAD\FIGURES\30717.001-DSI-F1.dwg F2 2/10/2015 10:15:03 a.m.

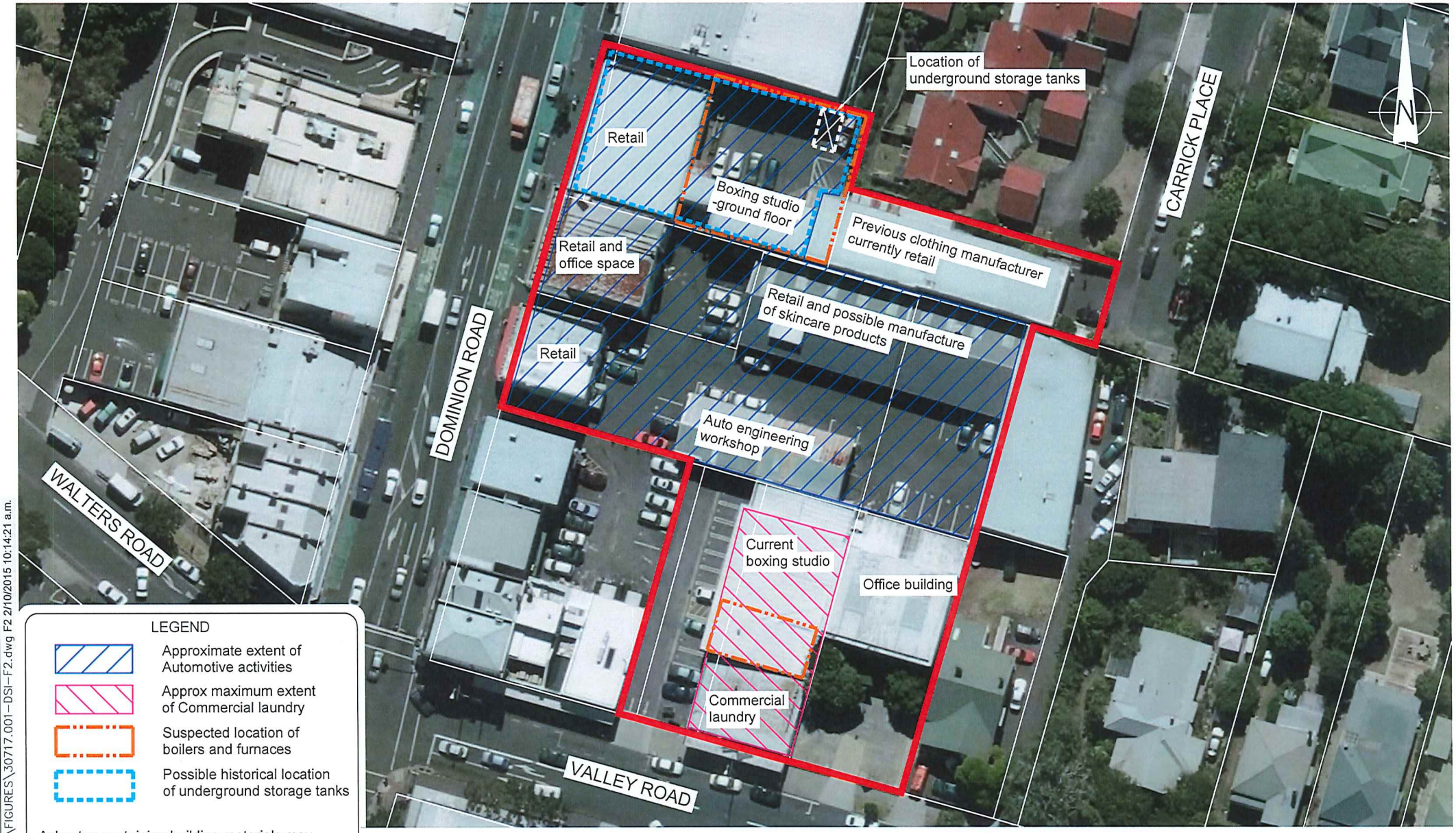
Tonkin+Taylor
105 Carlton Gore Road, Newmarket, Auckland
www.tonkintaylor.co.nz

DRAWN	RBS	Oct.15
DRAFTING CHECKED	TJ	6/10/15
APPROVED	JMC	6/10/15
CADFILE : 30717.001-DSI-F1.dwg		
SCALES (AT A4 SIZE) 1: 750		
PROJECT No. 30717.001		

DEVELOPMENT AUCKLAND
DETAILED SITE INVESTIGATION
VALLEY ROAD APARTMENTS, MT EDEN
Site Plan

FIG. No. Figure 1

REV. 0



LEGEND

- Approximate extent of Automotive activities
- Approx maximum extent of Commercial laundry
- Suspected location of boilers and furnaces
- Possible historical location of underground storage tanks

Asbestos containing building materials may have been used/present across the whole site.

SCALE 1: 750

0 10 20 30 40 50 (m)

Aerial photo and property boundaries sourced from Auckland Council GIS Website

L:\30717\30717.001\CAD\FIGURES\30717.001-DSI-F2.dwg F2 2/10/2015 10:14:21 a.m.

Tonkin+Taylor
105 Carlton Gore Road, Newmarket, Auckland
www.tonkintaylor.co.nz

DRAWN	RBS	Oct.15
DRAFTING CHECKED	TJ	16/15
APPROVED	JMC	16/15
CADFILE : 30717.001-DSI-F2.dwg		
SCALES (AT A4 SIZE) 1: 750		
PROJECT No. 30717.001		

DEVELOPMENT AUCKLAND
DETAILED SITE INVESTIGATION
VALLEY ROAD APARTMENTS, MT EDEN
Summary of Land Uses

FIG. No. Figure 2

REV. 0

SCALE 1: 750

0 10 20 30 40 50 (m)

Aerial photo and property boundaries sourced from Auckland Council GIS Website

L:\307 17\307 17.002\CAD\FIGURES\307 17.002-DSI-F3.dwg F3 30/03/2017 9:09:18 a.m.

Tonkin+Taylor

105 Carlton Gore Road, Newmarket, Auckland
www.tonkintaylor.co.nz

DRAWN	RBS	Mar. 17
DRAFTING CHECKED		
APPROVED		
CADFILE : 307 17.002-DSI-F3.dwg		
SCALES (AT A4 SIZE) 1: 750		
PROJECT No. 307 17.002		

DEVELOPMENT AUCKLAND

DETAILED SITE INVESTIGATION
VALLEY ROAD APARTMENTS, MT EDEN

Sample Location Plan

FIG. No. Figure 3

REV. 0

Appendix B: Laboratory transcripts

Hill Laboratories
BETTER TESTING BETTER RESULTS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

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Fax +64 7 858 2001
Email mail@hill-labs.co.nz
Web www.hill-labs.co.nz

ANALYSIS REPORT

Client:	Tonkin & Taylor	**Lab No:**	1477886	SPv1
Contact:	J Ferry	**Date Registered:**	19-Sep-2015	
	C/- Tonkin & Taylor	**Date Reported:**	28-Sep-2015	
	PO Box 5271	**Quote No:**		
	AUCKLAND 1141	**Order No:**		
		Client Reference:	30717.001	
		Submitted By:	J Ferry	

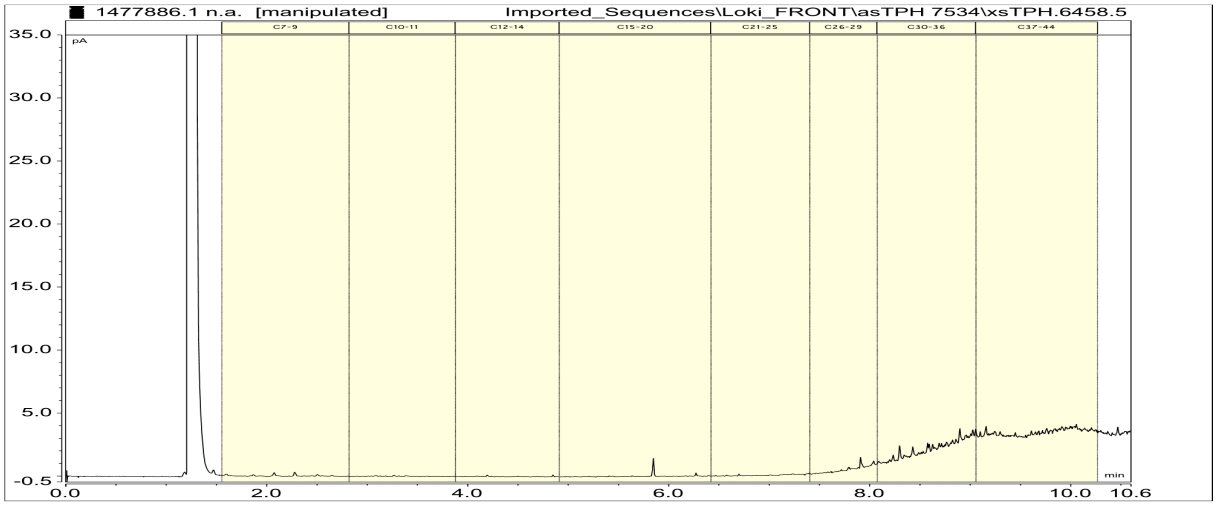
Sample Type: Soil

Sample Name:		HA1 - 0.3mbgl 14-Sep-2015	HA3 - 0.3 14-Sep-2015	HA3 - 0.5m 14-Sep-2015	HA6 - 0.3mbgl 14-Sep-2015	HA7 - 0.3mbgl 14-Sep-2015
Lab Number:		1477886.1	1477886.6	1477886.7	1477886.8	1477886.11
Individual Tests						
Dry Matter	g/100g as rcvd	76	53	56	85	87
Polycyclic Aromatic Hydrocarbons Screening in Soil						
Acenaphthene	mg/kg dry wt	-	< 0.04	-	< 0.03	< 0.03
Acenaphthylene	mg/kg dry wt	-	< 0.04	-	0.10	< 0.03
Anthracene	mg/kg dry wt	-	< 0.04	-	0.12	< 0.03
Benzo[a]anthracene	mg/kg dry wt	-	0.06	-	1.37	0.13
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	0.14	-	1.63	0.16
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	-	0.18	-	2.2	0.29
Benzo[g,h,i]perylene	mg/kg dry wt	-	0.23	-	1.45	0.18
Benzo[k]fluoranthene	mg/kg dry wt	-	0.08	-	0.94	0.09
Chrysene	mg/kg dry wt	-	0.10	-	1.10	0.12
Dibenzo[a,h]anthracene	mg/kg dry wt	-	< 0.04	-	0.19	0.03
Fluoranthene	mg/kg dry wt	-	0.12	-	2.4	0.22
Fluorene	mg/kg dry wt	-	< 0.04	-	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	0.15	-	1.47	0.17
Naphthalene	mg/kg dry wt	-	< 0.2	-	< 0.13	< 0.13
Phenanthrene	mg/kg dry wt	-	< 0.04	-	0.50	0.06
Pyrene	mg/kg dry wt	-	0.21	-	2.9	0.27
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 9	< 12	< 12	< 8	< 8
C10 - C14	mg/kg dry wt	< 20	< 30	< 30	< 20	< 20
C15 - C36	mg/kg dry wt	153	< 50	199	250	152
Total hydrocarbons (C7 - C36)	mg/kg dry wt	153	< 90	199	250	152

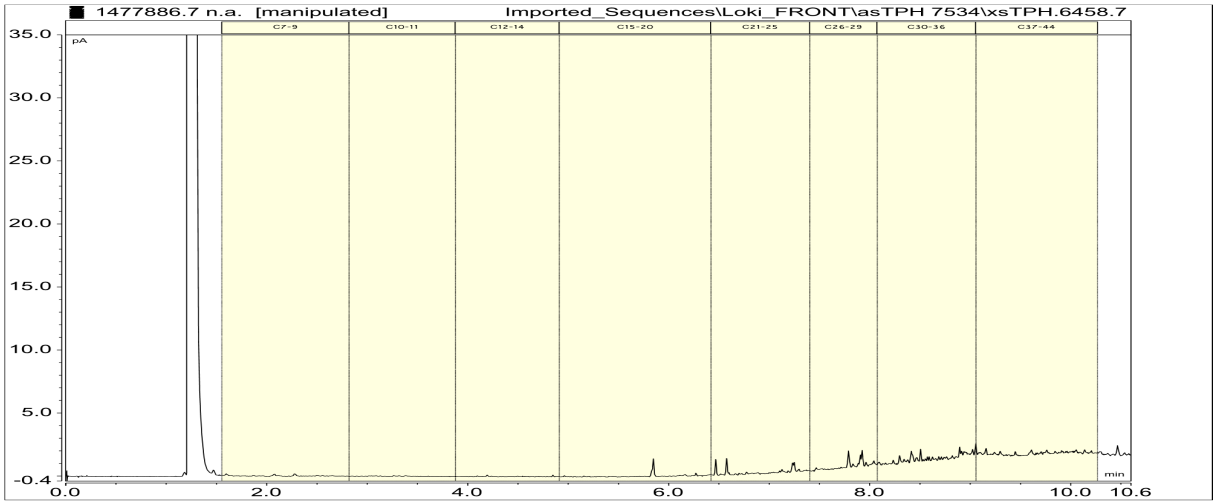
Sample Name:		HA7 - 1mbgl 14-Sep-2015	Top #1 Soil From Underground Tank			
Lab Number:		1477886.13	1477886.14			
Individual Tests						
Dry Matter	g/100g as rcvd	84	93	-	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil						
Acenaphthene	mg/kg dry wt	-	< 0.03	-	-	-
Acenaphthylene	mg/kg dry wt	-	< 0.03	-	-	-
Anthracene	mg/kg dry wt	-	< 0.03	-	-	-
Benzo[a]anthracene	mg/kg dry wt	-	0.03	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	0.03	-	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	-	0.05	-	-	-

Sample Type: Soil						
Sample Name:		HA7 - 1mbgl 14-Sep-2015	Top #1 Soil From Underground Tank			
Lab Number:		1477886.13	1477886.14			
Polycyclic Aromatic Hydrocarbons Screening in Soil						
Benzo[g,h,i]perylene	mg/kg dry wt	-	0.05	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	-	< 0.03	-	-	-
Chrysene	mg/kg dry wt	-	< 0.03	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	-	< 0.03	-	-	-
Fluoranthene	mg/kg dry wt	-	0.04	-	-	-
Fluorene	mg/kg dry wt	-	< 0.03	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	0.05	-	-	-
Naphthalene	mg/kg dry wt	-	< 0.12	-	-	-
Phenanthrene	mg/kg dry wt	-	< 0.03	-	-	-
Pyrene	mg/kg dry wt	-	0.04	-	-	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	-	-	-
C10 - C14	mg/kg dry wt	< 20	< 20	-	-	-
C15 - C36	mg/kg dry wt	40	118	-	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	118	-	-	-

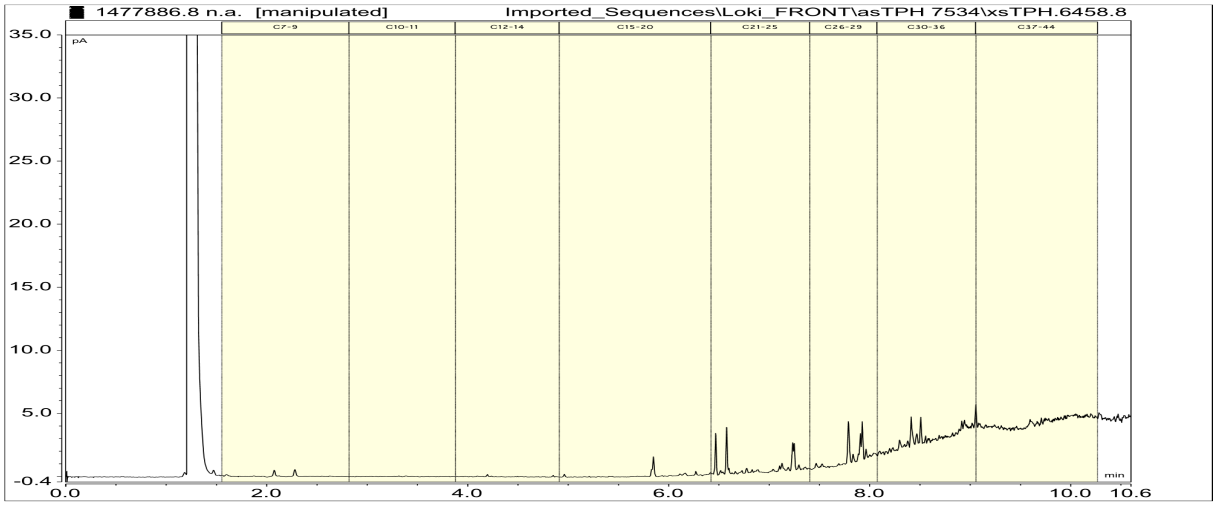
1477886.1
HA1 - 0.3mbgl 14-Sep-2015
Client Chromatogram for TPH by FID



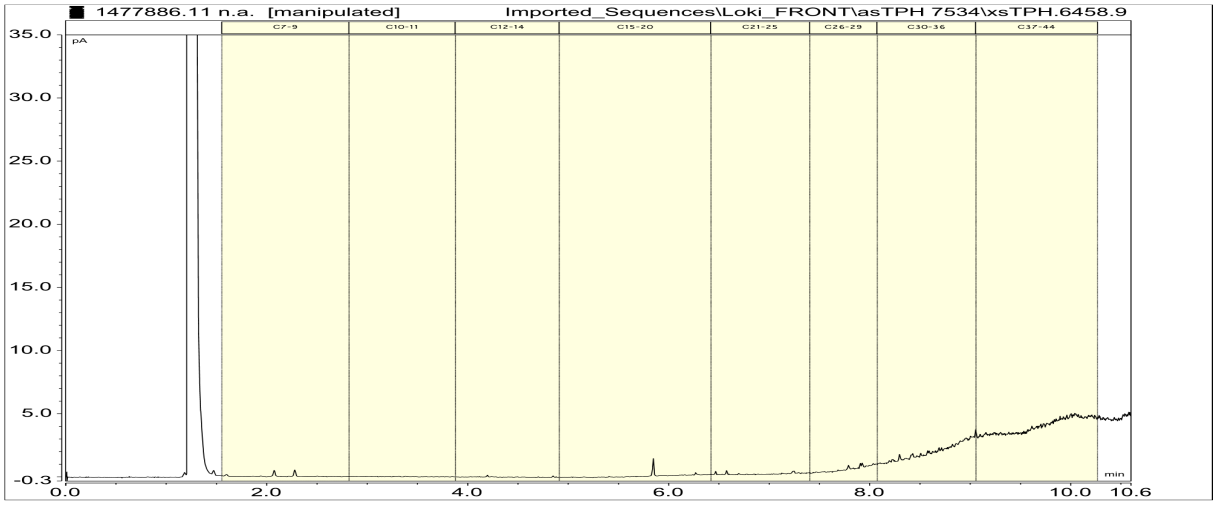
1477886.7
HA3 - 0.5m 14-Sep-2015
Client Chromatogram for TPH by FID



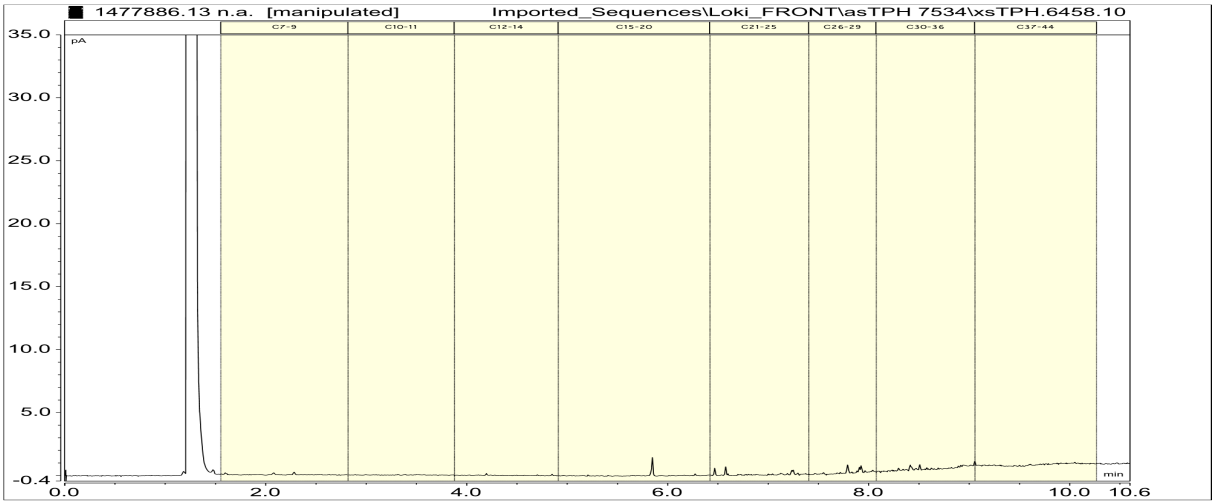
1477886.8
HA6 - 0.3mbgl 14-Sep-2015
Client Chromatogram for TPH by FID



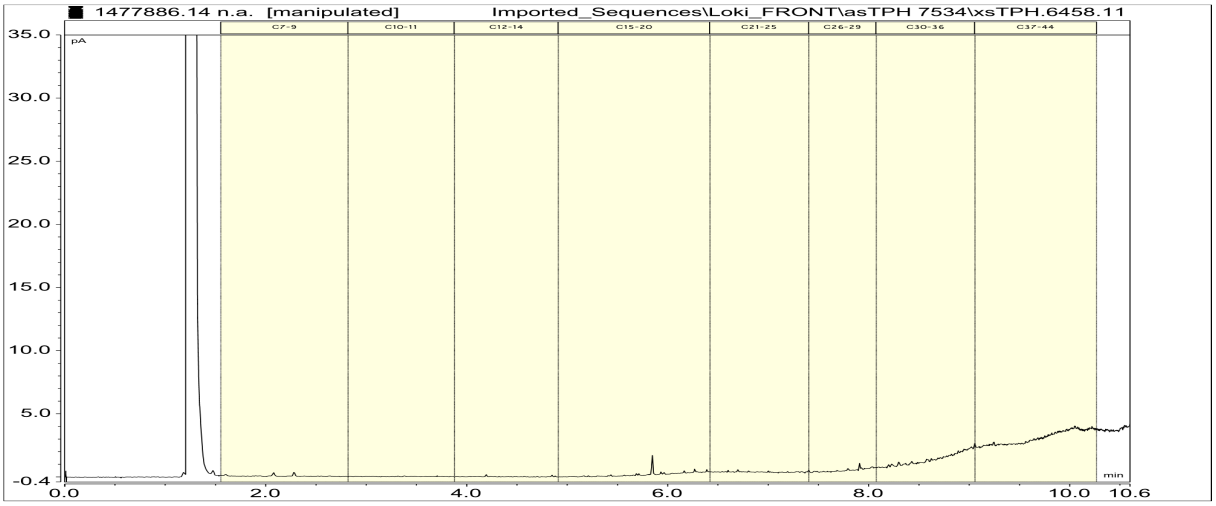
1477886.11
HA7 - 0.3mbgl 14-Sep-2015
Client Chromatogram for TPH by FID



1477886.13
HA7 - 1mbgl 14-Sep-2015
Client Chromatogram for TPH by FID



1477886.14
Top #1 Soil From Underground Tank
Client Chromatogram for TPH by FID



SUMMARY OF METHODS

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

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
TPH Oil Industry Profile + PAHscreen	Sonication in DCM extraction, SPE cleanup, GC-FID & GC-MS analysis. Tested on as received sample. US EPA 8015B/MfE Petroleum Industry Guidelines [KBIs:5786,2805,10734;2695]	0.010 - 60 mg/kg dry wt	6, 8, 11, 14
Total Petroleum Hydrocarbons in Soil*	Sonication extraction in DCM, Silica cleanup, GC-FID analysis US EPA 8015B/MfE Petroleum Industry Guidelines. Tested on as received sample [KBIs:5786,2805,10734]	8 - 60 mg/kg dry wt	1, 7, 13
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. US EPA 3550. (Free water removed before analysis).	0.10 g/100g as rcvd	1, 6-8, 11, 13-14

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

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

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Ara Heron BSc (Tech)
Client Services Manager - Environmental Division

Hill Laboratories
TRIED, TESTED AND TRUSTED

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Private Bag 3205
Hamilton 3240 New Zealand

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T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

ANALYSIS REPORT

Client:	Tonkin & Taylor	**Lab No:**	1744166	SPv1
Contact:	J Ferry	**Date Received:**	22-Mar-2017	
	C/- Tonkin & Taylor	**Date Reported:**	28-Mar-2017	
	PO Box 5271	**Quote No:**	73224	
	Auckland 1141	**Order No:**	Dominion Road	
		Client Reference:	30717.0020	
		Submitted By:	Cherise Martin	

Sample Type: Soil

Sample Name:		TP2017-01-0.4 21-Mar-2017	TP2017-02-0.3 21-Mar-2017	TP2017-03-0.15 21-Mar-2017	TP2017-03-0.65 21-Mar-2017	TP2017-Dup1 21-Mar-2017
Lab Number:		1744166.1	1744166.2	1744166.3	1744166.4	1744166.5
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	83	17	5	33	35
Total Recoverable Cadmium	mg/kg dry wt	0.37	0.48	0.64	3.3	6.0
Total Recoverable Chromium	mg/kg dry wt	25	32	111	83	89
Total Recoverable Copper	mg/kg dry wt	40	55	94	270	192
Total Recoverable Lead	mg/kg dry wt	350	167	370	580	530
Total Recoverable Nickel	mg/kg dry wt	65	90	134	121	125
Total Recoverable Zinc	mg/kg dry wt	390	220	520	1,540	2,200

Sample Name:		TP2017-04-0.1 21-Mar-2017	TP2017-04-1.1 21-Mar-2017	TP2017-05-0.9 21-Mar-2017	TP2017-05-1.2 21-Mar-2017	TP2017-06-0.6 21-Mar-2017
Lab Number:		1744166.6	1744166.7	1744166.8	1744166.9	1744166.10
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	14	5	13	8	29
Total Recoverable Cadmium	mg/kg dry wt	0.20	0.19	1.13	1.00	1.13
Total Recoverable Chromium	mg/kg dry wt	17	119	76	99	72
Total Recoverable Copper	mg/kg dry wt	47	61	161	84	104
Total Recoverable Lead	mg/kg dry wt	99	22	830	560	570 #1
Total Recoverable Nickel	mg/kg dry wt	78	141	126	145	136
Total Recoverable Zinc	mg/kg dry wt	118	98	830	890	2,000 #2

Analyst's Comments

#1 It should be noted that the replicate analyses performed on this sample as part of our in-house Quality Assurance procedures showed greater variation than would normally be expected. This may reflect the heterogeneity of the sample. The average of the results of the replicate analyses has been reported. Replicate 1: 510 mg/kg; Replicate 2: 630 mg/kg; Replicate 3: 710 mg/kg; Replicate 4: 430 mg/kg.

#2 It should be noted that the replicate analyses performed on this sample as part of our in-house Quality Assurance procedures showed greater variation than would normally be expected. This may reflect the heterogeneity of the sample. The average of the results of the replicate analyses has been reported. Replicate 1: 970 mg/kg; Replicate 2: 3000 mg/kg; Replicate 3: 3400 mg/kg; Replicate 4: 770 mg/kg.

SUMMARY OF METHODS

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

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-10

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

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

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Martin Cowell - BSc
Client Services Manager - Environmental

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W www.hill-laboratories.com

ANALYSIS REPORT

Client:	Tonkin & Taylor	**Lab No:**	1744250 A2Pv1
Contact:	Cherise Martin	**Date Received:**	22-Mar-2017
	C/- Geotechnics Limited	**Date Reported:**	28-Mar-2017
	PO Box 9360	**Quote No:**	73224
	Newmarket	**Order No:**	216-222 Dominion Rd
	Auckland 1149	**Client Reference:**	30717.0020
		Submitted By:	Cherise Martin

Sample Type: Soil

Sample Name:		TP2017-01 21-Mar-2017	TP2017-02 21-Mar-2017	TP2017-03 21-Mar-2017	TP2017-04 21-Mar-2017	TP2017-05 21-Mar-2017
Lab Number:		1744250.1	1744250.2	1744250.3	1744250.4	1744250.5
Asbestos Presence / Absence		Chrysotile (White Asbestos) detected.	Chrysotile (White Asbestos) detected.	Chrysotile (White Asbestos) detected.	Amosite (Brown Asbestos) detected.	Amosite (Brown Asbestos) and Chrysotile (White Asbestos) detected.
Description of Asbestos Form		Loose Fibres	Loose Fibres	Loose Fibres	Loose Fibres	ACM Debris and Loose Fibres
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	648.2	524.8	701.6	772.8	883.3
Dry Weight	g	540.3	365.5	581.8	677.1	826.5
Ashed Weight	g	530.6	330.7	573.0	673.8	818.4
Dry Sample Fraction >10mm	g ashed wt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Sample Fraction <10mm to >2mm	g ashed wt	224.4	78.8	194.6	381.2	385.1
Sample Fraction <2mm	g ashed wt	305.7	251.5	377.9	292.2	432.3
<2mm Subsample Weight	g ashed wt	52.5	56.0	56.9	59.4	56.9
Weight of Asbestos in ACM (Non-Friable)	g ashed wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g ashed wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g ashed wt	0.00145	0.00003	0.00003	0.00015	0.00655

Sample Name:		TP2017-06 21-Mar-2017				
Lab Number:		1744250.6				
Asbestos Presence / Absence		Chrysotile (White Asbestos) detected.	-	-	-	-
Description of Asbestos Form		Loose Fibres	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	-	-	-	-
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	-	-	-	-
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	-	-	-	-
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	-	-	-	-
As Received Weight	g	593.1	-	-	-	-

Sample Type: Soil						
Sample Name:		TP2017-06 21-Mar-2017				
Lab Number:		1744250.6				
Dry Weight	g	424.9	-	-	-	-
Ashed Weight	g	414.1	-	-	-	-
Dry Sample Fraction >10mm	g ashed wt	< 0.1	-	-	-	-
Sample Fraction <10mm to >2mm	g ashed wt	140.1	-	-	-	-
Sample Fraction <2mm	g ashed wt	273.4	-	-	-	-
<2mm Subsample Weight	g ashed wt	59.1	-	-	-	-
Weight of Asbestos in ACM (Non-Friable)	g ashed wt	< 0.00001	-	-	-	-
Weight of Asbestos as Fibrous Asbestos (Friable)	g ashed wt	< 0.00001	-	-	-	-
Weight of Asbestos as Asbestos Fines (Friable)*	g ashed wt	0.00017	-	-	-	-

Soil asbestos investigation criteria
0.001 % w/w asbestos for FA and AF – All site uses
0.01 % w/w asbestos for ACM – Residential use, day care centres, preschools, etc.
0.04 % w/w asbestos for ACM – Residential, minimal soil access
0.02 % w/w asbestos for ACM – Parks, public open spaces, playing fields, etc.
0.05 % w/w asbestos for ACM – Commercial/Industrial
(Taken from the 'Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009').

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

SUMMARY OF METHODS

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

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Western Australian Guidelines Semi Quantitative Asbestos in Soil*		-	1-6
Western Australian Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-6
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-6
Ashed Weight	Sample ashed at 400°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-6
Sample Fraction >10mm	Sample ashed at 400°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g ashed wt	1-6
Sample Fraction <10mm and >2mm	Sample ashed at 400°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g ashed wt	1-6
Sample Fraction <2mm	Sample ashed at 400°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g ashed wt	1-6
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	-	1-6
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-6
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.	0.00001 g ashed wt	1-6

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.	0.001 % w/w	1-6
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.	0.00001 g ashed wt	1-6
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.	0.001 % w/w	1-6
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.	0.00001 g ashed wt	1-6
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.	0.001 % w/w	1-6
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; May 2009.	0.001 % w/w	1-6

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

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

Dexter Paguirigan Dip Chem Engineering Tech
Laboratory Technician - Asbestos

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ANALYSIS REPORT

Client:	Tonkin & Taylor	**Lab No:**	1744249	A2Pv1
Contact:	Cherise Martin	**Date Received:**	22-Mar-2017	
	C/- Geotechnics Limited	**Date Reported:**	23-Mar-2017	
	PO Box 9360	**Quote No:**	73224	
	Newmarket	**Order No:**	216-222 Dominion Rd	
	Auckland 1149	**Client Reference:**	30717.0020	
		Submitted By:	Cherise Martin	

Sample Type: Building Material

Sample Name	Lab Number	Sample Category	Sample Weight on receipt	Asbestos Presence / Absence
TP2017-03-0.7-FRAGMENT	1744249.1	Fibre Cement	56.04	Chrysotile (White Asbestos) detected.

SUMMARY OF METHODS

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

Sample Type: Building Material

Test	Method Description	Default Detection Limit	Sample No
Asbestos in Bulk Material			
Sample Category	Assessment of sample type. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	-	1
Sample Weight on receipt	Sample weight. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.01 g	1
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	-	1

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

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

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WILLIAMSON
WATER & LAND ADVISORY

Dominion and Valley Road Apartments, Mt Eden

Interim Site Management Plan (Ground Contamination)

PRECINCT PROPERTIES LTD

WWLA1219 | Rev. 1

31 July 2024

Dominion and Valley Road Apartments, Mt Eden

Project no:	WWLA1219
Document title:	Interim Site Management Plan (Ground Contamination)
Revision:	1
Date:	31 July 2024
Client name:	Precinct Properties Ltd
Project manager:	Wendi Williamson
Author(s):	Penelope Lindsay
File name:	G:\Shared drives\Projects\Initia Geotechnical\WWLA1219_Precinct Dominion Rd CL\Deliverables\SMP\WWLA_Precinct Dominion_SMP_Rev 1_310724.docx

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Document history and status

Rev	Date	Description	By	Review	Approved
1	31 July 2024	Interim SMP	Penelope Lindsay	Wendi Williamson	Wendi Williamson

Distribution of copies

Rev	Date issued	Issued to	Comments
1	31 July 2024	Precinct Properties Ltd	For resource consent

Contents

1. Introduction

Williamson Water & Land Advisory (WWLA) has prepared this Interim Site Management Plan (SMP) to assist Precinct Properties Ltd with their proposed apartment development at 198-202 and 214-222 Dominion Road and 113-117 Valley Road, Mt Eden, Auckland (the site, see **Figure 1**).

This SMP should be read in conjunction the preliminary[1] and detailed[2] site investigation reports (PSI/DSI) prepared for the site, and WWLA assessment[3] of the PSI and DSI.

This version of the SMP supports the resource consent and is interim because detailed site investigations have not been completed across the full site extent. This SMP will be updated once investigations have been completed (following demolition).

Figure 1. Site location with individual lots comprising the site outlined in red. (Aerial image and information source: Land Information New Zealand).

[1] T+T, May 2016. *Preliminary Site Investigation, Valley Road Apartments, Mt Eden.* Prepared for Panuku Development Auckland.
[2] T+T, April 2017. *Detailed Site Investigation, Valley Road Apartments, Mt Eden*. Prepared for Panuku Development Auckland.
[3] WWLA, 31 July 2024. *Dominion Road and Valley Road Apartments, Mt Eden – Ground Contamination Assessment.* Prepared for Precinct Properties Ltd.

1.1 Background

Precinct Properties Ltd propose to construct three five-storey apartment buildings over the site, featuring a single-level interconnected basement. Construction will require excavations between 0.5 m and 4 m below current ground level, and all existing non-engineered fill will be removed from the site.

1.2 Site identification

The site covers several commercial properties located at the corner of Dominion and Valley Roads as shown in **Figure 1** above. Site identification details as recorded on Auckland Council Geomaps are presented in **Table 1**.

Table 1. Site identification

Address	Legal description	Area (m^2)
198-202 Dominion Road, Mount Eden, Auckland 1024	Lot 1 DP 51797, Pt Lot 4 DP 182, Pt Lot 5 DP 182	1,376
214-222 Dominion Road, Mount Eden, Auckland 1024	Lot 2 DP 54203, Pt Lot 1 DP 31896, Pt Lot 3 ALLOT 8 SEC 10 Suburbs AUCKLAND	2,284
115-117 Valley Road, Mount Eden, Auckland 1024	Pt Lot 3 DP 1, Pt Lot 3 DP 1, Pt Lot 3 DP 1	950
113 Valley Road, Mount Eden, Auckland 1024	Lot 1 DP 54203	642
	Combined site area (approx.)	5,252

1.3 Objectives and scope of this SMP

The objectives of this SMP are to:

- Provide procedures to guide contractors in materials management, reuse, containment, disposal, health and safety and response to unexpected contamination encounters.
- Outline the additional soil testing and reporting required following building demolition.
- Fulfil expected contaminated land conditions of the (discretionary) resource consent.

A summary of the key components of the various sections of this SMP are provided below:

Sections 1 and 2	Identification of the land covered by this SMP and supporting evidence used to inform the requirements of this SMP. The relevant development information and conclusions from the contamination investigations of the site are summarised in these sections.
Section 3	Provides the scope of post-demolition investigation requirements to address areas not yet investigated including those presently covered by buildings.
Section 4	Contamination-specific requirements for the contractor establishing the site and procedures to ensure contaminated fill and soils are handled, contained or disposed of appropriately and discharges are mitigated during development earthworks, and procedures for undertaking expected remediation.
Section 5	General earthworks controls for bulk earthworks outside or subsequent to any contaminated areas requiring remedial action.
Section 6	The contamination-specific health and safety requirements for soil disturbing activities.
Section 7	Monitoring requirements for the Contractor and suitably qualified and experienced environmental (contaminated land) practitioner (SQEP) during soil disturbance (remedial works and bulk earthworks).
Section 8	Contingency measures provided in the event that unexpected ground conditions are encountered, discharges occur and/or complaints are received during site works.
Section 9	Lists the information the contractor is required to provide at the end of the project to be included in a validation report and sets out the closure reporting obligations and method post clearance works.
Appendix A	A **Contractor Checklist** is provided to assist Contractors with compliance with this document.

1.4 Legislative requirements

This SMP has been prepared in support of application for resource consent for subdivision and earthworks; the contaminated land component as a Discretionary Activity.

WWLA has prepared this SMP in accordance with requirements of the NESCS, NZAG[4], and MfE CLMG No.1[5] and 5[6].

The persons preparing and certifying this SMP are suitably qualified and experienced environmental practitioners (SQEPs) as defined in the NESCS Users' Guide (2012). Information demonstrating the experience of our SQEPs involved in preparation of this report and future investigation of the site are available on request.

1.5 Plan management and control

Contaminated land-related responsibilities during development of the site, including management, distribution and implementation of this plan are as set out in **Table 2**.

Table 2: Roles and responsibilities under this plan

Organisation	Role and responsibilities
Landowner: [Precinct Properties Ltd]	Role: • PCBU as defined in the Health and Safety at Work Act 2015 (Health and Safety Regulation).
Lead Contractor: [TBC]	Responsible for: • Distribution of this plan to sub-contractors and ensuring they understand their obligations under the plan. • Compliance with resource consent conditions. • Implementation of this plan.
Contractor's Site Manager: [TBC]	Responsible for: • Liaising with the SQEP to ensure appropriate inspections are undertaken at the key times (refer Sections 3, 4 and 6 and Contractor Checklist, **Appendix A**); • Monitoring compliance with consent conditions. • Ensuring disposal of surplus materials is to an appropriate location. • Monitoring earthworks controls.
Site Health and Safety Officer: [TBC]	Responsible for: • Ensuring adequacy of health and safety provisions during unexpected contamination encounters.
Subcontractors	Responsible for adhering to procedures and requirements of this plan.
SQEP: [WWLA]	Responsible for: • Post-demolition contamination testing of soils. • Revision of this SMP as applicable based on additional investigations and unexpected contamination encounters. • Advice during the works. • Soil and water monitoring (if required). • Validation reporting.
Auckland Council	Responsible for monitoring compliance with resource consent conditions.
Worksafe NZ	Responsible for overseeing compliance with the Health and Safety Regulations.

[4] BRANZ, 2017. *New Zealand Guidelines for Assessing and Managing Asbestos in Soil*.
[5] Ministry for the Environment, 2021. *Contaminated Land Management Guideline No. 1 – Reporting on Contaminated Sites in New Zealand (updated 2021)*.
[6] MfE, 2021. *Contaminated Land Management Guideline No. 5 – Site Investigation and Analysis of Soils*.

1.6 SMP Users' Guide

This SMP has been prepared to support resource consent for the development works, thus demonstrating to Council how contaminated soils will be managed. However, the ultimate objective of this report is to support contractors undertaking development earthworks. Of key importance is the function of this SMP in directing contractors in materials management, remedial actions, health and safety, general earthworks requirements, response to unexpected contaminated materials and monitoring and documenting their works.

This SMP is intended as a flexible document with the full range of procedures to account for unexpected contamination that may be present given the significant building coverage, and to avoid delays if this report required updating. However, this does not preclude this document from being revised should contamination be identified that is outside the scope of the procedures in this report.

Appendix A contains a Checklist template for easy reference by contractor(s).

Throughout this report, times when the SQEP is required to be consulted are highlighted for easy reference.

2. Site Conditions and Management

This section sets out the site's setting and provides an overview of the history, potential for contamination, reported contaminant concentrations, and thus the basis for the procedures in this SMP.

2.1 Environmental setting and history

The history and environmental setting is based on information in the PSI/DSI.

Table 3. Environmental setting

Surrounding land uses	*The nature of surrounding land uses affects both how the site might be impacted by activities in its surrounds (e.g. be contaminated by adjacent land uses), and how contaminants present at the site (if any) might impact on surrounding land uses.* Surrounding to the north, west and south is all commercial, typically retail and restaurants. Residential dwellings are located east of 113 Valley Road and to the northeast on Carrick Place.
Topography and drainage	*The topography of the site influences where contaminants can migrate to (if present). Surface water features are potential receiving environments should contaminants be present on a site*. The overall site topography is flat with localised moderately sloping ground in the northwestern and northeastern corners of the site. The existing ground surface levels vary between about RL 56 m and RL 51.3 m. Auckland Council Geomaps indicates that surface water drains from the northeast to the northwest across the site via an overland flow path. There are no surface water features on or adjacent to the site.
Geology	*The geology is considered in the context of contaminant transport. For example, more porous soils can enable contaminants to move more quickly and potentially further than clay-rich soils that retain or prevent penetration of contaminants.* Published geological maps and historical investigations[7] indicate the site is located on variable depths of fill (up to 2 m thick) over rubbly basalt, with solid basalt rock is encountered between 0.15 m and 5.2 m below ground level.
Hydrogeology	*Hydrogeological conditions affect the potential risk of contaminants entering and being transported in groundwater*. Groundwater is expected to follow topography and flow southwest. Groundwater is expected to be >20 m below ground level based on the previous geotechnical investigation[7].
Sensitive receptors	*Sensitive environmental receptors could include aquatic or terrestrial ecosystems. This is not an ecological assessment but is instead an initial review of the surrounding environment to assess where contaminants (if present) on the site could migrate to and the potential effects.* There are no sensitive environmental receptors on or adjacent to the site.
	Sensitive human receptors could, for example, be children at a school or kindergarten on or adjacent to a site. Less sensitive receptors would be workers on industrial land (either on or adjacent to the site). This receptor interpretation informs the CSM and also future guideline value selection for evaluation of soil data. Future occupants of the site could be considered sensitive receptors since this could include families with children.

2.2 HAIL activities and reported contaminant concentrations

Several HAIL Activities were identified during the PSI including F4 (motor vehicle workshop), A13 (under- and aboveground fuel storage tanks (UST/AST)), E1 (degraded asbestos products) and I (accidental release of contaminants relating to filling).

Soil testing has only been completed on 214-222 Dominion Road, and the remainder of the site has not been investigated. Our review of the contamination investigations to date indicates that fill containing demolition waste, anticipated to be across much of the site to varying depths, is likely to contain contaminants above

[7] T+T, June 2017. *Geotechnical Investigation Report*, *198-222 Dominion Road and 113-117 Valley Road, Mt Eden.* Prepared for Panuku Development Auckland.

background levels, and heavy metal concentrations in the fill may present a risk to human health and/or the environment. Testing shows that levels of asbestos in fill are not a human health risk but this needs to be confirmed for the entire site. Further (post-demolition) investigation requirements are detailed in **Section 3.**

Figure 2. HAIL activity areas (based on information in the PSI and WWLA contamination review letter).

2.3 Development works requirements

At the time of preparing this SMP details of the methodology for future development works are not known, but is expected to follow the general process below:

1. Demolition of buildings, structures, and hardstand areas;
2. Undertake additional soil sampling as per **Section 3** where it is required to complete the assessment of ground conditions.
3. Removal and offsite disposal of all geotechnically unsuitable soil and fill. Any areas requiring remediation via offsite disposal would be completed first.
4. Bulk earthworks and ground engineering.
5. Building construction.
6. Paving and landscaping works; landscaping is expected to be at podium level (i.e. not in existing ground) given the basement extent.

Soil disturbance will occur during Phases 1 to 4. Management of contaminants in soil and any unexpected contamination will be required during this period.

2.4 Contaminant management strategies

The rationale for soil management procedures in this SMP are based on the type of contaminants present, their distribution and are to mitigate effects on workers, neighbouring property occupants and the environment during soil disturbance utilising industry best practice methods. It also considers contaminants that may be present in areas of the site that have not been investigated due to the coverage by existing buildings.

The management strategy is as follows:

1. Ensure asbestos demolition is completed appropriately. Asbestos demolition controls for the buildings will likely be as Class B works, however controls for soils (if needed) are expected to be under a lower level of control such as asbestos-related works (refer **Table 7**, **Section 4.3**). The level of control will be determined following further contamination testing.
2. Complete post-demolition soil sampling (refer **Section 3**) to address outstanding HAIL activity concerns and confirm any areas requiring remedial works (if necessary) and confirm the SMP procedures are appropriate. If any amendments to the procedures in this document are required, a revised SMP will be provided to Auckland Council by the SQEP.
3. Manage contamination (exceeding NESCS commercial criteria) under contamination-specific controls so that these can be removed prior to bulk earthworks commencing. Management may include:
    - Retaining the soil onsite where it does not pose a risk, i.e. is contained beneath the building, paving or other features that prevent mechanisms for its mobilisation and thus ability to affect human or environmental receptors.
    - Removal and disposal to an appropriately licensed offsite disposal facility. ***This is expected to be the most likely option chosen given the extent of the proposed basement structure***.
    - Onsite treatment or mechanisms for reducing contaminants such as vertical mixing/blending or stabilisation (addition of lime to raise the soil pH and thus reduce the leachability of metal and some other contaminants) may be possible for metal contaminants.
4. Standard earthworks controls and procedures during bulk earthworks, with focus on appropriate disposal of surplus soil, minimising generation of potentially contaminated sediment-laden stormwater and prompt response and management of unexpected contamination.
5. Regular communication between Precinct Property Ltd's project manager, the constructor's site manager and the SQEP to ensure that contaminated soil is appropriately managed without delay to the programme.
6. Site closure reporting to satisfy Council requirements on completion of earthworks.

3. Post-Demolition Investigations

Further (post-demolition) investigation is required within current building footprint and across paved open areas of 198-202 Dominion Road and 113-117 Valley Road, to better understand soil conditions and assess any potential impacts from prior land uses including the presence of possible underground (fuel) storage tanks (UST).

3.1 Investigation positions

The outstanding investigation areas, sampling and testing plan is shown in **Figure 3** below and described in **Table 4**.

Table 4. Post-demolition investigation plan.

Soil in building footprints and across the open areas of 198-202 Dominion Road and 113-117 Valley Road	• Upon completion of demolition of building slabs, the *SQEP shall inspect the ground surface for presence of deleterious materials (e.g. ACM) and other indicators of contamination*. • Collection of soil samples throughout the depth of fill or the maximum depth of excavation on a grid basis. • Laboratory analysis by an IANZ accredited laboratory for metals and/or PAH and/or asbestos, with additional contaminant testing determined by the SQEP based on observations of the material.
UST locations (if any encountered)	• Inspection of ground surface below the concrete pad upon removal of the tank. Surface expressions of tank locations may not be obvious. • *SQEP-supervised excavation and removal of UST(s) if present* (refer **Section 3.2, Table 3(5)**). • Sampling, analysis and reporting of UST decommissioning and removal, in accordance with CLMG1.

3.2 Sampling methodology

Soil sampling shall be undertaken by a SQEP in accordance with CLMG5 as follows:

- Soil samples will be collected via trowel for surficial samples, and from test pits (machine-excavated or hand-dug) or hand-augered boreholes at the locations as depths as per **Section 3.1** above.
- Materials encountered will be logged in general accordance with the NZ Geotechnical Society "*Guidelines for the classification and field description of soils and rocks for engineering purposes*".
    - Wearing nitrile gloves, the SQEP shall collect soil samples directly from the excavator bucket, trowel or hand auger and place into laboratory-supplied glass jars to avoid cross contamination between sample positions (asbestos samples shall be collected in 500 mL plastic bags).
- Equipment (trowel, hand auger) shall be decontaminated between sample locations using Decon-90 (a phosphate-free detergent) and freshwater rinses, and nitrile gloves should be changed between samples.
- Courier samples chilled, under chain of custody documentation, the same day they are collected. Samples to be submitted to an IANZ accredited laboratory for testing.

3.3 Reporting

The findings of the additional investigations shall be *reported by the SQEP in an addendum DSI* along with a revision of this SMP, if necessary and an updated contractor Checklist. The Checklist will clearly set out what aspects of remediation (if any) is required and shall reference the relevant procedures in **Sections 4 – 9**.

Council shall be provided with the addendum DSI and updated SMP and Checklist. ***Any amendments (new procedures added) to this SMP would need to be approved by Auckland Council prior to remediation commencing***.

Figure 3: Post-demolition sampling plan (Aerial image source: LINZ).

4. Remediation Procedures

Remediation is defined as actions to reduce, contain or remove areas where soil exceeding the NESCS soil contaminant standards for commercial use. Where environmental criteria are exceeded, the action of development of the land will increase impermeable surfaces and thus prevent mobilisation of contaminants.

These procedures only apply if remediation is deemed necessary upon review of post-demolition investigation data collected as per procedures in Section 3.1.

4.1 Remediation objectives and rationale

The objective of the remediation is to make the site suitable for residents of the proposed apartment complex. This will be in a high-density residential situation with no opportunity for residents to interact with in situ soils or undertake gardening. For these reasons the NESCS commercial/industrial land use criteria are applicable to the site.

The rationale for the procedures in **Section 4.2** and controls in **Section 4.3** is to:

1. Protect workers during soil disturbance.
2. Prevent effects on neighbouring residents/site users.
3. Remediate any soils exceeding commercial land use, or more sensitive if the development plans change.
4. Protect the environment and down gradient receptors during earthworks and post the site's development.

The procedures in this plan are provided to achieve the above.

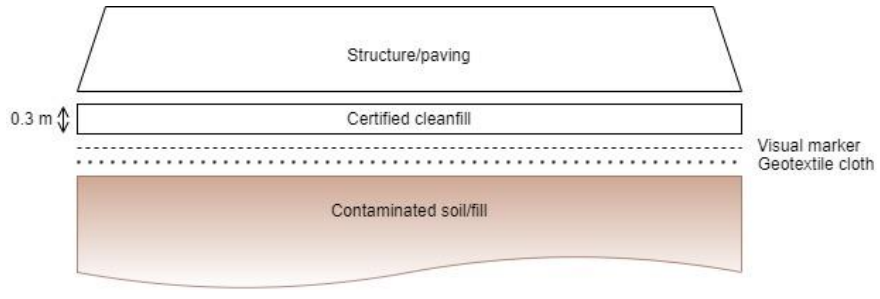
4.2 Remediation methods

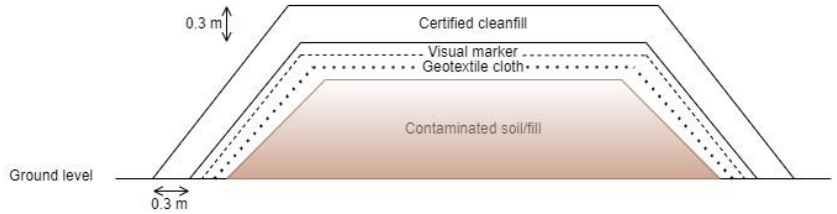
This SMP is intended to provide flexibility regarding remedial actions and can be upgraded to a remediation action plan (RAP) if the additional investigations to be undertaken indicates specific remediation is required. The procedures in **Table 5** shall be followed should remediation be necessary.

The contractor checklist sets out the key actions for the Contractor (**Appendix A**), to be populated once the findings of additional investigations are known.

Table 5: Remediation procedures

1. Site establishment	• Appropriate site fencing and hazard boards set up. Site access to prevent anyone not directly involved in removal works from entering the site. • Fencing shall consider dust mitigation cloth/polythene, i.e. controls shall be left in place as for the building demolition. • Induction for all site workers on the requirements of this plan. The *SQEP shall go over the Checklist with the site manager*. Further inductions (such as for visitors) may be by the site manager or nominated health and safety officer. • A disposal permit shall be obtained from an appropriate offsite disposal site (if materials require disposal) prior to works commencing. • Establish PPE equipment stores and decontamination/ changing facilities (refer **Section 6** for PPE requirements). • Establish controls; dust suppression, erosion and sediment controls as per **Section 4.3**.
2. Contaminated soil excavation and removal	• Works shall not occur in windy conditions, particularly if asbestos removal is required. • Soil shall be removed by excavator and placed directly onto trucks (hot loaded) where possible. • Stockpiling may be possible depending on contaminant types as per item 3 in **Table 8 (Section 5**) • All excavation, loading of trucks and stockpiling must occur within the area where asbestos (if applicable) and erosion and sediment controls are in place.

	• Tracking documentation shall be in place and load summaries provided to the SQEP on completion.
3. Asbestos in soils remediation	• The *SQEP shall be notified prior to asbestos demolition of buildings occurring*. The *SQEP shall review the contractor's asbestos removal control plan (ARCP)* and discuss the timing of building and soils removal. A Worksafe NZ licensed asbestos removalist must undertake asbestos removal from buildings. • The *SQEP shall define the level of asbestos control* required for soils as per **Table 7**. Disturbance of asbestos contaminated soils are classified in the NZAG on the basis of the concentration of asbestos fines, asbestos fibres, and/or ACM fragments present in soil. • Controls must be put in place and access to the works area minimised to only those contractors and workers undertaking the works. • Controls relevant to the work class must be established and maintained as per **Table 7** and trucking/ handling procedures as in 2 above adhered to. • Validation shall be by the SQEP following removal of soils and in accordance with **Section 9**. • Controls shall remain in place until all validation results are received. The threshold for all site uses is 0.001% w/w. Additional scrapes and re-validation sampling may be necessary or alternatively encapsulation may be considered (refer 4 below). • The *SQEP shall include the asbestos clearance results*, including any air monitoring results and site inspection records, in the validation report outlined in **Section 9**.
4. Onsite containment of contaminated materials	Retention of some or all contaminated materials may be appropriate, providing the materials are contained such that contact by site users and surface and groundwater is prevented. ***Given the extent and depth of the proposed basement structure containment is not expected to be chosen as a remedial option but methods are included here for completeness in the event it is appropriate***. Containment may include: • ***In situ encapsulation***: Provided geotechnical/engineering considerations do not require removal of fill/topsoil, contaminated materials may remain in place below an impermeable surface or structure (i.e. – building, paving). A minimum of 0.3 m of certified cleanfill/hardfill shall be placed between contaminated materials and the final structure, with a layer of geotextile and visual marker layer (orange plastic mesh or similar) separating clean and contaminated materials. • ***Below ground burial on another portion of the site***: Contaminated materials may be excavated and moved to another portion of the site (except for those containing free phase hydrocarbons), where geotechnical concerns do not preclude presence of non-engineered fill. Where materials are encapsulated they must, as above, be placed no shallower than 0.3 m BGL and covered with geotextile and a visual marker layer (orange plastic mesh or similar), prior to overfilling with clean hardfill or soil. They shall not be placed within 0.5 – 1.0 m (depending on soil conditions) of the water table. • ***Above ground encapsulation within landscaping feature(s)***: Contaminated materials may be encapsulated above ground within landscaping features such as perimeter earth bunds, again provided they do not contain free phase hydrocarbons. Contaminated materials shall be covered with geotextile and visual marker layer, prior to covering with a minimum of 0.3 m of certified cleanfill/soil. Where contaminated materials are encapsulated in situ further approval from Council is unlikely, however where materials are to be removed and placed elsewhere on the site a remediation plan would need to be provided to Council for review and approval prior to being placed. Details of onsite containment structures and contents, including as-built drawings shall be detailed within a Long Term Monitoring Plan (LTMPs) as discussed in **Section 9.3**.  **In situ encapsulation schematic.**

	 **Below ground burial schematic.**  **Above ground encapsulation schematic.**
5. UST removal	The site history review suggests that more than one UST has been present on the site in the past. ***There is no evidence to indicate whether or not former USTs have been removed thus this procedure is provided in the event they are encountered.*** USTs shall be removed according to the following procedure: 1. Cordon off the area as per item 1 above. 2. Monitoring shall be by the SQEP as per **Section 7**. 3. Any remaining concrete and surface coverings removed and surface excavated to the top of the tank. 4. Tank inspected to see if any fuel or contaminated water remains. If so, tank should be pumped out to liquid waste before works continue. 5. Using a narrow excavator bucket, remove soils around the sides of the tank to the tank base. 6. Remove the tank and disposal offsite to a licensed waste facility. Tracking documents need to be retained for validation reporting. 7. Excavate contaminated soils around the tank *under the guidance of the SQEP*. 8. On completion of tank and soil removal, *the SQEP shall carry out validation testing* to enable disposal of remaining materials if the tank is within the excavation depth. If it extends below the excavation depth then validation to confirm remaining ground conditions will be required. Testing shall be for metals, TPH and BTEX with results required to meet AUP discharge criteria and NESCS for commercial use (including consideration of exposure scenarios for indoor air inhalation). The tank excavation shall remain open and fenced off until satisfactory results are received. Further validation testing and further removal if required. 9. Backfill of the excavation with cleanfill or hardfill or if within the basement excavation then no backfilling would be necessary.
6. Health and safety	Refer **Section 6.**
7. Vehicle decontamination	For machinery (e.g., excavator) that is used where separate phase hydrocarbons are present, decontamination shall comprise washing prior to leaving the site. Washing shall be undertaken within the area of erosion and sediment controls with water treated and discharged to trade waste or a licensed facility via sucker truck. Successful decontamination of all machinery/equipment used for soil disturbance of material shall be confirmed by *visual assessment undertaken by the SQEP prior* to the machinery/ equipment leaving site.

Note: Soil stabilisation is another remedial method; lime is added to soil to raise the pH and thus reduce the leachability of metal and some other contaminants. Stabilisation may be difficult in an urban area given the issues around control of dust during addition of lime and would only be suitable if stabilisation occurred in situ or within a covered area. The use or applicability of this method could be assessed following receipt of the additional data should the earthworks plan and contaminant levels suggest this could be a viable method.

4.3 Remediation controls

Aside from asbestos, controls for soil disturbance must follow standard practices set out in Auckland Council Guideline Document 2016/005 – *Erosion and Sediment Control Guide for Land Disturbing Activities in the*

Auckland Region[8] (the GD05) with additional measures as outlined in **Table 6**. Asbestos control requirements are discussed in **Table 7**.

Table 6: Remediation controls

1. Management of erosion and sediment controls	Erosion and sediment controls installed in accordance with the GD05. • Any operating stormwater drains onsite shall be blocked to avoid the discharge of water that has come into contact with contaminated soil. • Soil disturbance work in heavy rain shall be avoided. • Surface water shall be diverted around stockpiles. • Erosion and sediment controls shall be checked regularly and made sure that are in good working condition. • Erosion and sediment control measures shall remain in place until surface reinstatement is established.
2. Asbestos controls (for soil)	The purpose of asbestos controls is to prevent fibres becoming airborne and potentially being inhaled by site workers, and in the future by subdivision users. Asbestos-specific control requirements for the fibre concentration groupings are set out in NZAG are in **Table 7**. Dust controls (as below) could be enhanced through use of polymer sprays prior to excavation to bind fibres if the concentrations are high.
3. Dust controls	Dust control measures shall be in accordance with the *Good Practice Guide for Assessing and Managing Dust* (Ministry for the Environment, 2016). There shall be a particular focus on dust mitigation to reduce the potential for site workers to inhale contaminated dust. • A water truck shall be available on all days when rain is not forecast and shall provide frequent spraying of water to ensure the working surfaces remain damp. • Use of tarps/ covers on all trucks to prevent dust generation during transport of soil to landfill. • Use of a water truck or portable water sprays in trafficked areas to dampen dust. • Dust cannons may also be useful in targeted areas, i.e. associated with asbestos removal. • Monitoring shall be by the contactor, *overseen by the SQEP*, as per **Section 7**.
4. Stockpiling procedures	Stockpiling of contaminated material shall be avoided wherever possible and all soils containing free phase hydrocarbons shall be immediately placed on trucks for disposal. The following procedures shall be applied during temporary stockpiling: • Where possible stockpiles shall be placed within excavations to avoid the potential for rainfall induced runoff. • For stockpiles formed on ground surface, the following controls shall be in place: - Stockpiles shall be placed within a designated area as defined on the ESCP. - Bunding shall be present to control runoff of surface water falling on them. - Covers shall be placed over the stockpile to prevent rainfall runoff and dust if stockpiles are maintained longer than one working day.
5. Offsite Disposal	Offsite disposal of contaminated materials will require pre-approval from appropriately licenced fill site operator(s). The nearest licenced landfill is Redvale (operated by Waste Management, with Hampton Downs managed by Envirowaste in north Waikato also an option); the managed fill site at Ridge Road, Bombay, may accept these materials also, at a considerably lower cost (contingent on the results of post-demolition investigations).

[8] Leersnyder, H., Bunting, K., Parsonson, M., and Stewart, C. (2018). Erosion and sediment control guide for land disturbing activities in the Auckland region. Auckland Council Guideline Document GD2016/005. Incorporating amendment 1. Prepared by Beca Ltd and SouthernSkies Environmental for Auckland Council.

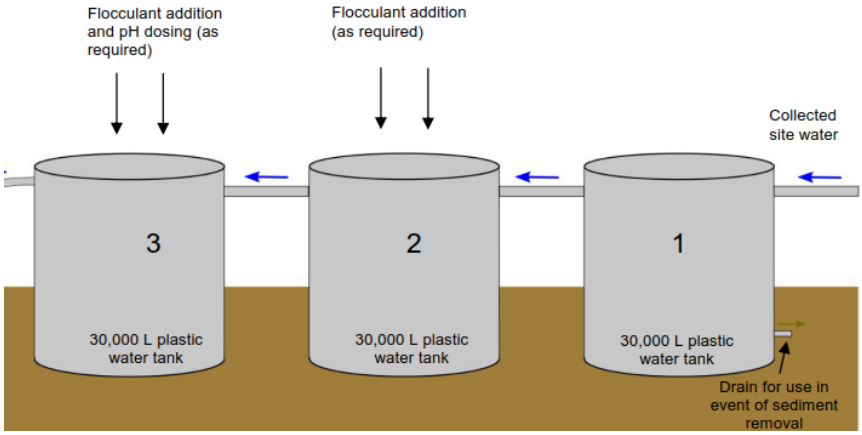
6. Water management	Surface water that intercepts contaminated soil may entrain contaminated sediment or become contaminated itself. • Water (ground and surface) collecting in excavations may typically be managed via soakage if of a short duration. Water that cannot be managed by soakage will require testing and treatment prior to discharge to stormwater. *The SQEP shall be contacted if water requires discharge or disposal offsite*. A typical treatment method includes collection (in a series of tanks), settlement and flocculant addition to enhance settlement if required (see below). • Water for disposal to stormwater must meet the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/search) for the 80% protection threshold for freshwater species, with the exception of benzene where the 95% protection level shall apply, and be free from petroleum hydrocarbon sheen and separate phase hydrocarbons. Monitoring is required as per **Section 7**. • Water not meeting stormwater quality would require disposal to trade waste via a temporary permit. Water treatment will again be necessary prior to discharge, with a system such as in the schematic below likely to be suitable. • Alternatively, a licenced liquid waste contractor can be engaged to remove water from the site for disposal (but this is expected to be an expensive option).  **Schematic: Suggested water treatment is required prior to discharge to stormwater or tradewaste.**
7. SPH management	The key issues during the disturbance or removal of soils containing free phase or separate phase hydrocarbons are: 1. Development of hazardous atmospheres, particularly within excavations and voids. 2. Odour generation. 3. Soil handling, transport and disposal management.
8. Odorous materials procedure	Implemented if odorous soils are encountered (considered unlikely): • Monitor weather conditions including wind direction and wind speed on-site. • Minimise works in strong winds as they will enhance odour transport to neighbouring sites. • Undertake major excavation works during early mornings and late evening periods when the wind speed is expected to be lower. • Minimise the generation of odour and vapour by maintaining minimal open areas. This will include reducing the volume of material being excavated during wind conditions that have a greater potential for odour effects (e.g. specific wind directions, low wind speeds, early morning during warming conditions). • Application of dust/vapour/odour suppression measures such as: - Use of water sprays; and/or - Use of deodorisers delivered via demisting sprays around the excavation plant if water sprays are insufficient. Air Repair FS Gold odour suppressants (or equivalent) will be used conservatively assuming a dosing rate of 100:1. • Monitoring of odour/vapour according to **Section 7**. • If an odour is detected at the site boundary, the contingency measures in **Section 8** shall be implemented.

Table 7: Summary of asbestos works categorisation and controls required

Works category	Definition	Worksafe notification required?	Licensed removalist required?	Supervision level	Air monitoring required?	PPE required	Key controls
Unlicensed Works	For soils with ≤0.001% w/w AF/FA[9] and/or ≤0.01% w/w bonded ACM	No	No	SQEP	No	No asbestos specific PPE is required.	Standard earthworks controls as per **Section 4**.
Asbestos-Related Works	For soils with >0.001% w/w AF/FA and/or 0.01% w/w bonded ACM	No	No	SQEP	No	No asbestos specific PPE is required but a P2 respirator is recommended.	Standard earthworks controls with additional vigilance regarding dust emissions.
Class B Works	For soils with >0.01% w/w AF/FA and/or 1% w/w bonded ACM	Yes	Yes	SQEP meeting competency under Regulation 41(3) Asbestos Regulations	Recommended	Half face P3 mask and disposable overalls and boot covers. Decontamination tent needed.	Dust mitigation including application of polymers/ surfactants to soil prior to excavation.
Class A Works	For soils with >1% w/w AF/FA (friable)	Yes	Yes	SQEP meeting competency under Regulation 41(3) Asbestos Regulations	Yes	Full face P3 mask and disposable overalls and boot covers. Decontamination tent needed.	Dust mitigation including application of polymers/ surfactants to soil prior to excavation.

[9] AF/FA refers to the combined concentration of asbestos fines (AF) and fibrous asbestos (FA).

5. Bulk Earthworks Soil Management

Following remediation (if any) standard controls are applicable as per Table 8. These procedures will also apply to soil disturbance/earthworks where low levels of contaminants may exist (those below human health evaluation criteria, but including those above the AUP discharge criteria, if any).

Bulk earthworks may commence after the completion of remedial actions (if required) described in Section 4.

The procedures in this section are standard earthworks practices with the exception of disposal requirements.

Table 8: Soil disturbance controls and procedures

1. Pre-works requirements	• *Advise the SQEP of the work programme*. The SQEP may need to assist with disposal permitting and must respond to unexpected contamination should it be encountered (**Section 8**). • Arrange disposal permits for soil to be taken offsite (see item 3 below). • Ensure erosion and sediment controls are in place as per the approved ESCP and as per GD05.
2. General materials handling, excavation and transportation procedures	The following shall be adhered to during excavation and offsite transportation of excavated of soils: • Project-relevant earthworks controls shall be in place during excavation. • Trucks transporting surplus soil offsite shall be loaded within the site where runoff and possible spills during loading shall be controlled and contained. • The Contractor shall ensure that any soil exceeding background levels, or any unexpected contaminated soil, is disposed to managed or fill and is transported in covered trucks and accompanied by tracking documentation. • Materials defined as suitable for cleanfill should be targeted where possible for offsite disposal as opposed to those that exceed background, to ensure cost efficiencies. • Trucks shall have their wheels maintained clean of debris and there shall be no tracking of material onto roads or footpaths. • All disposal dockets shall be retained, with *weighbridge summaries provided to the SQEP* for closure reporting as per **Section 9**.
3. Soil disposal and reuse	Upon completion of any remedial works (if required, refer **Section 4**) and as *verified by a SQEP, soils can potentially be reused onsite*. The suitability for reuse is dependent on the findings of the post-demolition soil testing and geotechnical properties. Soils requiring offsite disposal to be treated as follows: • Fill requires disposal to licensed landfill unless soil testing data shows managed fill is acceptable. • Odorous hydrocarbon impacted soils (if any) will require licensed landfill disposal. • Natural in situ subsoils are expected to be accepted by a cleanfill, confirmed by post-demolition soil testing. Soil data within the addendum DSI can be provided to fill site operator(s) to confirm acceptance.
4. Imported materials procedure	Any material imported to the site shall originate from: • A site which has been determined by a *SQEP* to have had no known history of potentially contaminating activities, as detailed on the HAIL. • A site which has been adequately investigated by a SQEP, in accordance with CLMG5, and material that meets the 'Cleanfill material' definition as described by the Ministry for the Environment in their "Guide to the Management of Cleanfills (2002)". This process shall include: - Sampling at a rate of 1 sample for every 500 m^3. - Testing for metals and PAH, depending on the land use at the material's source, testing for OCPs and asbestos content may also be required. - It is preferable that the fill is tested at its source prior to its use at the site. However, if not, then the Contractor shall stockpile the fill on site until test results are available. • Hardfill imported for backfill, if sourced directly from a quarry or supplier, does not require testing. • *Contact the SQEP* should there be any uncertainty about the certification of imported materials. • A weighbridge or load count summary of imported materials shall be provided to the *SQEP on completion of works*.

5.	**Management of erosion and sediment controls**	Erosion and sediment controls installed as per the ESCP and shall be managed as follows: • Any additional controls shall be in accordance with GD05. • Any operating stormwater drains onsite shall be covered by filter cloth to avoid the discharge of water that has come into contact with soil. • Vehicles shall be inspected prior to leaving the works area and wheels brushed/cleaned as required to avoid the potential for sediment to leave the site on vehicle tyres and enter the existing stormwater system. • Soil disturbance work in heavy rain shall be avoided. • The site shall be kept clean of debris and stockpiles unless necessary. • Erosion and sediment controls shall be checked regularly and made sure that are in good working condition. To ensure good practice: - The entry/exit point shall be reapplied with aggregate, or in the case of a pavement entrance, cleaned if excessive sediment build-up occurs. - Erosion and sediment control measures shall be upgraded/ modified where necessary. - Sediment fences will be replaced if the fabric is ripped or otherwise damaged. They shall be retrenched if needed. • Weather conditions along with the performance of the erosion and sediment control measures shall be monitored. • Erosion and sediment control measures shall remain in place until surface reinstatement is established.
6.	**Dust controls**	Dust generation shall be prevented at all times, via regular wetting of excavated areas, stockpiles, and haul roads as per MfE's *Good Practice Guide for Assessing and Managing Dust*.
7.	**Stockpiling procedures**	Standard procedures shall apply for stockpiling unless contamination is present, in which case the stockpiling procedures and controls described in item 4 in **Table 4 (Section 4.3)** shall be implemented. As a minimum, stockpiles shall be placed within a designated area defined on the ESCP.
8.	**Water management**	Refer item 6 in **Table 6 (Section 4.3)**

6. Health and Safety

6.1 Overview

Health and safety management for the works is informed by:

- The site Hazard Register. Available in the site office and attached to the daily contractor and visitor sign-in book.
- Contractor works-specific SSSPs. These documents are produced by the contractor, including any Safe Works Method Statements (SWMS) specific to their activities.
- The Contamination-specific requirements (detailed below). These will be updated upon discovery of further (unexpected) contamination if necessary.

6.2 Contamination-specific requirements

If contaminants are confirmed to be present at concentrations posing a potential risk to human health via post-demolition investigations (refer **Section 3**), the following specific measures will be required for disturbance, handling, transport and placement of soils/fill therefrom, and what protocols need to be in place for the balance of works (i.e. – outside the contaminated area areas).

Table 9. Contaminated materials health and safety requirements

Asbestos-related health and safety	The PPE requirements during disturbance of asbestos in soil are dependent on the level of contamination identified during post-demolition sampling. The PPE requirements are described in **Table 7** (**Section 4.3**)
General	Outside of any asbestos impacted areas contamination-specific protocols are not necessary, however, it is considered good practice to adhere to the following general principles when disturbing soil that contains elevated levels of contaminants: • Avoiding direct dermal contact with contaminated soil. If soil is to be handled then disposable gloves shall be worn. • Observing good hygiene practices such as separating works areas from break areas and ensuring all workers shall wash their hands and faces before eating, drinking, or smoking. • Report any dust discharges to the site manager and ensure they are addressed via dampening immediately. • Use of sprinklers/water trucks to prevent generation of dust and measures to prevent other soil discharges as outlined in **Table 8** are maintained.
Working with materials containing hydrocarbon odours	Workers may be exposed to vapours that can commonly bring on headaches and nausea. The following should be followed when remediating hydrocarbon-impacted soils: • Workers shall be aware of the potential risks and be confident to cease works as soon as there is any sign of a headache or nausea. • No worker shall enter an excavation that is impacted by hydrocarbons without the appropriate confined-spaces training and procedures. These will be advised separately on a case-by-case basis. • Half-face respirators with organic cartridges shall be provided if required. • Excavations shall be kept open and able to naturally vent periodically when being worked. Forced ventilation could be considered for strongly odorous materials or where triggers in **Table 10** (**Section 8.2**) are exceeded.
Personal decontamination (for workers involved in remediation)	All personnel involved in ground disturbance activities associated where contamination exceeds the human health and environmental protection levels must remove PPE and decontaminated before leaving the site. Decontamination facilities shall comprise, as a minimum: • Facilities for storing and changing PPE. • Boot wash facilities. • A hand and face wash facility.

	• Bins for disposal of contaminated gloves and other consumables. • All personnel need to complete the personal decontamination procedures whenever they stop work, i.e. for meal breaks, toilet breaks etc. Decontamination shall be undertaken immediately in the event of any body parts coming in direct contact with any soil and/or groundwater. Personnel decontamination shall comprise: • Rinsing and/or scrubbing of boots, gloves and other PPE to remove dirt and dust residues. • Removal of all PPE with disposable items such as gloves and dust mask (if worn) placed in a plastic bag or drum for waste collection. • Thorough washing of hands and face with soap and water. • All waste materials shall be considered as contaminated and disposed appropriately.

6.3 Induction and general behaviour

All contractors and visitors to the site shall be inducted as per item 1 in **Table 5** (**Section 4.2**). Workers shall be appropriately trained and qualified in their area of work and be provided training by the SQEP at the pre-works induction, and by the site manager for new subcontractors, on identifying and responding to unexpected ground contamination (**Section 8**).

The following general safety procedures shall be followed by construction staff and visitors:

- Any incidents shall be reported to the HSO;
- Site workers shall avoid unnecessary contact with unexpected contamination and shall generally avoid handling known or suspected contaminated soil or water;
- No person to enter and work on the site alone; and

Workers to be provided with appropriate training on hazards and reporting on any issues or discomfort experienced.

7. Monitoring

Monitoring is required during any remediation of contaminants that exceed the human health and environmental protection levels. The monitoring obligations are set out below.

The actions for the contractor in Section 7.1 apply to all works where soil disturbance occurs, i.e. general/bulk earthworks.

7.1 Contractor obligations and documentation

The Contractor is responsible for implementation of the monitoring programme and maintaining records to confirm monitoring was carried out. We recommend this is via a daily log form.

The Contractor shall ensure that during the works:

- No discharges from any activity on site shall give rise to visible emissions, other than water vapour, to an extent which is noxious, dangerous, offensive or objectionable.
- Beyond the boundary of the site, there shall be no hazardous air pollutant, caused by discharges from the site that causes, or is likely to cause, adverse effects on human health, environment or property.

There is no discharge of contaminants to the stormwater system *unless testing by the SQEP* confirms this is appropriate. Once contaminated materials are removed this is expected to be approved.

7.2 SQEP obligations

The *SQEP shall visit the site on a regular basis* to confirm the procedures in the SMP are being following and to respond to issues of unexpected contamination. The SQEP shall maintain site visit records of each visit for including in the site validation report (SVR) outlined in **Section 9**.

The SQEP may also assist in monitoring for asbestos, both if requested by the contractor and as spot-checks.

Table 9. SQEP obligations.

Asbestos air monitoring	Air monitoring during disturbance and excavation/removal of asbestos-contaminated fill/soils is not expected to be necessary, as similar works (on comparable sites) are generally within the "asbestos-related-works" as per NZAG. This is because the potential for fibres to exceed the trace level of 0.01 fibres/ml is very low and based on the current data below the level that would trigger requirement for air monitoring based on NZAG (i.e. >0.01 % w/w in soil). However, if unexpected further asbestos contamination is identified or further soil testing undertaken identifies higher concentrations than detected to date or if dust management issues arise air monitoring shall be *undertaken by the SQEP* or a party independent to the contactor as follows: • A minimum of three monitors, one upwind and 2 downwind of the works area shall be in put around the working area. • Monitors shall be set for a minimum of four hours during soil disturbance. • Cassettes shall be analysed for asbestos fibre content at an IANZ accredited laboratory, the same day they were collected. If the trace level (0.1 fibres/ml) is exceeded in the air monitors then works shall cease and dust suppression measures increased, as advised by the SQEP and licensed asbestos removal contractor.
Odour monitoring	If UST removal is required and hydrocarbon odours (as per the definition in **Table 10**) are noted during removal, the SQEP shall: • Record the level of gases present using: - A photoionisation detector (PID[10] - fitted with a 10.6 eV lamp and calibrated against an isobutylene standard) shall be used to monitor ambient air in the work area for total volatile ionisable vapours

[10] It should be noted that PIDs are not contaminant specific and will therefore detect all ionisable compounds that are present in the air space of the work area. This may result in false exceedances of the action level as a result of detection of compounds which are present at higher, although

	to provide real-time screening and alarming for the potential cumulative mixture of volatile contaminants. - Explosive gases (carbon dioxide, carbon monoxide and oxygen) shall be undertaken at above ground levels during hours of operation using a multi-meter. • Contingency measures in **Section 8** shall be implemented if exceedances occur.

Table 10: Odour intensity evaluation descriptions

Very strong	Offensive odour that is unable to be tolerated. May cause headaches. Strong Clearly recognised type of odour and may be uncomfortable
Moderate	The type of odour is easily recognised but not uncomfortable
Slight	May be difficult to identify the type of odour
Very slight	The type of odour not able to be discerned nor is the source
Not detected	No measurable odour

Table 11: Air monitoring trigger values

Vapour	Action level	Measure with
Explosive gases	10 % LEL[2] 0 % LEL for hot works/ mechanical activities (piling, excavation)[3]	Multi-gas meter
CO2	0.5 %[2]	Multi-gas meter
O2	>19.5 %[2]	Multi-gas meter
H2S	10 ppm[2]	Multi-gas meter
VOCs	5 ppm[4]	PID

Notes:

1 AS/NZS 60079.10.:2009 Part 10.1: Classification of areas – Explosive gas atmospheres.
2. Worksafe Exposure Standard TWA.
3. Any hot works at or below ground level shall only be carried out when no combustible gases are detected. As defined by WorkSafe New Zealand, hot works includes welding, thermal or oxygen cutting, heating, including fire-producing or spark-producing operations that may increase the risk of fire or explosion.
4. Only a limited number of compounds have New Zealand Workplace Exposure Standards (WES) lower than 5 ppm and it is unlikely that these compounds will be present in sufficient quantities to exceed their individual WES. 5 ppm has therefore been adopted as a practical screening level to avoid false positives associated with weather effects and instrument drift.

still safe concentrations, or the detection of compounds introduced by other activities which are being undertaken within or adjacent to the work area (for example vehicle exhaust emissions, use of glues, solvents, or paints etc.). In these instances NIOSH certified detector tubes, such as Gastec or Draeger colour diffusion tubes (passive and/or active), may be used to monitor exposures to specific contaminants.

8. Contingency Measures

8.1 Contingency triggers and responsibilities

Unexpected contamination, complaints or an uncontrolled discharges will trigger implementation of contingency measures. Key identifiers for unexpected contamination that will trigger these measures include:

- Asbestos fibres and/or building products.
- Odours such as hydrocarbons or solvents.
- Discoloured soil such as black, blue or green staining, or any staining that appears out of the ordinary.
- Underground structures such as fuel tanks (USTs are already suspected).

Mitigation measures must be applied in accordance with the hierarchy of control described in the Health and Safety at Work (General Risk and Workplace Management) Regulation 2016: **Eliminate, Isolate, Minimise**.

Responsibility for identifying and enacting contingency measures lies with the Contractor. The contractor shall apply the notification process outlined below.

- *The SQEP shall be notified* immediately in the event that any unexpected contamination or contingency measures are required to be implemented.
- Auckland Council shall be notified in writing within 24 hours of contingency measures being implemented.
- Worksafe NZ may also need to be notified, depending on the nature of contamination or possible exposure by workers.

8.2 Emergency response

Should an incident occur on site which may result in any unauthorised discharges (water, soil, hydrocarbons etc.), the Contractor's site supervisor will take control of the situation and coordinate the efforts of all on site to minimise the impact. *The SQEP shall be notified and inspect the discharges and advise on mitigation*.

In the unlikely event that sustained and uncontrollable discharges (exceeding the specified action levels) occur from the site, emergency response and evacuation procedures, including provisions for notifying and managing neighbouring site users, shall be implemented.

The emergency response and evacuation procedures shall be specified in the project-specific health and safety plan.

8.3 Complaints procedure

The contact details for occupants of the neighbouring sites shall be established by the Contractor prior to commencement of the works. These parties shall be advised of the 24-hour emergency contact number for the project and the associated complaints procedure at this time.

In regard to the general public, signage advising the 24-hour emergency contact number for the project must be posted around the fenced site frontages.

A written record of all complaints received shall be maintained. The Contractor's site supervisor shall initiate an investigation as soon as practicable on receipt of a complaint, but as a minimum shall notify Auckland Council within 24 hours of the complaint being received, including providing details of any corrective actions taken.

Appropriate feedback will be provided to the complainant, such as the response made and any corrective actions taken, in response to the complaint.

8.4 Unexpected contamination

In the event of unexpected (visual and olfactory indicators) contamination the Contractor shall follow the notification process in **Section 8.1**, and the workflow in **Table 12** shall be implemented by the Contractor.

The *SQEP shall inspect to ensure the controls in place remain appropriate to the type and level of contamination encountered*. All site staff involved in earthworks shall be inducted prior to works commencing as to the protocols for reporting on and managing unexpected contamination.

Table 12: Unexpected contamination work flow

STOP WORK (in the immediate area)	1. Remove all unnecessary site staff from the immediate area (5 x 5 m) of the unexpected contamination.
ISOLATE	2. Install temporary fencing, taping or cones to identify the area.
NOTIFY	3. Advise the Site Manager. 4. Liaise with the *SQEP*. 5. Update the site hazard board to warn workers and visitors.
REVIEW CONTROLS	6. The *SQEP shall review controls* with the Site Manager. 7. The Contractor shall implement additions controls if required.
ASBESTOS	If ACM is observed in soil: - P2 dust masks (minimum) shall be provided to all workers required to enter the isolated area. - The *level of control shall be reviewed by the SQEP*. This shall include inspection and review of the works. - Additional testing may be required and this shall be *undertaken by the SQEP* in accordance with the NZAG. - If the above assessment indicates that it is possible that asbestos in soil will be encountered at concentrations exceeding the relevant standards, an Asbestos Removal Control Plan shall be prepared to support removal of the materials in accordance with asbestos control requirements in **Section 4**. A Licensed Asbestos Removal Supervisor must be engaged if works are classified as Class A or B.

Likely identifiers of soil contamination include but are not limited to the following images described below.

If unexpected contamination is encountered, works controls should be reviewed and amended appropriately to the type of contamination present (refer above). The SQEP shall advise on any additional mitigation required.

Odours/sheen such as hydrocarbons or solvents.

Asbestos fibres and/or building products.

Discoloured soil such as black, blue or green staining, or any staining that appears out of the ordinary.

Underground structures such as fuel tanks/drums, or other buried waste.

Fill materials.

Fill materials.

8.5 Odour discharges

The following hierarchy of actions is proposed in the event that odour discharges occur from the works:

1. Consider increased wetting of the exposed materials by use of water carts or hosing etc.
2. Minimise the open areas of excavations as much as practicable, including whenever possible covering or temporarily backfilling excavations when not excavating.
3. Automated suppression systems may need to be implemented.
4. The use of automated suppression systems such as rotary atomisers or spray line systems with suitable odour suppressants.

The *SQEP shall be consulted* to assist with defining appropriate control measures.

8.6 Water discharges

Water discharge will generally be managed via soakage; if soakage is not sufficient, and the quality of water being discharged from the site cannot meet the standards required for discharge to stormwater the following shall be employed:

1. Improving effluent quality through additional treatment (refer item 6 in **Table 6** (**Section 4.3)**.
2. Collection (for example by tanker trucks) for off-site disposal to an appropriately licensed facility.

The *SQEP shall be consulted* to assist with defining appropriate control measures if the standards required for discharge to stormwater cannot be met.

9. Closure Reporting

Validation is the process of confirming the objectives of any remedial actions have been achieved, confirming resulting ground conditions have met the remedial target, where applicable and confirming the procedures in this SMP were followed including remediation (if required).

9.1 Validation programme

All validation (visual and sampling) shall be undertaken by the SQEP. Validation sampling is only required for those areas requiring remedial works (to be determined upon post-demolition investigations) where visual validation is not possible.

Inspections	The SQEP shall observe all remedial works and make regular inspection during general bulk earthworks to confirm that works are being carried out as per this plan.
Asbestos validation	On completion of asbestos in soils removal and *if directed by the SQEP*, validation samples shall be collected at 5 m intervals throughout the disturbed area with samples tested for semi-quantitative analysis of asbestos at an IANZ accredited laboratory.
Other contaminants validation sampling	Generally: • Soil sampling of the remediated soil surface shall be undertaken by the SQEP on no larger than a 10 x 10 m grid spacing. • Laboratory analysis must show that the soils remaining onsite meet commercial land use criteria for contaminants of concern. • If the target is not met, a further 100 mm site scrape and visual inspection shall be carried out in the exceeding area before re-validation sampling occurs. • Laboratory testing for target contaminants at an IANZ accredited laboratory.
USTs	Where USTs are removed sampling shall be from the pit walls and floor and at 5 m intervals along any fuel lines. All validation samples shall be tested for total petroleum hydrocarbons and monoaromatics (benzene, toluene, ethylbenzene and xylene).

9.2 Site validation report

Upon completion of the clearance works a Site Validation Report (SVR) shall be prepared confirming the works were undertaken according to the final SMP, unexpected contamination encounters (if any) and any remedial measures implemented. Preparation of the SVR will also be required to be in accordance with the conditions of the consent. The SVR will document the final contaminant status of the site, and suitability (from a contamination standpoint) of the site for ongoing residential occupation.

The following information is required from the Contractor for inclusion in the SVR, including:

- As-built drawings and other information any on-site encapsulation of contaminated soils.
- Copies of weigh bridge summaries for the disposal destination of any surplus soil or water generated during the redevelopment works.
- Documentation confirming the source, where necessary testing data, and weighbridge summaries or load counts from the source of certified imported clean materials.
- Air monitoring records.
- Records of visits by Council representatives.
- Details of any complaints and actions in response to these.
- Details of any health and safety incident related to the contamination and how they were resolved.
- Details of unexpected encounters/events and the action taken.
- Any contingency actions implemented.

The Contractor shall *provide the required information to the SQEP* within one month of completion of groundworks.

The SVR(s) shall be submitted to ADC and shall be prepared to generally comply with the MfE Contaminated Land Management Guideline No. 1.

9.3 Long-term monitoring plan

Long term monitoring is not expected to be required given the geological conditions and the extent and depth of the basement. If any on-site encapsulation of contaminated soils is undertaken, the SQEP shall prepare a LTMP in accordance with MfE Contaminated Land Management Guideline No. 1.

The LTMP shall include as a minimum:

- A summary of the contaminated soil remaining on the site, including the soil validation results in the context of effects on residents, and location of contaminated soil on the site.
- An asbestos management plan for asbestos remaining on site (if required) prepared in accordance with the Health and Safety at Work (Asbestos) Regulations (2016) if asbestos remains on the site.
- As built details of encapsulation measures placed where contaminated soils remain (only where those exceed the NESCS soil contaminant standard for commercial/ industrial land use).
- Appropriate management measures for the site cover, and for future ground disturbing work.
- Ongoing monitoring requirements (if any).

The LTMP shall be prepared within 3 months of ground works completion.

Appendix A. Contractor checklist

WILLIAMSON
WATER & LAND ADVISORY

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Site Management Plan (Ground Contamination) – Contractor Checklist

Site ID:	198-202, 214-222 Dominion Road and 113-117 Valley Road, Mt Eden	Rev 1, 31 July 2024

Overview

Precinct Properties Ltd propose to construct three five-storey apartment buildings over the site, featuring a single-level interconnected basement.

The enabling and development works are expected to follow the general process below:

1. Demolition of buildings, structures, and hardstand areas;
2. Undertake additional soil sampling as per SMP **Section 3** where it is required to complete the assessment of ground conditions.
3. Removal and offsite disposal of all geotechnically unsuitable soil and fill. Any areas requiring remediation via offsite disposal would be completed first.
4. Bulk earthworks and ground engineering.
5. Building construction.
6. Paving and landscaping works.

This checklist provides a summary of the procedures detailed in the WWLA Site Management Plan (SMP) for the development, which outlines required post-demolition investigations, and the key materials management, reuse, health and safety and response to unexpected contamination encounters.

The contractor is responsible for following the requirements of the SMP alongside use of this Checklist, and reporting on compliance to the SQEP.

Where input is required by a *SQEP, it is highlighted below* and in the SMP.

Procedures understood by Contractor's Site Manager: …….……..	Date: ……..……
Induction *given by SQEP*: ……..……	Date: ……..……

Task	Description	Check
Site Establishment	• Establish earthworks controls in accordance with Auckland Council Guideline Document 2016/005 – *Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region*.	☐
	• *Inform the SQEP of works commencement* date and arrange contractor induction for this SMP.	☐
	• The contractors site manager shall induct new workers/subcontractors to requirements of this plan as works progress.	☐
	• Arrange disposal permits for offsite disposal of surplus soil/fill (excepting those areas requiring further investigation).	☐
Asbestos Management, Demolition	• Obtain an asbestos survey of the buildings and carry out demolition in accordance with the Asbestos Regulations. Demolition of asbestos containing structures must be by a Licensed Asbestos Removalist, certified by Worksafe NZ. • Asbestos clearance (for buildings) shall be obtained prior to bulk demolition.	☐
	• *SQEP (i.e. WWLA) shall be notified post removal of the buildings to inspect the soil and conduct sampling* as per **Section 3** of the SMP. • Soils asbestos clearance, separate from the building-related clearance, shall be provided by the SQEP prior to bulk earthworks commencement.	☐
Post-demolition investigations	*SQEP (i.e. WWLA) shall investigate building footprints* as per **Section 3** of the SMP. An addendum DSI shall be provided to Auckland Council upon completion of post-demolition investigations, along with an updated SMP and or remediation action plan (RAP) if required.	☐

Figure A1: Post-demolition investigation plan to be *implemented by the SQEP*.

Hold Point – Advice to be provided by the SQEP following the additional investigations.

Remediation (if required), refer SMP Section 4

Task	Description	Check
Remediation requirements	The following sections shall be updated upon completion of post-demolition investigations, following consultation with civil and geotechnical team(s).	☐
	UST removal: • If USTs are confirmed during/after demolition, the *SQEP shall direct removal of tank(s) and remediation of contaminated soils* • Refer to **Table 5** (**Section 4.2**) of the SMP for removal procedures; UST location(s) shall be fenced off/isolated until the *SQEP* confirms remediation achieved.	☐
	Onsite encapsulation of contaminated materials (*unlikely to occur*): • Identified area(s) for onsite encapsulation shall be prepared as per **Table 5** (**Section 4.2**) prior to excavation of contaminated soils. • Transport, placement and capping of contaminated materials shall be overseen by the *SQEP*; as-built information shall be provided to the SQEP upon completion.	☐
	Offsite disposal of contaminated soils: The SQEP shall advise following the post-demolition investigations, but disposal is expected to be: • Hydrocarbon and/or asbestos impacted soils to licensed landfill.	☐

	• Soil/fill with moderate metal contamination and/or trace asbestos contamination to a managed fill (able to accept low levels of contaminants).	
	Health and safety during remediation: Remediation specific health and safety requirements will be confirmed upon completion of post-demolition investigations (refer **Section 6** SMP).	☐
Hold Point – Confirmation to be provided by the SQEP confirming validation is complete and general procedures apply (this may be done in stages to faciliate commencement of general earthworks in other parts of the site).		
General Earthworks, refer SMP Section 5		
Task	**Description**	**Check**
General Earthworks Requirements	• Maintain standard earthworks controls (as per *GD05*). • Dust management shall be in accordance with the *Good Practice Guide for Assessing and Managing Dust*, Ministry for the Environment (2016).	☐
	Offsite soil disposal is expected as follows (pending fill site approval): • Fill requires disposal to licensed landfill unless soil testing data shows managed fill is acceptable. • Odorous hydrocarbon impacted soils (if any) will require licensed landfill disposal. • Natural in situ subsoils are expected to be accepted by a cleanfill, confirmed by post-demolition soil testing. A weighbridge or load count summary of imported materials *shall be provided to the SQEP* on completion of works.	☐
	Imported materials procedure: • Any material imported to the site shall originate from a proven uncontaminated site (refer **Table 8** (**Section 5**) of the SMP) or direct from quarry. • Certification documentation shall be provided to the SQEP prior to placement of any imported fill. • A weighbridge or load count summary of imported materials *shall be provided to the SQEP* on completion of works.	☐
Health and Safety	The PPE requirements during disturbance of asbestos in soil are dependent on the level of contamination identified during post-demolition sampling. The PPE requirements are described in **Table 7** (**Section 4.3**) of the SMP.	☐
	• All workers to adhere to personal hygiene principles, avoiding direct contact with contaminated fill/soil at all times	☐
Unexpected Contamination Response	Liaise with the *SQEP should any unexpected contamination be identified* and implement mitigation measures advised by the SQEP. Typical unexpected materials are shown in the images below and can include; odorous materials (i.e., hydrocarbons, solvent odour), discoloured soil (green, black), bulk asbestos or putrescible or demolition materials.	☐
	If unexpected contamination is encountered the following steps must be taken by the Contractor: • Cease works in the immediate vicinity of the suspected contamination and tape off. • *Notify the project manager (client representative) and the SQEP*. • Implement any contaminated land-related health and safety procedures and PPE if deemed necessary by the SQEP. • Update the Hazard Board to direct site workers should continued exclusion of the area be required. • Implement and maintain any additional controls required by the SQEP to manage contamination. • Notify Auckland Council via the *SQEP within 24 hours of implementing any contamination mitigation measures* • If additional asbestos is identified subsequent to the demolition and clearance, requirements of the Health and Safety at Work (Asbestos) Regulations 2016 must be adhered to. The *SQEP shall provide direction* and if required, a Licensed Asbestos Removal Supervisor shall be engaged.	☐

Odours/sheen such as hydrocarbons or solvents.

Asbestos fibres and/or building products.

Discoloured soil such as black, blue or green staining, or any staining that appears out of the ordinary.

Underground structures such as fuel tanks/drums, or other buried waste.

Fill materials.

Fill materials.

Task	Description	Check
Post Works: (*provide to SQEP*)	• Clearance certificates for asbestos removal from the buildings.	☐
	• As-built drawings and other information any on-site encapsulation of contaminated soils	☐
	• Copies of weigh bridge summaries for the disposal destination of any surplus soil or water.	☐
	• Documentation confirming the source and weighbridge summaries/load counts of certified imported clean materials.	☐

Task	Description	Check
	• Air monitoring records.	☐
	• Records of visits by Council representatives, including details of any complaints and actions in response to these	☐
	• Details of any health and safety incident related to the contamination and how they were resolved	☐
	• Details of unexpected encounters/events and the action taken	☐
	• Any contingency actions implemented	☐
	The *SQEP shall produce a site validation report (SVR*). The SVR shall be prepared in accordance with Ministry for the Environment Contaminated Land Management Guideline No. 1 – *Reporting on Contaminated Sites in New Zealand* (updated 2021).	☐