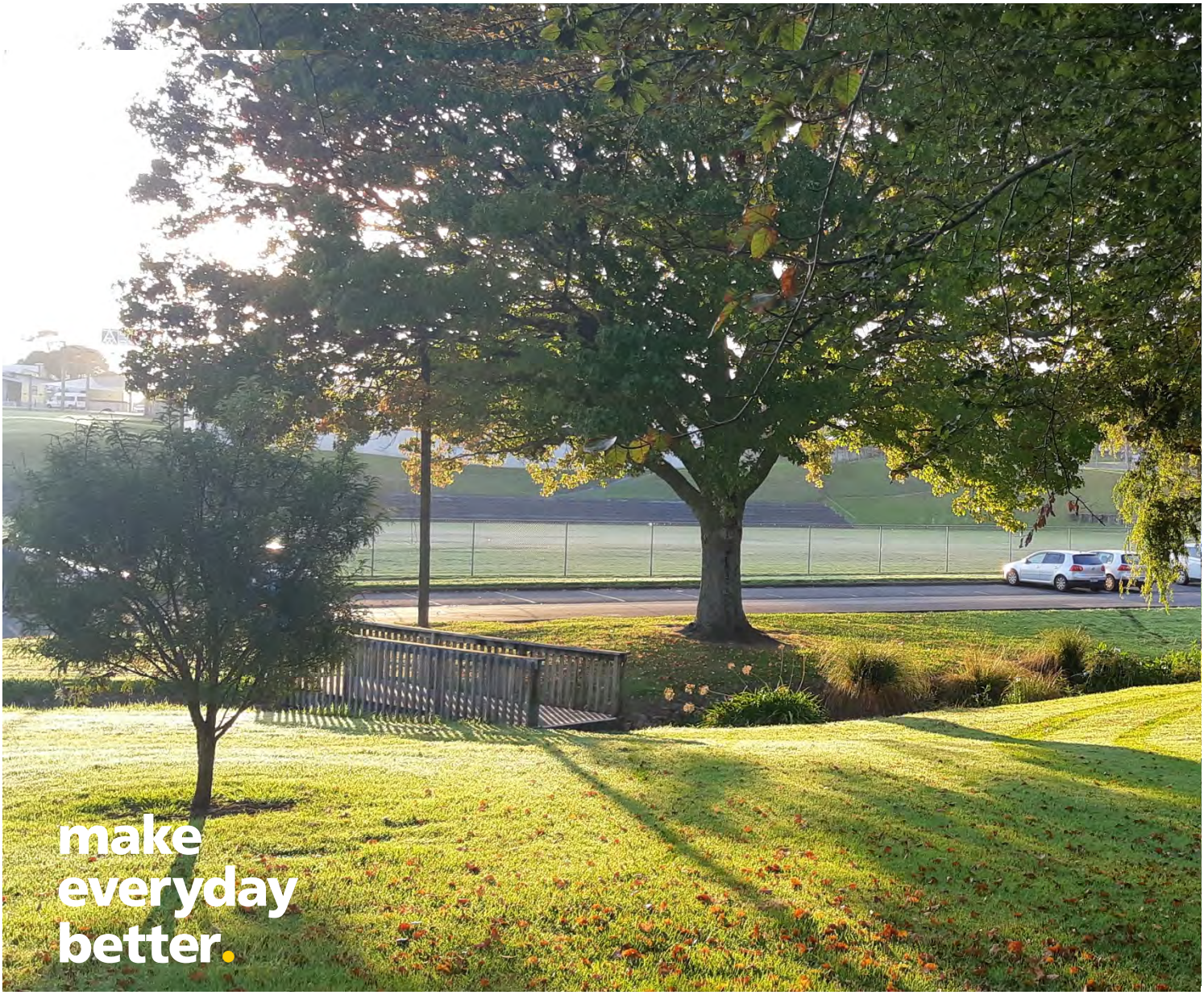
Carrington Site-wide Contaminated Soils Management Plan

Prepared for Marutūāhu Rōpū and Waiohua-Tāmaki Rōpū
Prepared by Beca Limited

26 January 2022



Creative people together transforming our world

Revision History

Revision Nº	Prepared By	Description	Date
1	Mia Uys	Initial	30/06/2021
2	Mia Uys	Document for Council Review	07/07/2021
3	Mia Uys	Updated Site Area	21/09/2021
4	Mia Uys	Updated with Council Comments	16/11/2021
5	Mia Uys	Updated with Council Comments	26/01/2022

Document Acceptance

Action	Name	Signed	Date
Prepared by	Mia Uys		26/01/2022
Reviewed by	Phillip Ware Suitably Qualified and Experienced Practitioner		26/01/2022
Approved by	Dale Paice	Dale Paice Digitally signed by Dale Paice DN: E=Dale.Paice@beca.com, CN=Dale Paice, OU=Users, OU=New Zealand, DC=beca, DC=net Date: 2022.01.26 15:58:02+13'00'	26/01/2022
on behalf of	Beca Limited		

Contents

Appendices

Glossary

Abbreviation	Definition
ACD	Asbestos Containing Dust. This is dust or debris that has settled within a workplace and is, or is assumed to be, contaminated with asbestos.
ACM	Asbestos Containing Material. This can be a product or material containing any amount or percentage of asbestos by volume. ACMs come in many different forms and contain varying levels of asbestos fibres.
ACOP	Approved Code of Practice. A document giving practical guidance on compliance. Specifically relates to the Health and Safety a Work (Asbestos) Regulations 2016.
AMP	Asbestos Management Plan.
AOA	Asset Owner Approval. Approval from Auckland Council to undertake works on a closed landfill.
ARCP	Asbestos Removal Control Plan
Asbestos	The fibrous form of the mineral silicates belonging to any one or a combination of the serpentine and amphibole groups of rock-forming minerals, including actinolite, amosite (brown asbestos), anthophyllite, crocidolite (blue asbestos), chrysotile (white asbestos), or tremolite.
Asbestos Assessor	Licensed by WorkSafe to undertake clearance inspections following Class A and Class B asbestos removal works
Asbestos Regulations	Regulations made under the Health & Safety at Work (Asbestos) Regulations 2016 which control management of and work with ACMs, their removal and disposal together with the responsibilities of employers, managers, employees, contractors, visitors, and designers.
Asbestos Waste	Waste containing asbestos is normally deemed as being hazardous waste and stringent regulations apply for carriage on the highways and its disposal.
asl	Above Sea Level.
AT	Auckland Transport.
AUP	Auckland Unitary Plan
bgl	Below Ground Level.
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes.
Class A	Removal work involving asbestos that requires a Class A licensed asbestos removalist, usually involving friable asbestos.
Class B	Removal work involving asbestos that requires a Class B licensed asbestos removalist, usually involving non-friable asbestos or ACM.
CLMG	Contaminated Land Management Guidelines.
Competent Person	As defined by WorkSafe, undertakes clearance inspections following Class B Asbestos removal works
CSM	Conceptual Site Model
DSI	Detailed Site Investigation
ESCP	Erosion and Sediment Control Plan
Friable	Asbestos or ACM in a powder form or able to be crumbled, pulverised, or reduced to a powder by hand pressure when dry

Abbreviation	Definition
GAMAS	New Zealand Guidelines for Assessing and Managing Asbestos in Soils
HAIL	Hazardous Activity and Industry List
Independent Licensed Asbestos Assessor	A person who is licensed by WorkSafe New Zealand to conduct air monitoring and clearance inspections for friable and non-friable asbestos projects.
IANZ	International Accreditation New Zealand
Licensed asbestos removalist	A PCBU with a Class A or Class B license for asbestos removal.
MfE	Ministry for the Environment
NESCS	National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health
Non-friable material	Asbestos or ACM. For the purposes of this definition, asbestos and ACM include material containing asbestos fibres reinforced with a bonding compound
'Piece of land'	As defined in the NESCS (Regulation 5.7) as: "The piece of land is a piece of land that is prescribed by 1 of the following: a) An activity or industry described in the HAIL is being undertaken on it: b) An activity or industry described in the HAIL has being undertaken on it: c) It is more likely than not that an activity or industry described in the HAIL is being or has been undertaken on it."
PCBU	Person conducting a business or undertaking.
PCBs	Polychlorinated biphenyl
PPE	Personal Protective Equipment such as overalls, masks, gloves etc.
RAP	Remediation Action Plan
RMA	Resource Management Act.
RPE	Respiratory Protective Equipment such as either a full or half face mask.
SCS	Soil Contaminant Standard
Site-wide CSMP	Site-wide Contaminated Soils Management Plan
SPH	Separate Phase Hydrocarbons
SQEP	Suitably Qualified and Experienced Practitioner.
SVR	Site Validation Report
Trace Level	Trace level means an average concentration over any eight-hour period of less than 0.01 asbestos fibres per millilitre of air.'
Unlicensed	Work involving asbestos that does not require a licensed asbestos removalist.

1 Introduction

1.1 Overview of Proposed Development

The Carrington Residential Development is a large-scale development project which will create up to 4,000 housing units within the Wairaka Precinct on land situated between Carrington Road and Te Auaunga / Oakley Creek.

The Carrington Development is located within the Auckland Unitary Plan's Wairaka Precinct alongside existing Unitec Campus facilities, the Mason Clinic and Taylor's Laundry. The Crown currently holds 29ha of the future development land which is right of first refusal land in Treaty settlement (the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Deed and Act). The Rōpū parties to this Redress Deed, in partnership with Te Tūāpapa Kura Kāinga / the Ministry of Housing Urban Development (HUD) are undertaking this development project.

1.2 Scope

Beca Limited (Beca) has been commissioned by the Marutūāhu Rōpū and Waiohua-Tāmaki Rōpū (the Rōpū) and the HUD to prepare a Site-wide Contaminated Soils Management Plan (CSMP) for the management of contaminated soils during enabling works, including the Backbone infrastructure extent and future Carrington Development. The area of interest in this report ("the Site") is shown on **Figure 1-1**.

Figure 1-1: Site boundary and location of the investigation area (Image sourced from Land Information New Zealand).

1.3 Purpose of the Site-wide CSMP

The purpose of this Site-wide CSMP is to identify procedures that shall be undertaken during future earthworks at the Site that may involve the disturbance and movement of contaminated soils. The Site-wide CSMP also applies to any development at the Site where a change in land use is occurring even if soil disturbance is not occurring. The procedures within this Site-wide CSMP have been informed by the listed contaminated land investigations reports and various phases of localised soil sampling for earthworks projects within the wider area completed to date:

- URS New Zealand Limited (23 June 2014) Unitec Mount Albert Campus Redevelopment – Preliminary Site Investigation Report.
- WSP New Zealand Limited (June 2017) Phase 1 Environmental Due Diligence and Development Project – Wairaka Precinct Masterplan. Unitec Institute of Technology.

- WSP New Zealand Limited (August 2017) Stage 2 Detailed Site Investigation Land Development Project – Wairaka Precinct Masterplan. Unitec Institute of Technology.
- Beca Limited (22 September 2021) Carrington Development Contaminated Land Gap Analysis Report.

Implementation of this Site-wide CSMP is intended to mitigate significant potential human health risks, reduce adverse contamination impacts upon the receiving environment (generation of dusts and off-site migration) and provide guidance for disposal options for the removal of surplus soil, groundwater or stormwater during future works.

Any amendments made to the Site-wide CSMP are to be approved by a Suitably Qualified and Experienced Practitioner (SQEP).

1.4 Scope of Site-wide CSMP

The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations, 2011 (NESCS) applies to land which currently has, or historically had, a potentially contaminating activity or industry undertaken on it as described in the Ministry for the Environment (MfE) Hazardous Activities and Industries List (HAIL). Five 'trigger activities' which are undertaken on HAIL land are controlled by the NESCS; these are: soil disturbance, change in land use, subdivision, soil sampling, and removal of underground fuel tanks.

This Site-wide CSMP has been prepared to identify appropriate controls for the management of potential land contamination related to all of the above 'trigger activities' with the exception of soil sampling which should be designed by a SQEP in all situations as standard.

1.5 Consents and Regulatory Compliance

This Site-wide CSMP has been prepared in general accordance with:

- Ministry for the Environment (MfE) Contaminated Land Management Guidelines No.1 – Reporting on Contaminated Sites in New Zealand and No.5 – Site Investigation and Analysis (2021).
- Health and Safety at Work (Asbestos) Regulations, 2016.
- Approved Code of Practice: Management and Removal of Asbestos (2016) (ACoP, WorkSafe, 2016).
- New Zealand Guidelines for Assessing and Managing Asbestos in Soil (BRANZ, 2017) (herein referred to as the GAMAS).

This Site-wide CSMP has been prepared to support consent applications for the enabling works including the Backbone Infrastructure Works and to facilitate all proposed future development of the Site for residential use. It is noted that some projects may be subject to a separate resource consent which may include additional consent conditions or controls. Those undertaking soil disturbance activities should check if the works are subject to additional resource consent conditions that may not be included within this Site-wide CSMP.

2 Site Description

2.1 Site Location

The Site is located off Carrington Road, Mount Albert, Auckland, New Zealand. It is located approximately 6 kilometres west of the Auckland Central Business District between Te Auaunga/Oakley Creek on the western boundary and Carrington Road to the east. Refer to **Figure 1-1** for the area defined in this report as 'the Site'.

The existing buildings located at the Site were previously used as the main Unitec education campus. The campus operations have been consolidated in an area south of the Site, with the buildings on the Site now unused. The surrounding area comprises a range of activities including Unitec, (an educational campus facility recently consolidated to an area of approximately twenty-four hectares in a southern portion), the Mason clinic, Taylors laundry, recreational parks and areas intended for redevelopment which will include various future land uses including public open space and residential land use.

2.2 Summary of Geology, Hydrogeology and Hydrology

The Geology and hydrogeology information summarised in this section has been adopted from the Beca Limited Carrington Backbone Works Geotechnical Factual Report dated 28 May 2021 and the 2017 DSI dated August 2017.

The published geological map of the area (Edbrooke,2001) indicates the wider area to be generally underlain by the Auckland Volcanic Field (AVF), with the northern portion, being underlain by the East Coast Bays formation (ECBF) of the Waitemata Group.

The Auckland Volcanic Field consists of various volcanic cones, explosion craters, lava flows, tuff rings, scoria, basalt, and basanite. Lava caves and tunnels are common features within some Auckland Volcanic Field basalt lava flows. Volcanic landforms and features are generally well-preserved owing to its geologically recent deposition. The Site location lies within a 2-kilometre distance of Mount Albert, a relic scoria cone of a quaternary aged eruption (~120,000 years ago).

The East Coast Bays Formation of the Waitemata Group is described as consisting of *"alternating, decimetre-bedded, graded sandstones and laminated mudstones*". The local geology is shown in **Figure 2-1**.

The 2017 DSI reported that the groundwater at the Site is influenced by the underlying geology of the Site, in particular the basalt flow. Underlying and bordering the basalt rock is the Waitemata Group, which exhibits low permeability characteristics, therefore containing groundwater flow within the basalt extent.

The Te Auaunga/Oakley Creek and Wairaka Stream intercepts the Site as shown in **Figure 2-1**. The Wairaka Stream is located along the centre of the Site and flows in a north-westerly direction before discharging into Te Auaunga/ Oakley Creek on the western boundary of the Site. Te Auaunga/ Oakley Creek is located along the western boundary of the Site. Te Auaunga/ Oakley Creek drains into the Waitemata Harbour to the north of the Site.

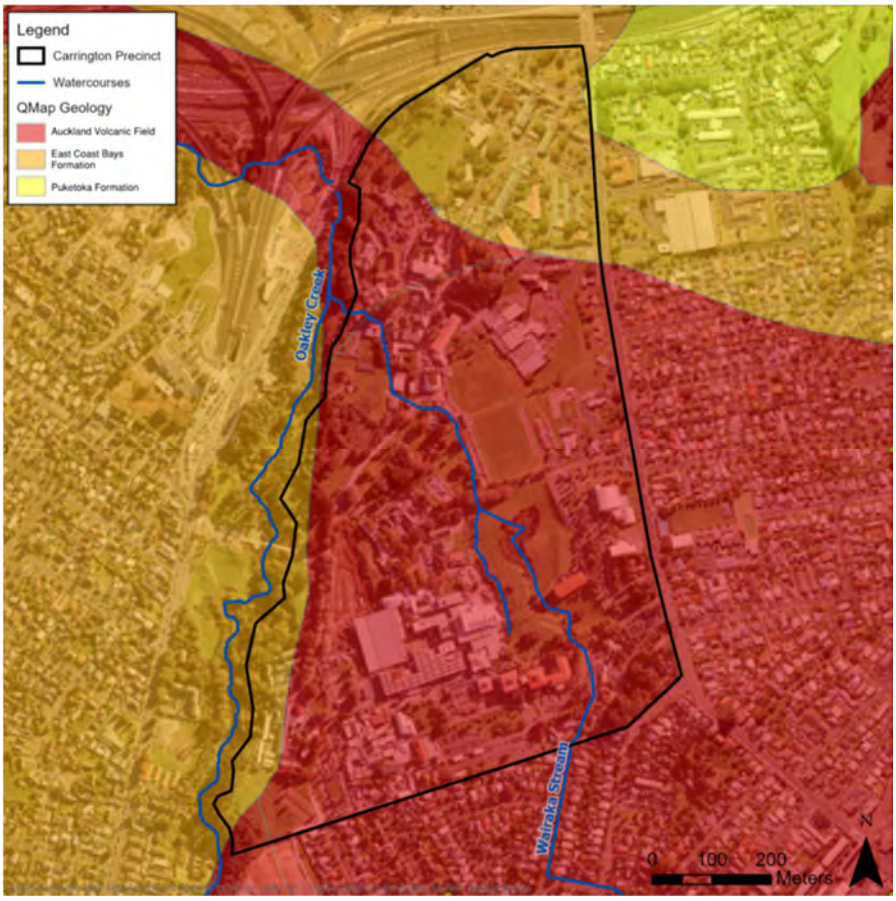


Figure 2-1: Published site geology and surface water. (Image sourced from Land Information New Zealand dated 2017 and geological information from GNS Science).

2.3 Sensitive Receptors

The sensitive receptors identified at and around the Site include the underlying soil and groundwater, current and future site users, construction and maintenance workers during redevelopment works, the surface water streams and the surrounding residential and commercial site users, including Unitec students, Mason clinic patients, staff and residents and those employed by Taylors Laundry

2.4 Summary of Site History

The Unitec campus site was founded and establish at this location in 1967. Formerly, the Site was the location of the Carrington Hospital (building 1) which was built in 1860. In more recent years, these facilities were evacuated, and the campus activities consolidated in a portion of land located directly south of the Site. The majority of the Site was used as facilities relating to the Unitec campus and facilities used for educational purposes.

2.5 Summary of Potential Contamination

2.5.1 Identified HAIL Areas

This section reflects information from the following documents:

- URS New Zealand Limited (23 June 2014) Unitec Mount Albert Campus Redevelopment – Preliminary Site Investigation Report
- WSP New Zealand Limited (June 2017) Phase 1 Environmental Due Diligence and Development Project – Wairaka Precinct Masterplan. Unitec Institute of Technology.

- Beca Limited (22 September 2021) Carrington Development Contaminated Land Gap Analysis Report.

HAIL activities, as historically or currently being undertaken at the Site, which may have resulted in soil contamination as identified in the PSI reports are summarised in **Appendix A.** The HAIL map is shown in **Figure 2-2. This HAIL map should be reviewed prior to any works being undertaken.** Note that majority of HAIL areas were assigned to existing or demolished building footprints. However, depending on the HAIL activities, the HAIL areas should conservatively extend further than the building footprint with the distances set out in **Table 2-1**. Where visual markers are unable to determine the location of the HAIL areas and GPS or other measuring tools would have to be used, then the error margins of these tools should be considered.

All additional reviews of the HAIL map and any prepared contamination assessment reports will be provided to the Consent Holder. The Consent Holder will maintain their records with an up-to-date HAIL and Investigation Plan, detailing the HAILs and any soil investigation results undertaken across the Site.

Table 2-1: Extent of HAIL areas around building footprints.

Activities (HAIL codes)	Extent of HAIL areas around HAIL areas set out on Figure 2-2 (in meters)
Stormwater ponds and cesspits (G6)	5m
Electrical Transformers (B2)	2m
Workshops, Scrap Yards and Bulk Chemical Storage (A2, F4, G4)	5m
Current and former chemical storage including fuel storage and use (A1, A17)	5m
Current and former market gardens, sports turfs, laboratories and pharmaceutical manufacturing facilities and greenhouses (A3, A14, A10)	Not applicable (0m)
Historical uncontrolled fill material and landfill (G3, G5)	Not applicable (0m)
Asbestos containing material and lead-based paint from buildings and demolished buildings (E1, I)	2m

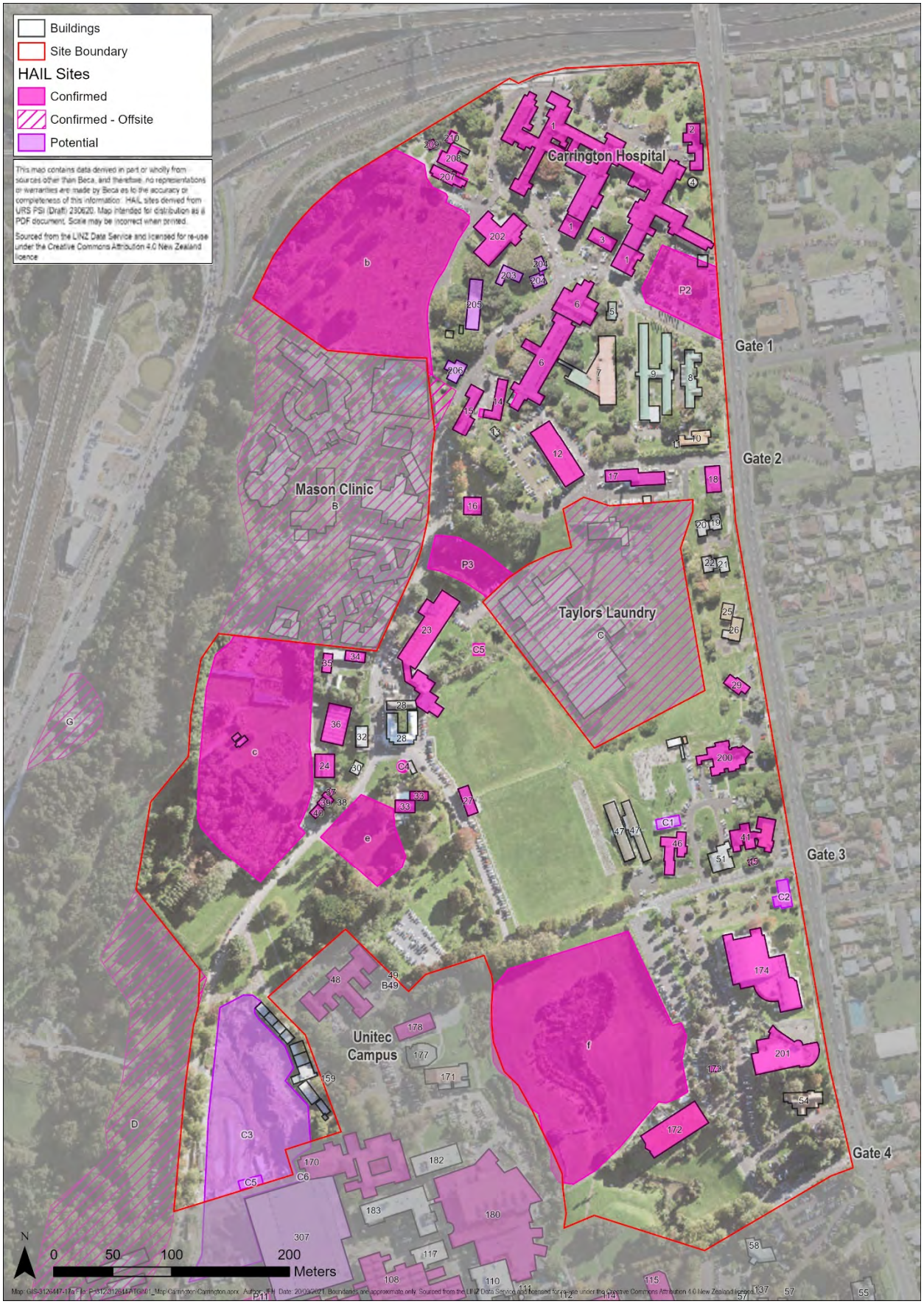


Figure 2-2: Carrington Development Site-wide CSMP HAIL Map.

2.5.2 Soil Sampling Investigations

- A previous assessments comprised a combined geotechnical and environmental site investigation. The contaminated land investigation findings were reported in a Phase 2 (2017 DSI) report[1].
- The DSI included a review of various previous reports including the 2017 PSI and Consolidated ACM Reports and Documentation prepared by Dowdell & Associates Limited (Dowdell) dated 2017 (not seen by Beca to date).
- Both soil and groundwater were identified to have potentially been impacted, and the potential for volatilised vapour impacts couldn't be discounted in some areas.
- The soil and groundwater investigation comprised 83 soil sampling locations including 40 drilled boreholes (28 of which were converted to groundwater monitoring wells), 39 hand auger locations and four surface sample locations. In some instances, the sampling did not target HAIL areas and only recovered samples from geotechnical boreholes.
- Selected representative soil samples were analysed for contaminants of concern comprising total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylene (BTEX compounds), polycyclic aromatic hydrocarbons (PAHs), metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), phenoxy acid herbicides, polychlorinated biphenyls (PCBs), volatile halogenated compounds (VHCs), phenols and asbestos (using a combination of qualitative and quantitative methods). Limited sampling was also undertaken for boron, formaldehyde and cyanide in targeted locations where these were considered potential contaminants of concern.
- Results from the analysis of soil samples identified concentrations of benzo(a)pyrene eq., arsenic, lead, asbestos in bulk materials, chromium, and PAHs (total) above Soil Contaminant Standard ($SCSs_{(health)}$) for a residential land use and in some instances exceeding the adopted Environmental Risk Criteria in samples recovered from the general vicinity of Buildings 1, 3, 12, 16, 17, between building 23 and the sports fields, 'area e', 33, 35, 37-40, 202, 207 and 208.
- Groundwater samples collected from all monitoring wells were analysed for TPH, BTEX compounds, PAHs, metals, OCPs, OPPs, phenoxy acid herbicides, PCBs and phenols. Select samples were also analysed for biological contaminants, VHCs, formaldehyde, cyanide and boron in selected locations.
    - Groundwater levels across the site were calculated to range from 8.214 m RL to 40.258 m RL.
    - Results from the analysis of groundwater samples identified concentrations of copper, nickel, and zinc were elevated above ANZECC (2000) Trigger values for freshwater (80% protection) in samples recovered from 16 of the recovered 28 samples across the site.
- The report concluded that due to the limited sampling that had been undertaken, it was not possible to delineate specific contaminant hot spots or have confidence that all contamination issues have been identified.
- Where fill was noted to potentially refer to HAIL G3 activities, it was not considered by Beca that these are not HAIL areas on a 'more likely than not' level of certainty.

[1] WSP (August 2017) Stage 2 Detailed Site Investigation Land Development Project – Wairaka Precinct Masterplan. Unitec Institute of Technology.

- The limited number of soil sampling results that can be used to further evaluate HAIL delineation from the 2014 and 2017 PSI. The number of soil samples and exceedances of adopted screening criteria is summarised in **Appendix A**.

2.5.3 Contaminants of Concern - Asbestos

Asbestos is a contaminant of concern due to the likely presence of asbestos in soils related to the age of existing buildings and development across the majority of the Site where ACM was historically used in construction materials and/or where buildings that historically contained ACM were demolished. Under the NESCS there are no SCS for asbestos, therefore the soil concentrations should be assessed against the soil guideline values set out in the GAMAS *Table 5 Soil Guideline Values* to establish the potential risks to human health exposure for the specific land-use scenarios. Low level asbestos is considered to be <0.001% w/w FA and/or AF.

Work involving asbestos in soil is defined as one of four categories within the GAMAS, dependent on the concentrations of asbestos recorded within air or soil. **Table 2-2** presents a summary of the four work scenario categories and the relevant Tier 1 health risk quantities/ concentrations of asbestos within various forms for each category taken from the GAMAS.

Table 2-2: Summary of Asbestos Works Scenarios and Guideline Values

ACM Type	Unlicensed asbestos work	Asbestos related work	Licensed Class B asbestos work*	Licensed Class A asbestos work*
Concentrations of asbestos fibres within air	<0.01 f/ml	<0.01 f/ml	≥ 0.01 f/ml	≥ 0.01 f/ml
Concentration of Fibrous Asbestos or Asbestos Fines (FA/AF) within soil	≤ 0.001% w/w	> 0.001% w/w	> 0.01% w/w	> 1% w/w
Concentration of ACM within soil	≤ 0.01% w/w	> 0.01% w/w	> 1% w/w	-

**Class A and Class B asbestos removal require the works to be undertaken by a licensed asbestos removalist. The removalist will implement an Asbestos Control Removal Plan to undertake any licensed works.*

The SQEP will determine which class the works fall under based on soil sampling and laboratory results if asbestos is considered a contaminant of concern.

If the trace level in air is likely to be exceeded while undertaking soil disturbance, this work must comply with the asbestos removal obligations under the Asbestos Regulations.

A Tier 2 risk assessment can be undertaken by the SQEP to reduce the conservative approach that the Tier 1 soil guideline values set in the GAMAS. The Tier 2 risk assessment methodology is set out in the GAMAS and will take into account:

- Depth of contamination
- Asbestos physical form or condition
- Asbestos physico-chemical nature
- Matrix type
- Soil moisture content
- Land use
- Duration of exposure
- Exposure frequency

2.5.4 Contaminants of Concern – Non-Asbestos Contaminants

The potential risk to human health risk should be assessment by comparing soil sampling results to screening criteria in accordance with the hierarchy defined by Ministry for the Environment (MfE) Contaminated Land Management Guidelines No.2 (MfE, 2002) based on the relevant land-use scenarios.

The risk posed by the discharge of contaminants in soil should be assessed against the following guidelines:

- Auckland Unitary Plan Operative in Part Table E30.6.1.4.1 – Permitted Activity Soil Acceptance Criteria.
- Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand (MfE, 1999); Soil acceptance criteria for protection of groundwater quality (Table 4.20).

The human health and environmental risks from the majority of the other contaminants of concern (e.g. heavy metals, hydrocarbons, pesticides etc.) can be managed through the implementation of standard good practice procedures such as the use of gloves to reduce dermal contact, avoiding entering excavations, appropriate disposal, good handwashing practices and installation of erosion sediment control measures.

If contaminants of concern are determined to pose a risk to the environment or human health, that the SQEP considers, cannot be addressed by the controls set out within this Site-wide CSMP, a project specific Environmental Management Plan (EMP) or Remediation Action Plan (RAP) will be required.

2.5.5 Exposure Routes

Based on the Conceptual Site Model (CSM) set out in the 2017 PSI, the potential contamination exposure routes have been identified as set out in **Table 2-3**.

Table 2-3: Conceptual Site Model for the Carrington Development works adapted from the 2017 PSI.

Potential Contaminant Sources**	Potential Receptors	Potential Pathways (Migration and Exposure)
Uncontrolled fill material and landfills May include building waste containing asbestos and lead. Hydrocarbon compounds including TPHs and PAHs Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) Organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), organonitrate pesticides (ONPs) and herbicides Asbestos Ground gas (unlikely unless significant quantity of putrescible material present)	• Soil • Groundwater (not applicable to asbestos) • Groundwater resources for public consumption (not applicable to asbestos) • Construction and maintenance workers during development works • Future residents and users of the site following development • Wairaka Stream, Oakley Creek and downgradient surface water (not applicable to asbestos unless via sediment runoff). • Surrounding residential and commercial site users.	Potential migration pathways for the contaminants of concern include: • Airborne migration of dust, vapour or fibres • Surface runoff containing impacted soil or dissolved contaminants • Infiltration of contaminants in soil • Groundwater transport through soil, including in preferential pathways (service trenches, along lower permeability soils). Potential exposure pathways comprise: • Ecological exposure via soil and water ingestion and habitation • Inhalation of dust, vapour or fibres • Ingestion or dermal contact with impacted soil, including surface soils during excavation work • Ingestion of or dermal contact with impacted surface water or extracted groundwater.
Asbestos containing material and lead-based paint from buildings and demolished buildings	• Soil • Groundwater resources for public consumption (lead only) • Current site users • Construction and maintenance workers during development works or other • Future residents and users of the site following development • Wairaka Stream, Oakley Creek and downgradient surface water (lead only) • Surrounding residential and commercial site users (lead only as asbestos does not migrate via groundwater or soil).	Potential migration pathways for the contaminants of concern include: • Airborne migration of dust or fibres • Surface runoff containing impacted soil or dissolved contaminants • Infiltration of contaminants in soil Groundwater transport through soil, including in preferential pathways (service trenches, along lower permeability soils). Potential exposure pathways comprise: • Inhalation of dust, vapour or fibres • Ingestion of or dermal contact with impacted soil, including surface soils and during excavation work

Potential Contaminant Sources**	Potential Receptors	Potential Pathways (Migration and Exposure)
		• Ingestion of or dermal contact with impacted surface water or extracted groundwater.
Current and former market gardens and greenhouses Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) Organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), organonitrate pesticides (ONPs) and herbicides Asbestos (from building structures)	• Soil and groundwater • Groundwater resources for public consumption • Current site users • Construction and maintenance workers during development works or other • Future residents and users of the site following development • Wairaka Stream, Oakley Creek and downgradient surface water • Surrounding residential and commercial site users.	Potential migration pathways for the contaminants of concern include: • Airborne migration of dust, vapour or fibres • Surface runoff containing impacted soil or dissolved contaminants • Infiltration of contaminants in soil Groundwater transport through soil, including in preferential pathways (service trenches, along lower permeability soils). Potential exposure pathways comprise: • Ecological exposure via soil and water ingestion and habitation • Inhalation of dust, vapour or fibres • Ingestion of or dermal contact with impacted soil, including surface soils and during excavation work • Ingestion of or dermal contact with impacted surface water or extracted groundwater.
Current and former chemical storage including fuel storage and use Dependent on the type of chemicals stored but may include pharmaceuticals, fuels, herbicides, pesticides, laboratory chemicals etc.	• Soil and groundwater • Groundwater resources for public consumption • Current site users • Construction and maintenance workers during development works or other • Future residents and users of the site following development • Wairaka Stream, Oakley Creek and downgradient surface water • Surrounding residential and commercial site users.	Potential migration pathways for the contaminants of concern include: • Airborne migration of dust, vapour or fibres • Surface runoff containing impacted soil or dissolved contaminants • Infiltration of contaminants in soil • Groundwater transport through soil, including in preferential pathways (service trenches, along lower permeability soils). Potential exposure pathways comprise: • Ecological exposure via soil and water ingestion and habitation • Inhalation of dust, vapour or fibres

Potential Contaminant Sources**	Potential Receptors	Potential Pathways (Migration and Exposure)
		• Ingestion of or dermal contact with impacted soil, including surface soils and during excavation work • Ingestion of or dermal contact with impacted surface water or extracted groundwater.
Electrical transformers Copper, Lead, Tin and Mercury Hydrocarbon compounds including TPHs PCBs Asbestos (from thermal insulators)	• Soil and groundwater • Groundwater resources for public consumption • Current site users • Construction and maintenance workers during development works or other • Future residents and users of the site following development • Wairaka Stream, Oakley Creek and downgradient surface water • Surrounding residential and commercial site users.	Potential migration pathways for the contaminants of concern include: • Airborne migration of dust, vapour or fibres • Surface runoff containing impacted soil or dissolved contaminants • Infiltration of contaminants in soil • Groundwater transport through soil, including in preferential pathways (service trenches, along lower permeability soils). Potential exposure pathways comprise: • Ecological exposure via soil and water ingestion and habitation • Inhalation of dust, vapour or fibres • Ingestion of or dermal contact with impacted soil, including surface soils and during excavation work • Ingestion of or dermal contact with impacted surface water or extracted groundwater.
Workshops Hydrocarbon compounds including TPHs, BTEX, VOCs PAHs and phenolic compounds Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc)	• Soil and groundwater • Groundwater resources for public consumption • Current site users • Construction and maintenance workers during development works or other • Future residents and users of the site following development • Wairaka Stream, Oakley Creek and downgradient surface water • Surrounding residential and commercial site users.	Potential migration pathways for the contaminants of concern include: • Airborne migration of dust and vapour • Surface runoff containing impacted soil or dissolved contaminants • Infiltration of contaminants in soil • Groundwater transport through soil, including in preferential pathways (service trenches, along lower permeability soils). Potential exposure pathways comprise:

Potential Contaminant Sources**	Potential Receptors	Potential Pathways (Migration and Exposure)
		• Ecological exposure via soil and water ingestion and habitation • Inhalation of dust, vapour or fibres • Ingestion of or dermal contact with impacted soil, including surface soils and during excavation work • Ingestion of or dermal contact with impacted surface water or extracted groundwater.
Stormwater ponds and cesspits Hydrocarbon compounds including TPHs Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) Asbestos Coliforms and bacteria	• Soil and groundwater • Groundwater resources for public consumption • Current site users • Construction and maintenance workers during development works or other • Future residents and users of the site following development • Wairaka Stream, Oakley Creek and downgradient surface water • Surrounding residential and commercial site users.	Potential migration pathways for the contaminants of concern include: • Airborne migration of dust, vapour or fibres • Surface runoff containing impacted soil or dissolved contaminants • Infiltration of contaminants in soil • Groundwater transport through soil, including in preferential pathways (service trenches, along lower permeability soils). Potential exposure pathways comprise: • Ecological exposure via soil and water ingestion and habitation • Inhalation of dust, vapour or fibres • Ingestion of or dermal contact with impacted soil, including surface soils and during excavation work • Ingestion of or dermal contact with impacted surface water or extracted groundwater.

** Identified COCs related to the different activities may vary.

3 Management Approach

3.1 General Requirements

This section sets out general management procedures and requirements.

1. The Consent Holder will be responsible for the implementation of this Site-wide CSMP throughout the duration of the Site construction works. Typically, physical works contractors will take on responsibility for specific requirements and provisions of the CSMP when they are engaged to do works.
2. All personnel involved in the Site construction works are to be familiar with this Site-wide CSMP and ensure that the requirements of this Site-wide CSMP have been followed.
3. A copy of this Site-wide CSMP is to remain available onsite at all times so that reference can be made to it when undertaking any site works.
4. The Site-wide CSMP is intended to assist the Site Contractor/s in meeting their legal obligations related to potentially contaminated soils with respect to health, safety and the environment. It is not intended to cover the general site safety procedures required for typical excavation and construction activities at the Site. The Site-wide CSMP is not intended to relieve the Contractor of their legal responsibilities.
5. Excavation, demolition and construction activities at the Site may be subject to other controls/rules/policies under the relevant district and regional plans, including but not limited to, NESCS. Any conditions imposed by the regulatory authorities must be adhered to. However, it is expected that this Site-wide CSMP will be incorporated into any consent/permit involving excavation/disturbance work at the Site so that the risks associated with contaminated soils are managed appropriately.

3.2 Roles and Responsibilities

This Site-wide CSMP shall be implemented and managed by the relevant responsible parties. For each project to be completed under this Site-wide CSMP the roles outlined in **Table 3-1** should be identified and recorded within Works Completion Reporting (refer **Section 10.2**).

Table 3-1: Roles and Responsibilities

Role	Responsibility
Consent Holder	Responsible for overseeing approval and implementation of this Site-wide CSMP.
Contaminated Land Specialist	The Contaminated Land Specialist registered as a Suitably Qualified and Experienced Practitioner (SQEP) shall be responsible for: • Assessing the adequacy of available soil sampling results or determining the scope of soil sampling required if results are not already available. • Advising on the Sections of this Site-wide CSMP to be followed during works. • Provision of ground contamination advice during the works and undertake periodic inspections during the works. • Undertaken completion reporting on conclusion of the works. • Advising the Consent Holder and their subcontractors on procedures if unexpected contamination is encountered during the works.
Licenced Asbestos Removalist	A licenced asbestos removalist will be responsible for any Class A or Class B asbestos removal works.

Role	Responsibility
Lead Contractor	• The Contractor shall be responsible for ensuring works are undertaken in accordance with requirements of the Site-wide CSMP and other relevant plans/documentation. • Inform the Consent Holder and Auckland Council, as required, relating to contamination incidents.
Site Supervisor(s)	• The Site supervisor(s) of the Contractor must read, understand and implement the Site-wide CSMP in the field and ensure site workers comply with this management plan. • The Site supervisor shall ensure all workers are inducted, wear appropriate personal protective equipment and follow basic hygiene procedures and be aware of the symptoms of contamination toxicity and health risks (as identified by the SQEP for the particular project). • The Site supervisor shall monitor for signs of contamination (using an excavation spotter if deemed necessary) and manage the implementation of control measures and safety precautions. • Report on incidents relating to presence of contamination.

Note: The Contaminated Land Specialist, Contractor, and Site Supervisors may be different for each sub development site.

4 Pre-Works Procedures

4.1 Task Sequence

Activities to be undertaken on confirmed or potential HAIL sites need to be assessed prior to the activity being carried out. This section discusses the required procedures to follow prior to undertaking the following activities:

- Change in Land use and/or Subdivision
- Soil disturbance, remedial works and/or fuel storage systems removal works or;
- Where both these are to be undertaken

A task sequence flowchart detailing the decision-making process, when undertaking the listed activities, are set out in **Appendix B**.

4.2 Change in Land Use and Subdivision

Depending on the available information to date (from the existing soil sampling / DSI findings), the SQEP shall assess whether the change in land-use or subdivision will result in a change in risk profile e.g. site use changes from commercial to residential use, including child care facilities where surface soils are exposed (but where no soil disturbance is required). Additional soil sampling may be required to adequately assess the risk. Soil sampling results should be compared with the appropriate human health risk criteria based on the relevant land use scenario.

If the SQEP identifies contamination that presents a risk that cannot be managed by the procedures within this Site-wide CSMP, a project site-specific Remediation Action Plan (RAP) and site validation report (SVR) or works closure report (WCR) will be completed. These reports should provide sufficient information to cover NESCS and E30 requirements with the support of this site-wide CSMP.

Council will be notified of any proposed land-use change (as applicable under the NESCS) or subdivision activities. If a change in risk profile presents, then commentary around relevant Sections of the management plans (or updates to the management plan) should be included in the Council notification. See **Section 5** for details.

Refer to **Appendix B** for the sequence of tasks required when undertaking these activities.

4.3 Soil Disturbance and Fuel Storage Systems Removal - Contaminated Land Works Categories

The task sequence set out in **Appendix B** should be followed for all projects involving soil disturbance, remedial works and removal or replacement of fuel storage systems.

Depending on the available information to date (from the existing soil sampling / DSI findings or future investigations), the proposed works will be categorised into one of four categories (1-4) as summarised in **Appendix B**. On top of the basic definition of Categories 3 and 4 in **Appendix B**, the GAMAS enables use of Tier 2 risk assessment to review controls needed based on the potential for trace fibres in air (<0.01 fibres/mL) to be exceeded which may result in an area that initially presents as Category 4 being re assessed as Category 3.

For works that will involve the removal or replacement of a fuel storage system and surrounding soil, the SQEP will undertake an assessment in general accordance with the MfE Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand.

As detailed in **Section 2.5.4**, if the SQEP identifies contamination that presents a risk that cannot be managed by the procedures within this Site-wide CSMP, a project specific EMP/RAP will be completed, or additional procedures added to this Site-wide CSMP.

It should be noted that there were only two locations where fuel tanks may still remain buried (potentially) on site (Hail ID 12, 16 and 18). No details around the exact locations of such tanks were identified and may likely not exist or have been removed.

Table 4-1: Soil Disturbance Categories

Category number	Contamination Status of Soils	Site-wide CSMP Procedures
1	No contamination identified: All targeted COC concentrations are below background (or consistent with background), and below human health (set out in the NESCS and GAMAS for the relevant land-use scenario) and environmental guideline values (set out in AUP E30.6.1.4.). *Good practice handling and management protocols to be implemented*	**Sections 6 and 10**
2	Low level contamination (including asbestos) with levels reflecting risk generally below human health (set out in the NESCS and GAMAS for the relevant land-use scenario) and environmental guideline values (set out in AUP E30.6.1.4.). *Unlicensed asbestos work scenario (refer Table 2-2)*	**Sections 6, 7 and 10**
3	Contamination above human health (set out in the NESCS and GAMAS for the relevant land-use scenario) and environmental guideline values (set out in AUP E30.6.1.4.) or if asbestos is present in concentrations considered within the *asbestos related work scenario (refer Table 2-2).* If soil disturbance quantities are greater than 200m^3, then Council need to be notified 5 days prior to undertaking earthworks.	**Sections 6, 8 and 10**
4	Contamination above human health (set out in the NESCS and GAMAS for the relevant land-use scenario) and environmental guideline values (set out in AUP E30.6.1.4.). *Asbestos concentrations within the licensed asbestos work scenario- Class A or B (refer Table 2-2).* If soil disturbance quantities are greater than 200m^3, then Council need to be notified 5 days prior to undertaking earthworks.	**Sections 6, 9 and 10**

4.4 Considerations for Additional Soil Sampling / Detailed Site Investigation

To determine the need for further soil sampling / a DSI, the SQEP in conjunction with the Consent Holder's assigned Project Manager will consider numerous factors, including:

- The likely presence of contamination.
- Site size / volume of proposed soil disturbance.
- Ease of access for the investigation.
- Need to determine disposal criteria in advance of the works.
- Change in risk profile.

For larger projects it is likely a DSI will be undertaken on the basis that a DSI may provide a better cost: benefit ratio, compared to not completing a DSI and assuming full controls/conservative disposal sites are required/selected.

If a DSI cannot be completed due to access restrictions, e.g., undertaking the DSI will cause significant disruption / impact on the Consent Holder operations, and in the opinion of the SQEP it is likely that contamination may present at a level that could result in a human health or environmental risk, the proposed works will be undertaken as Category 3 (see **Table 4-1**). This allows for all material to be treated as contaminated in the absence of site evidence and is likely to be applied to areas where minimal soil disturbance is proposed.

4.5 Overview of Requirements

Table 4-2 presents a high-level summary of the requirements for each works category. Refer to **Sections 6 to 10** for detail each procedure.

Table 4-2: Summary Table of Requirements

	Cat 1	Cat 2	Cat 3	Cat 4
Regulatory Notification Requirements				
Council notification of removal of procedures from Site-wide CSMP	✓	✓	✓	✓
Council notification prior to works	✗+	✗+	✓+	✓+
WorkSafe notification	✗	✗	✗	✓
Completion Reporting@	✓	✓	✓	✓
General Procedures				
Standard Procedures (set out by the Consent Holder and project manager)	✓	✓	✓	✓
Stormwater Control Procedures	✓	✓	✓	✓
Erosion and Sediment Control Procedures	✓	✓	✓	✓
Dust Management	✓	✓	✓	✓^
Soil Excavation/Disturbance Procedures	✗	✓	✓	✓
Unexpected Contamination Discovery	✓	✓	✓	✓
Soil Re-use and Disposal	✓	&	&	&
Groundwater Management	✗	✗	✓	✓
General Site Monitoring	✗	✗	✓	✓
Temporary Stockpile Procedures	✗	✗	✓	✓
Emergency Procedures	✗	✗	✓	✓
Licensed Contractor Required	✗	✗	✗	✓
Work Area Controls				
Control air monitoring	✗	✗	#	✓
Establishment of Asbestos Work Area	✗	✗	✓	✓

	Cat 1	Cat 2	Cat 3	Cat 4
Decontamination				
Removal of visible soil from equipment/ plant / machinery	✗	✓	✓	✓
Personal Decontamination	✗	✗	✓	✓
Equipment / machinery decontamination by wet/ dry method and assessment by competent person or SQEP	✗	✗	✓	✓
Inspections / Monitoring				
Clearance Inspection/ Validation	✗	✗	✗	✓

@Reporting requirements dependent upon project soil disturbance volume and whether undergoing subdivision or a change in land use

^ Enhanced dust suppression may be required

Air monitoring requirements to be determined by the SQEP following assessment of the soil sampling / DSI results

+ If soil disturbance is greater than 200m^3 for Category 3 and Category 4 works or if subdivision or land use change is being undertaken (any Category)

& All soils can likely be re-used on site, where SQEP consider it appropriate

4.6 PPE/ RPE Requirements

Table 4-3 provides a summary of the indicative PPE/ RPE requirements for each works category related to contaminated land hazards only (additional task specific PPE may be required). The SQEP can change the required PPE/RPE based on the soil sampling results / tier 2 risk assessment.

Table 4-3: Summary of PPE/ RPE Requirements

PPE/ RPE	Cat 1	Cat 2	Cat 3	Cat 4
Safety Boots	✓	✓	✓	✓
Cloth overalls/ long sleeved clothing	✗	✓	✗	✗
Disposable overshoes and Category 3, Type 5 Disposal Coveralls	✗	✗	✓	✓
Protective gloves for any personnel handling ACM	✗	✓	✓	✓
Safety Glasses	+	+	✓	✓
Disposable P2 mask or half face P2/P3 respirator with particulate filter. Consideration of the use of full-face respirators if friable ACM is identified.	✗	✗	✓	✓

PPE / RPE requirements to be determined by the SQEP following assessment of the soil sampling / DSI results.

+ Task dependent

4.7 Additional Consent Conditions

It is noted that some projects may be subject to a separate resource consent which may include additional consent conditions or controls. Contractors should always check if the works are subject to additional resource consent conditions that may not be included within this Site-wide CSMP.

5 Regulatory Notification Requirements

5.1 Council Notification

5.1.1 Changes to Site-wide CSMP

If procedures are to be removed from the Site-wide CSMP the amendments will be provided to the relevant team leader at Auckland Council (Regulatory Council).

5.1.2 Change in Land Use and Sub-Division Notification

For projects where only a change in land use or sub-division is to occur (see **Section 4.2**), then Council shall be notified of the proposed changes and how it will relate to the existing HAIL sites. In the event where the changes will incur a change in risk profile, Council will be notified a minimum of five days prior any works (other than soil disturbance work). A summary of the mitigation / remediation that has been undertaken to mitigate any ongoing risks, including any long-term management requirements will be included in the Council notification.

5.1.3 Soil Disturbance Works Notification

As noted in **Section 4.5** Council will be notified of any land disturbance works to be carried out as Category 3 or Category 4 works greater than 200m^3 at least 5 days prior to commencement of work. A DSI or soil sampling results, if completed, and/or relevant description of contaminants will be included in the notification.

Any works undertaken as Category 1 and Category 2 or Category 3 and 4 works < 200m^3 does not require council notification, prior to works commencing, under this Site-wide CSMP. Reporting of works start may be required under other consent requirements. The works completion register listing all works undertaken under this Site-wide CSMP and all associated prepared contamination reports will be provided to Council annually. Refer to **Section 10** for further details.

5.2 Work Safe Notification

Any works to be undertaken as Category 4 (licensed Class A or Class B asbestos works) will be notified to WorkSafe as required by the Health and Safety at Work (Asbestos) Regulations 2016 regulation 34. This notification is to be undertaken by the Licenced Removal Contractor.

6 Category 1 Works: General Procedures

The procedures within this section are general procedures that are applicable to all soil disturbance or remedial works undertaken.

6.1 Good Practice Procedures

The Consent Holder shall maintain industry good practice processes for all works undertaken under this Site-wide CSMP in line with the following guidelines:

- Worksafe Excavation Safety Good Practice Guidelines, 2016
- Auckland Council Guideline Document (GD05) Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region, 2016
- Worksafe Approved Code of Practice: Management and Removal of Asbestos (ACoP, 2016)
- Good Practice Guide for Assessing and Managing the Environmental Effects of Dust Emissions, 2016
- BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil (2017)

Standard good practices include training and induction, a permit to dig system, Job Safety and Environment Analysis (JSEA), contractors Health & Safety Plan (CHSP) and contractors Construction Management Plan (CMP) will also be completed as required.

- Prevent the generation of dust and wear a P2 dust mask if dust is generated.

6.2 General Site Monitoring

The following site monitoring activities should be undertaken by the Site Supervisor whilst disturbance of potentially contaminated land is being undertaken:

- Informal inspections to check compliance with this Site-wide CSMP and note any issues to be rectified.
- Ensuring that dust control measures are implemented, including ensuring trucks are using dust covers.
- Inspections as required by environmental control procedures e.g. sediment control devices inspected daily to ensure that they are installed correctly, operating effectively and are properly maintained.
- Ensure that a spill kit is available onsite, and that the Contractor's staff are suitably trained in its use; and
- All machine operators / drivers should ensure all machinery is free of oil leaks prior to use and only re-fuel machinery in designated areas.

For works that are of a duration of two weeks or more **weekly formal site inspections** are to be completed by the Site Supervisor to check compliance with this Site-wide CSMP. Site specific checklists will be developed by the Contractor to check compliance. Issues will be noted if they present significant environmental risks (e.g. noise, dust, spoil management).

Triggered inspections will be undertaken and recorded in response to the following:

- Complaints – upon receiving a complaint, the complaint should be noted, and an inspection of the area affected or involved undertaken. Complaints should be reported to the Consent holder project manager who should co-ordinate with a Stakeholder and Engagement team to resolve.
- Extreme weather – site control measures will be inspected immediately before, during and after extreme weather (as appropriate).
- Post incident inspections will be undertaken immediately following accidental spills or other incidents or emergencies and after "near miss" events. Any follow-up action/response will be document and appropriately closed out.

6.3 Dust Control Procedures and Air Quality Monitoring

Dust generating activities should be adequately managed. The stockpiling of soils during excavation should be minimised and, where possible, material directly loaded into trucks if planned to be taken off-site. Trucks and trailers should be covered to mitigate the risks of inadvertent spillages and dust dispersal during transport. The most effective way to control construction site dust is through good on-site housekeeping and mitigation measures including:

- Reduction of vehicle speeds on site.
- Minimising drop heights from loaders.
- Ensuring soil is covered when being transported by truck if required.
- Limiting access to the working area to essential vehicles and personnel only.
- Trucks and excavators entering the work area can have their wheels, tracks or buckets scraped washed or brushed down prior to leaving the work area if required.
- Where windy conditions persist and potential for dust generation is present; consideration should be given to use of light sprays to dampen the immediate excavation surfaces. Excessive wetting causing run-off or ponding of water should be avoided.
- Consideration should be given to dampening and/or covering soil stockpiles, if required.
- Minimise the time soil is exposed by backfilling or cover exposed soil.

Additional dust control procedures are set out in Sections 8 and 9 depending on the asbestos works scenario.

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

- The wearing of dust masks shall be implemented in the event that visible dust is generated. If dusts are discharging beyond the boundary of the work area the following actions shall be implemented immediately:
  - Increase wetting of the exposed materials until discharges are mitigated. Consider employing automated suppression systems if problems are recurring.
  - Cover or temporarily backfill excavations to address discharges while alternative mitigation measures are implemented. Alternative mitigation measures may start with revising operational procedures, for example, significantly reducing open areas in conjunction with the controls described above. However, if the discharges persist, professional advice should be sought in order to define appropriate control measures.

Air quality monitoring is not a requirement within the guidelines for ‘unlicensed asbestos works’ or ‘asbestos related works’, however it can be determined to be required at the discretion of the SQEP. Air quality monitoring will be required during earthworks if the following listed conditions apply (based on best practice methods listed in the ACoP):

- If there is uncertainty about whether the airborne contamination standard for asbestos is likely to be exceeded.
- When it is not clear if new or existing control measures are effective.
- When modifications or changes in work methods have occurred that may adversely affect worker exposure.
- If there is evidence (for example, dust deposits outside the work area) that control measures are not adequate or have deteriorated.
- When there has been an uncontrolled disturbance of asbestos.

The requirement for air monitoring will be determined by the SQEP upon review of the soil investigation results. If determined to be required, the SQEP will advise on the scope of air monitored needed.

6.4 Erosion and Sediment Control Management

Erosion and sediment controls shall be installed by the Contractor prior to earthworks commencing and shall be designed for the treatment of surface water runoff in general accordance with GD05. At minimum the following should be considered:

- Avoid work in heavy rain where soil runoff cannot be prevented.
- Keeping the site clean.
- Silt fences and runoff diversion bunds and swales shall be utilised where appropriate to capture sediment in surface water runoff. While the works involve a significant excavation there may be areas around the perimeter where runoff of sediment could enter the stormwater system. These areas should be appropriately sealed off.
- Erosion and sediment controls shall be checked regularly and maintained in good working condition.
- Erosion and sediment control measures will be upgraded/modified where necessary. Sediment fences will be replaced if the fabric is ripped or otherwise damaged.
- The weather conditions along with the performance of the erosion and sediment control measures will be monitored.
- Erosion and sediment control measures shall remain in place until the earthworks is complete.

The appropriateness of these measures is dependent upon a number of factors including size of site, the surrounding receiving environment and type and contamination concentrations. The SQEP may determine that the GD05 erosion and sediment controls are not appropriate where some of these specific scenarios. In these instances, appropriate ESC measures should be set out in a site-specific Erosion and Sediment Control Plan (ESCP) and/or amendments to the relevant sections of this Contaminated Soils Management Plan.

Major earthworks projects may also have project-side ESCP that would set out additional controls for the Contractors to adhere to.

6.5 Stormwater Control Procedures

Any surface run-off water or perched groundwater, encountered within the excavation area requiring removal must be considered potentially contaminated, and must either:

- Be disposed of by a licenced liquid waste contractor; or
- Pumped to sewer, providing the relevant permits are obtained; or
- Discharged to the stormwater system or surface waters provided testing demonstrates compliance with the Australian and New Zealand Environment Conservation Council (ANZECC) Guidelines for Fresh and Marine Water Quality (2000) for the protection of 80 percent of freshwater species, with the exception of benzene where the 95 percent protection level shall apply, and that it is free from petroleum hydrocarbons.
- Copies of permits or disposal receipts need to be retained for Site Validation/Works Completion reports.

Stormwater runoff should preferably be maintained onsite and allowed to infiltrate wherever possible to reduce the volume of water and material discharged. Cesspit protection measures such as filter socks and sandbags should be used to trap any sediment from collected runoff.

6.6 Imported Material

Material imported to site should be cleanfill or otherwise suitable for its proposed use (and agreed with the SQEP). Records must be provided by the Contractor to demonstrate that any imported material is obtained from a quarry or other certified source. Material shall not be imported from any site that is, or would be considered, a HAIL site (MfE, 2011), unless sampled by a SQEP to show that it is suitable for the intended land use and is acceptable to the Consent Holder.

Cleanfill is defined by MfE (2002) as:

"Material that when buried will have no adverse effect on people or the environment. Cleanfill material includes virgin natural materials such as clay, soil and rock, and other inert materials such as concrete or brick that are free of:

- *combustible, putrescible, degradable or leachable components*
- *hazardous substances*
- *products or materials derived from hazardous waste treatment, hazardous waste stabilisation or hazardous waste disposal practices*
- *materials that may present a risk to human or animal health such as medical and veterinary waste, asbestos or radioactive substances*
- *liquid waste."*

Cleanfill is defined in AUP Chapter J as:

"…*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)"*

Material not meeting the definition of cleanfill but representing material that is considered by a SQEP to be suitable for its intended use may be imported providing that prior approval has been sought and granted by Auckland Council, and that all consent conditions can be meet. It should be noted that the re-classification of material with presence of low-level contamination is currently under review. The updated classification should be considered once taking effect.

6.7 Soil Re-use and Disposal

Soil within Category 1 will likely meet the definition of cleanfill or managed fill. The material classification is dependent on the interpretation of the owner/operator of the receiving site.

Where soil is being relocated to an alternate area at the Site, a sampling program should be set in place to determine if material is suitable and new risks are not introduced. A minimum sampling density of 1/500m^3 and 1/1000m^3 shall be adopted, dependent on the advice from the SQEP.

The offsite receiving site may require additional sampling to satisfy the suitability of such materials. Approval from the receiving site shall be obtained by the Contractor prior to transportation.

Offsite disposal of contaminated soil must be to a facility consented to accept such material. Acceptance of excavated materials to be disposed offsite (landfills or other approved locations) shall be obtained prior to works commencing. The Contractor must retain copies of all disposal receipts/documentation and provide these to the Consent Holder within 2 weeks of the completion of works in the particular sub stage of development being undertaken by that Contractor.

6.8 Unexpected Contamination Discovery

The procedures outlined in this section provide the Contractor with protocols to identify potential contamination if suspected contaminated soils or hazardous materials are discovered during the excavation works. These protocols will enable the appropriate action to avoid exposure of contaminants to site workers or dispersion of contaminants to the wider site.

Contamination indicators or hazardous materials may include but are not limited to:

- Unusual odours.
- Discoloured or stained water seepage and soils.
- Petroleum hydrocarbon contaminated soil, visual sheens and/or free product.
- Liquid waste, putrescible waste, household refuse and any material that normally would be sent to a licensed landfill.
- Any visible suspected Asbestos Containing Material (ACM) (noting that the majority of ACM contamination at the Site is in the form of FA/AF (likely as a result of demolition/removal of pipe lagging etc).
- Intact or broken drums and containers.

During the earthworks on site, the Contractor shall actively monitor for the conditions/materials specified above. In the event that any of the above indicators are identified, the Contractor should take the following actions:

- Unless the source is identified (i.e. known AC pipe), stop all earthworks within a 5 m radius of the area where the suspected material/ emission/ discharge has been reported.
- Immediately notify the person in charge of the physical works and the SQEP.
- Cordon off the area as practicable with a suitable barrier.
- Work shall not resume or commence within a 5 m radius of the area unless authorised by the Consent Holder or the appropriate person as nominated in the physical works contract.

The Site Supervisor shall contact the Consent Holder who will consult with the SQEP and advise on the appropriate course of action. The SQEP shall:

- Notify the regulatory authority (Auckland Council) that contamination has been discovered and contingency action is being implemented.
- Characterise the contamination by collecting samples for chemical laboratory analysis, if required.
- Where the material characteristics have been established, the SQEP will advise the Site Supervisor as to whether the materials may remain on site or what remedial measures are required to manage this material on-site, or the options available to disposal of this material off-site.
- Instruct relevant staff/contractors so that all appropriate information such as location and quantity of material and off-site weighbridge dockets are recorded.

7 Category 2 Works

The following section outlines general controls for the disturbance of soil in areas designated by the SQEP as **Category 2** and/or **'unlicensed asbestos works'** scenario.

7.1 Soil Excavation/Disturbance Procedures

The following procedures should be followed for any earthworks associated with the project:

- If excavators are used during the works, they should be 'closed cab'.
- Re-usable PPE, like half or full-face respirator masks should be cleaned and any waste would require appropriate disposal.
- All contaminated material removed from site shall be disposed of as per the procedures set out in **Section 7.3**.

7.2 On-Site Soil Re-use and Relocation

The suitability for the re-use of soils will be dependent on the findings of the soil sampling investigation and this will be communicated by the SQEP following assessment of the results.

Material will be re-useable on site, and would be encouraged, should the COC concentrations not exceed the targeted environmental and human health risk criteria. In this situation it would be preferable if re-used material is located below an imported layer of clean material or under handstand, roads, or structures.

In the event where unexpected contamination is discovered, discussions with the SQEP should be held to determine what material may be suitable for reuse and where. Input may be necessary from a Geotechnical Engineer.

7.3 Off-Site Soil Disposal

The soil sampling results will inform the disposal classification. The excavation, handling and off-site removal of the material shall be managed by the Contractor as follows:

- Offsite disposal of contaminated soil must be to a facility consented to accept such material. Approval shall be obtained by the Contractor prior to transportation.
- The material classification is dependent on the interpretation of the owner/operator of the receiving site and at their risk. The offsite receiving site may require additional sampling to satisfy the suitability of such materials.
- All trucks shall be covered before leaving site and any soils brushed off wheels to avoid tracking onto public roads. Should the Site become wet and material adheres to wheels a wheel wash facility shall be installed and truck wheels washed before exiting the Site.
- Dependent on the requirements of the receiving facility/ landfill truck lining or soil wrapping may be required.
- Chain of Custody procedures will be followed to enable tracking of the spoil and confirm disposal at the landfill facility.
- Waste manifests / weigh bridge receipts will be retained as proof of disposal.
- The Contractor must retain copies of all disposal receipts/documentation and provide these to the Consent Holder within five days of receipt.

7.4 Decontamination

Equipment, plant and / or machinery used during earthworks should have all bulk soil removed prior to demobilisation / removal from site.

8 Category 3 Works

The following section outlines controls for the disturbance of soil in areas designated by the SQEP as **Category 3**. Refer to **Section 8.11** for the **'asbestos related works'** scenario controls.

8.1 Personal Control Measures

PPE/ RPE requirements related to management of contamination are summarised in **Table 4-2**. Workers may be exposed to contaminants via the inhalation, accidental ingestion of, or skin contact with soil and/or groundwater and/or surface water. To prevent this exposure standard good practice earthworks procedures should be followed by workers who are likely to come into direct contact with contaminated soil and/or water.

The following personal control measure should be used:

- Avoid hand to mouth contact.
- Wash hands and face prior to eating, drinking or smoking.
- No eating or drinking within the excavation area.
- Wash any skin abrasions immediately and treat to prevent infections.
- Avoid where practical personnel entering excavations (i.e. outside of plant and machinery).
- When any signs of dust generation are likely, or as directed by the SQEP, a suitable face mask should be worn.
- Follow any additional requirements in the Contractor (Site Specific) Health and Safety Plan.

Further hazards may be identified during the course of the works by the Contractor who is expected to review any new work element. Subsequently, the Contractor need to assess whether there are any new associated hazards, and whether these can be eliminated, isolated or minimised and update their plans accordingly. The Contractor shall then instruct all staff on the health and safety procedures associated with the new hazard and update the works management plan.

8.2 General Site Monitoring

The following site monitoring activities should be undertaken by the Site Supervisor whilst disturbance of potentially contaminated land is being undertaken:

- Informal inspections to check compliance with this Site-wide CSMP and note any issues to be rectified.
- Ensuring that dust control measures are implemented, including ensuring trucks are using dust covers.
- Inspections as required by environmental control procedures e.g. sediment control devices inspected daily to ensure that they are installed correctly, operating effectively and are properly maintained.
- Ensure that a spill kit is available onsite, and that the Contractor's staff are suitably trained in its use; and

All machine operators / drivers will ensure all machinery is free of oil leaks prior to use and only re-fuel machinery in designated areas.

For works that are of a duration of one week or more, a more formal weekly site inspection should be completed by the Site Supervisor to check compliance with this Site-wide CSMP. Site specific checklists will be developed by the Contractor to check compliance. Issues will be noted if they present significant environmental risks (e.g. noise, dust, spoil management).

Triggered inspections will be undertaken and recorded in response to the following:

- Complaints – upon receiving a complaint, the complaint should be noted, and an inspection of the area affected or involved undertaken. Complaints should be reported to the Consent Holder and Contractor.
- Extreme weather – site control measures will be inspected immediately before, during and after extreme weather (as appropriate).

- Post incident inspections will be undertaken immediately following accidental spills or other incidents or emergencies and after “near miss” events. Any follow-up action/response will be document and appropriately closed out.

8.3 Emergency Procedures

Emergency procedures appropriate to the proposed works shall be established prior to the start of works and the responding emergency personnel should be notified of the presence of contamination. A copy of this Site-wide CSMP should be available so it can be referred to by emergency personnel, if necessary.

Should an incident occur on site which may result in any unauthorised discharges (vapour, odour, water, soil, separate phase hydrocarbons (SPH etc.), the Contractor’s site supervisor will take control of the situation and coordinate the efforts of all site occupants to minimise the impact. Ultimately, in the event, albeit unlikely, that uncontrollable discharges 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.

8.4 Stormwater Control Procedures

Cesspit protection measures such as filter socks and sandbags should be used to trap any sediment from collected runoff. Sediment captured from the excavation of potentially contaminated material shall be managed in the same manner as soils requiring off-site disposal, as described in **Section 8.9**. All diversion bunds (if required) shall be designed and constructed to accommodate and divert the overland flow and stormwater around live construction zones and also prevent sediment-laden water from leaving the works area.

Stormwater will be managed according to project specific ESCP, anticipated to be required as part of major earthworks consent requirements. If no project specific ESCP exist, refer to **Section 6.4** and **Section 6.5** for minimum controls to be in place.

If disposal to the stormwater network is not possible, then accumulated stormwater should be disposed of to an appropriate facility.

8.5 Groundwater Management Procedures

If groundwater is encountered during excavation works, the Contractor shall:

- Contain groundwater within the excavation and not allow it to discharge across the Site surface.
- If dewatering is required, the pumped groundwater discharge shall be diverted into a tank or pond. The groundwater may be disposed to stormwater only if laboratory testing of water indicates it is appropriate to do so and this has been agreed with the SQEP and appropriate operator.
- If dewatering is required, the pumped groundwater could be discharged to the Auckland Council reticulated wastewater system (trade waste) with prior approval.

If unexpected groundwater contamination is encountered the following controls shall be implemented:

- The area in which unexpected contamination conditions have been encountered shall be isolated so that stormwater from this area can be separated from that generated across the wider site; and
- If dewatering is required, the effluent should be contained for testing prior to disposal.
- Excess water within the site (including stormwater in the case of a rainfall event) will need to be filtered using a 5-micron filter or equivalent methodology and the filters must be treated as contaminated and disposed of as asbestos waste if not tested prior.

Refer to **Section 6.8** for indicators of potential contamination.

8.6 Temporary Stockpile Procedure

Stockpiling on site shall be minimised. If required, the following stockpiling procedures shall be applied:

- Stockpiles shall be maintained at a low level (no more than 3.0 m in height).
- Stockpiles shall be sited within an area away from the main working area to minimise potential contact by site workers.
- Stockpiled materials shall be placed on suitable material (i.e. polythene sheet) to prevent contaminants leaching into clean soils, and in an area where water and sediment runoff cannot be controlled.
- Stockpiled material shall be covered by a suitable material (such as polythene) to prevent the ingress of rainwater into the material and therefore minimise the potential for generation of leachate or sediment in stormwater.

8.7 Soil Excavation/Disturbance Procedures

The following procedures should be followed for any earthworks associated with the project:

- If excavators are used during the works, they should be 'closed cab'.
- Re-usable PPE, like half or full-face respirator masks should be cleaned and any waste would require appropriate disposal.
- All contaminated material removed from site shall be disposed of as per the procedures set out in **Section 8.10**.

8.8 On-Site Soil Reuse and Relocation

The suitability for the re-use or relocation of soils will be dependent on the findings of the soil sampling investigation and this will be communicated by the SQEP following assessment of the results.

The re-use of material on the Site from Category 3 areas is not be permitted unless it is subject to a Remediation Action Plan (RAP) that is submitted to Auckland Council for approval by the SQEP. Any Category 3 soil re-use onsite from areas requiring soil disturbance is likely to require installation of a suitable capping layer or placement under a hardstand or structure. Should areas of known soil contamination above human health or environmental screening values be relocated on-site it is also likely that the RAP will require some form of ongoing management upon completion of the soil disturbance works (refer **Section 10.1**)

In the event where unexpected contamination is discovered (refer to **Section 6.8**), discussions with the SQEP should be held to determine what material may be suitable for reuse and where. Input may be necessary from a Geotechnical Engineer.

8.9 Off-Site Soil Disposal

The soil sampling results will inform the disposal classification. The excavation, handling and off-site removal of the material shall be managed by the Contractor as follows:

- Offsite disposal of contaminated soil must be to a facility consented to accept such material. Approval shall be obtained by the Contractor prior to transportation.
- The material classification is dependent on the interpretation of the owner/operator of the receiving site and at their risk. The offsite receiving site may require additional sampling to satisfy the suitability of such materials.
- All trucks shall be covered before leaving site and any soils brushed off wheels to avoid tracking onto public roads. Should the Site become wet and material adheres to wheels a wheel wash facility shall be installed and truck wheels washed before exiting.
- Dependent on the requirements of the receiving facility/ landfill truck lining or soil wrapping may be required.

- Chain of Custody procedures will be followed to enable tracking of the spoil and confirm disposal at the landfill facility.
- Waste manifests / weigh bridge receipts will be retained as proof of disposal.
- The Contractor will retain copies of all disposal receipts/documentation and provide these to the Consent Holder within five days of receipt.

8.10 Decontamination

Equipment, plant and / or machinery used during earthworks should have all bulk soil removed prior to demobilisation / removal from site.

8.11 Asbestos-Specific Controls

8.11.1 Establishment of Asbestos Work Area

The extent of the controlled area will be set by the Contractor with the objective of preventing unacceptable exposure to personnel working outside of the exclusion zone.

The following procedures should be implemented before earthworks begin:

- Signs and barriers must be erected around the area of works to warn of the danger and to prevent unauthorised entry. Signage wording must include ‘Low level asbestos removal in progress’ or similar. An exclusion zone should be set up with safety tape and signage placed a minimum of ten metres from the removal area, where practicable. If this is not practicable, the SQEP must approve reduction of separation distances. All barriers and warning signs shall remain in place until all removal work has been completed.
- Access to asbestos removal area by other work parties will only be allowed during ‘tools down’ periods under the direct supervision of the Contractor and when wearing appropriate PPE and RPE.
- Establishment of a truck loading area and decontamination area must be set up adjacent to asbestos work area, to prevent machinery and trucks from trafficking asbestos contaminated soils outside the ‘asbestos work area’ and contaminating otherwise asbestos free materials.
- Assess the removal area to establish the appropriate controls for the protection of health, safety, and environment.

8.11.2 Control Air Monitoring

The requirement for air monitoring will be determined by the SQEP upon review of the soil investigation results. If determined to be required, the SQEP will advise on the scope of air monitored needed.

Control air monitoring is not a requirement within the guidelines for ‘asbestos related works’, however it can be determined to be required at the discretion of the SQEP. Air quality monitoring will be required during earthworks if the following listed conditions apply (based on best practice methods listed in the ACoP):

- If there is uncertainty about whether the airborne contamination standard for asbestos is likely to be exceeded.
- When it is not clear if new or existing control measures are effective.
- When modifications or changes in work methods have occurred that may adversely affect worker exposure.
- If there is evidence (for example, dust deposits outside the work area) that control measures are not adequate or have deteriorated.
- When there has been an uncontrolled disturbance of asbestos.

8.11.3 Dust Control Procedures

Moisture is the most important control measure for mitigating airborne asbestos fibres.

Dust suppression mitigation systems should be implemented, operating at all times during earthworks when soil is deemed dry (i.e. less than 10 % moisture). This can be achieved via the addition of water. Consider enhancing dust suppression measures by addition of surfactants and polymers if sensitive receptors were identified in close proximity to the works.

8.11.4 Soil Excavation / Disturbance Procedures

The ACoP recommends best practice procedures for asbestos waste containment and disposal. The following general methodology / procedures should be followed for any earthworks associated with soil disturbance:

- If excavators are used during the works, they should ideally be 'closed cab'. Should open cabs be used, operators are required to wear appropriate PPE and RPE as detailed in **Table 4-3.**
- All contaminated material removed from site shall be disposed of as per the procedures set out in **Section 8.11.7**.

8.11.5 Temporary Stockpile Procedure

Stockpiling of asbestos containing material is not recommended, however should stockpiling be required the following apply (in addition to the procedures in **Section 8.6**):

- Asbestos contaminated soils must be placed in a fenced area and warning signs erected, where applicable.
- Asbestos contaminated soil stockpiles shall be placed on sheeting or similar to prevent contamination of underlying clean material. Care must be taken to ensure that the integrity of the sheeting is not damaged during handling or transportation.
- The stockpiled material shall be covered and secured with geotextile or a polythene cover to prevent rainfall or wind induced erosion and dust.

8.11.6 On-Site Soil Reuse or Relocation

The suitability for the re-use of soils will be dependent on the findings of the soil sampling investigation and this will be communicated by the SQEP following assessment of the results.

The re-use of material on the Site from Category 3 areas is not be permitted unless it is subject to a Remediation Action Plan (RAP) that is submitted to Auckland Council for approval by the SQEP. Any Category 3 soil re-use onsite from areas requiring soil disturbance is likely to require installation of a suitable capping layer or placement under a hardstand or structure. Should areas of known soil contamination above human health or environmental screening values be relocated on-site it is also likely that the RAP will require some form of ongoing management upon completion of the soil disturbance works (refer **Section 10.1**)

An Asbestos Management Plan (AMP) including long-term management requirements will be prepared at the time that long term use is established.

In the event where unexpected contamination is discovered (refer to **Section 6.8**), discussions with the SQEP should be held to determine what material may be suitable for reuse and where.

8.11.7 Off-Site Soil Disposal

The soil sampling results will inform the disposal classification. Typically, material containing asbestos is considered to not meet the definition of cleanfill, and therefore disposal as managed fill or contaminated fill will be likely, depending on the resource consent conditions of the facility accepting the material.

The excavation, handling and off-site removal of the material shall be managed by the Contractor as follows where category 3 soils are confirmed:

- Offsite disposal of contaminated soil must be to a facility consented to accept such material. Approval shall be obtained by the receiving site prior to transportation.

- The material classification is dependent on the interpretation of the owner/operator of the receiving site and at their risk. The offsite receiving site may require additional sampling to satisfy the suitability of such materials.
- All trucks shall be covered before leaving site and any soils brushed off wheels to avoid tracking onto public roads. Should the Site become wet and material adheres to wheels a wheel wash facility shall be installed and truck wheels washed before exiting.
- Dependent on the requirements of the receiving facility/ landfill truck lining or soil wrapping may be required.
- Chain of Custody procedures will be followed to enable tracking of the spoil and confirm disposal at the landfill facility.
- Waste manifests / weigh bridge receipts will be retained as proof of disposal.
- The Contractor shall maintain a register of soil movements and records such as location of excavation, disposal location, quantity of material and off-site weighbridge documents. The Contractor must retain copies of all disposal receipts/documentation and provide these to the Consent Holder within five days of receipt.
- Should it be necessary to temporarily store asbestos waste prior to transport for disposal then all plastic bags containing the waste shall be held in leak-proof metal containers or bins suitably marked and held in a secured area displaying appropriate warning signs.

8.11.8 Decontamination

i. Personal Decontamination

Prior to work commencing, a decontamination area will be identified. The decontamination area will be located up-wind of the works area and items available in this area should include but not be limited to:

- Labelled asbestos waste bags (with a minimum thickness of 200µm).
- Water spray bottle.
- 'Wet wipes'/Alcohol wipes.
- Spare suits, boot covers, and gloves.

Personal decontamination should be undertaken as outlined in the ACoP.

Once the asbestos related work is complete, workers must return to the decontamination area. Before stepping into the decontamination area, workers must spray water over coveralls, head, face, hands, and feet to adhere any loose asbestos fibres to the PPE. Workers must then wipe any exposed areas of skin and the externals of the mask down with baby wipes (around eyes and hands).

Workers must then put used baby wipes into the labelled asbestos waste bag available.

To remove coveralls, fold back the hood onto itself, and continue this rolling method from top to bottom, until the suit has been rolled inside of itself. Sleeves should be pulled inside out and rolled into the body of the suit. The aim of this is to contain the surface of the suit, that may have asbestos fibres attached, inside itself and avoid transference to other surfaces. Wrap gloves into the folds of the suit and flip the booties inside out (these must be rolled into the suit as well). Place the rolled bundle into the labelled asbestos waste bag.

Wipe down hands, face, and all surfaces and edges of RPE with baby wipes a second time before turning upwind and removing RPE. If a disposable respirator was used, workers must place this in the asbestos waste bag. If a re-usable respirator was used, wipe down the inside with alcohol wipes to prevent mould, and place in its designated carry case.

Once all asbestos containing waste is placed in the bag, it should be goose neck tied closed for transport. If the asbestos waste bag is full and ready for disposal it should be double bagged in 200 µm plastic, each bag individually goose-necked and sealed with PVC tape. This bag should be placed in the designated asbestos storage area for disposal at an appropriate waste facility.

All disposable PPE used during removal works are to be considered asbestos containing waste and are to be disposed of appropriately.

ii. Equipment Decontamination

All handheld items and equipment (e.g. spades) used during earthworks which have come in contact with potentially asbestos contaminated soils must be;

- Decontaminated using wet or dry decontamination methods as outlined in the ACoP (i.e. fully dismantled, and cleaned under controlled conditions); or
- Placed in sealed containers (and only used for asbestos removal work); or
- Disposed of as asbestos waste.

Plant and machinery used during earthworks should have all visible soil removed and a visual assessment undertaken by a competent person or SQEP prior to demobilisation from site.

8.11.9 Clearance Inspection and Site Validation

There is no requirement in the Health and Safety at Work (Asbestos) Regulations (2016) for a visual inspection to be undertaken by a Licensed Asbestos Assessor or Competent Person for ‘asbestos related works’.

Additionally, there is no requirement in the ‘asbestos in soils NZ guideline’ for site validation to be undertaken by a Contaminated Land Practitioner for ‘asbestos related works’.

9 Category 4 Works

The following section outlines general controls for the disturbance of soil in areas designated by the SQEP as **Category 4** and considered **'Licensed Class A or Class B Asbestos Removal Works'.** A licensed asbestos removalist contractor will have to undertake works considered as **Category 4**. All management procedures as set out in **Section 8** for **Category 3** works will also apply to **Category 4** works with the additional requirements as set out in this section.

Following completion of the soil sampling the SQEP will determine if the works meet the Class A or Class B works scenario. It is envisaged there is a low likelihood a Class A licence will be triggered for soil disturbance, unless significant quantities of buried friable asbestos waste is encountered.

9.1 Requirements for Licensed Asbestos Removalists

Class A or Class B asbestos removal works are required to be undertaken by a WorkSafe licensed asbestos removal company. WorkSafe expects licensed asbestos removalists to, *'act with integrity and carry out asbestos removal work with professionalism and with care to their workers and other people. All the asbestos removal works undertaken by a licensed asbestos removalist must be undertaken in accordance with the requirements of the Health and Safety at Work Act 2015 (the Act), the Health and Safety at Work (Asbestos) Regulation 2016 (the Regulations) and other relevant health and safety regulations'.*[2]

Any works undertaken as Category 4 will be undertaken by an appropriately licensed asbestos removalist registered on WorkSafe's public register of asbestos licences.[3]

9.2 Asbestos Removal Control Plan (ARCP)

The licensed asbestos removal company shall prepare an Asbestos Removal Control Plan (ARCP) in accordance with Appendix H of the ACOP. The ARCP will include:

- Details of how the asbestos removal will be carried out, including the method to be used and the tools, equipment, and PPE to be used.
- Details of the asbestos to be removed, including the location, type, and condition of the asbestos.
- Detailed description of the asbestos removal area for the work and any air monitoring points (by means of a site plan).
- Details of the means of transport and disposal of the asbestos waste.

9.3 Notification Requirements

WorkSafe is required to be notified of works undertaken as Class A or Class B licensed asbestos removal at least five days in advance of the works commencing.

The Notification of Licensed Asbestos Removal form is available from WorkSafe's website: www.worksafe.govt.nz.

Copies of all WorkSafe correspondence must be retained onsite at all times in the onsite folder with all other relevant information, including this Site-wide CSMP.

9.4 Control Air Monitoring

Control air monitoring is a requirement under the Health and Safety Regulations (Asbestos) 2016 for all Class A asbestos removal work, as well as during Class B removal work when airborne asbestos fibres have the

[2] April 2021. WorkSafe Asbestos Licensing Removalist Applicant Guidelines.
[3] https://www.worksafe.govt.nz/the-toolshed/registers/asbestos-licence-holder-register/

potential to exceed trace level (trace level being set by WorkSafe as <0.01 fibres/mL of air). The potential for airborne asbestos fibres to exceed trace level will be determined by the SQEP or asbestos assessor/competent person.

A control air monitoring strategy should be developed by an independent “Competent Person” (as defined by WorkSafe) specifically for the works (if Class A, or if air monitoring is determined to be required for Class B).

9.5 Clearance Inspections and Site Validation

Following licensed asbestos removal works, a visual inspection is required to be undertaken by a Competent Person (Class B) or licensed Asbestos Assessor (Class A or B) as defined by WorkSafe. This inspection will include, but not be limited to, the area of asbestos removal, the adjacent areas where trucks have been loaded with asbestos containing material, and any machinery used in the excavation of the asbestos containing material. Where a licensed asbestos assessor is required, they should be chosen by the Consent Holder independent of the Contractor.

Access to the asbestos removal area will be restricted until the visual inspection has been undertaken and documentation stating the Site is “safe to re-occupy” has been issued.

In preparation of the visual inspection, all asbestos containing waste must have been removed from the Site or be appropriately sealed (in the case of capping contaminated soil).

Should the project managers wish for the Site to be classified as remediated of asbestos in soil, Site Validation will need to be undertaken and overseen by a SQEP who will issue a Site Validation Report. This will include soil samples to validate that impacted material has been removed as per the remedial targets.

The SQEP must forward all field data/results and clearance/closure documentation to the Consent Holder assigned specialist asbestos manager.

10 Post Works Procedures

10.1 Long Term Management

The soil disturbance works will be undertaken to enable facilitation of the Consent Holder projects or site development works. Not all soil disturbance works aims to remediate the Site of potentially contaminated soil.

The PCBU, that will manage or control the works at the Site, must ensure that a written plan (RAP or AMP) is prepared wherever contamination is known to have either been left in-situ or re-used onsite to manage the risk of residual contaminated materials (including asbestos) at the Site. In areas where potential asbestos contaminated soil is left in-situ an ongoing site management plan should be prepared by the SQEP to control future activities where remaining asbestos and other residual contaminants exist in soils that do not require immediate remedial action or disturbance as part of development. RAP and/or AMPs including long term management requirements will be prepared at the time that long term use is established.

10.2 Works Completion Reporting

10.2.1 Annual Soil Disturbance

The Consent Holder shall maintain and update a Works Completion Register of all projects where soil disturbance works was carried out. The register will record all soil disturbance undertaken, regardless of volume.

For projects where works will span multiple reporting periods, approximate soil disturbance volumes undertaken in each period will be provided (where available) and the project noted as 'ongoing'.

Any Site Validation or Contamination Assessment Reports will be issued to Council for their records.

The register will also include a site plan showing the location of each project for the period.

The works completion register will be provided to Council for years where more than 200m^3 were carried out. The register will summarise the works undertaken under the provisions of the global NESCS/ AUP consent. The annual reporting timeframes will be confirmed upon the receipt of the consent conditions.

A template for the works completion register is included as **Appendix C**.

10.2.2 Soil Disturbance Volumes Greater than 200 m^3

A Works Completion Report shall be submitted to the Council for their record for any projects involving soil disturbance volumes greater than 200 m^3. The report will be submitted to Council within three months of the completion of the works.

The report will be prepared by the SQEP in accordance with the MfE Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand, and will include:

- A summary of the works undertaken, including the location and dimensions of the excavations carried out and the volume of soil excavated.
- Details and results of any testing, including validation testing, undertaken and interpretation of the results.
- Records/evidence of the appropriate disposal for any material removed from the Site.
- The mitigation and management measures applied to soil contamination remaining on site, if applicable.
- Records of any unexpected contamination encountered during the works and response actions, if applicable.
- Long term site management and monitoring plan, if applicable.

- Reports of any complaints, health and safety incidents related to contamination, and/or contingency events during the earthworks.
- A record of any deviations from this CSMP, if applicable.
- A statement certifying that all works have been carried out in accordance with the requirements of the global consent and the Site is safe for the intended use without any further remediation.

11 Limitations

This report has been prepared by Beca Ltd (Beca) solely for Marutūāhu Rōpū and Waiohua-Tāmaki Rōpū (Client).

This report is prepared solely for the purpose of managing contaminated soils during the Carrington Development Project works. Beca accepts no liability to any other person for their use of or reliance on this report, and any such use or reliance will be solely at their own risk.

In preparing this report Beca has relied on key information including the following:

- URS New Zealand Limited (23 June 2014) Unitec Mount Albert Campus Redevelopment – Preliminary Site Investigation Report
- WSP (June 2017) Phase 1 Environmental Due Diligence and Development Project – Wairaka Precinct Masterplan. Unitec Institute of Technology.
- WSP (August 2017) Stage 2 Detailed Site Investigation Land Development Project – Wairaka Precinct Masterplan. Unitec Institute of Technology.
- Beca Limited (22 September 2021) Desk-based Contamination Assessment – Gap Analysis Wairaka Precinct Development

Unless specifically stated otherwise in this report, Beca has relied on the accuracy, completeness, currency and sufficiency of all information provided to it by, or on behalf of, the Client or any third party, including the information listed above, and has not independently verified the information provided. The reports listed above that have been provided to Beca as 'Draft' have been relied upon as if they are 'final'. Beca accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the information provided.

The contents of this report are based upon our understanding and interpretation of current legislation and guidelines ("Standards") as consulting professionals and should not be construed as legal opinions or advice. Unless special arrangements are made, this report will not be updated to take account of subsequent changes to any such Standards.

This report should be read in full, having regard to all stated assumptions, limitations and disclaimers.

A

Appendix A – HAIL Areas List

List of HAIL areas and potential contaminants of concern

HAIL ID	Applicable HAIL Code	Source	Comment	HAIL Identified	Number of Targeted Soil Sampling Locations	Potential Contaminants of Concern
				HAIL activities undertaken at the site		
1	E1, A2, A14	2014 PSI	Historically used a psychiatric hospital	E1 Asbestos exterior cladding and exterior and underfloor pipe insulation A2 2x Dangerous Goods Cabinets A14 Pharmaceutical manufacture, blending, mixing or formulation	4 soil samples. One exceedance of adopted human health criteria for arsenic.	Asbestos, Listed by URS as "Type of storage TBC" – Recommend adopting SVOC//TPH/Metals Pharmaceutical storage – recommend adopting a range or organic and non-organic commonly stored chemicals as CoC (may require a library search for contaminants for testing purposes)
2	E1	2014 PSI	Historically used a psychiatric hospital. Site has been modified since the 2014 URS HAIL report was released.	E1 Asbestos roof		Asbestos
3	B2	2014 PSI	Historically used a psychiatric hospital	B2 Power transformer	3 soil sample locations. Two samples exceeded of adopted human health criteria for Benzo(a)Pyrene equivalence.	PCBs, hydrocarbons, trace elements
6	E1	2014 PSI	Historically used a psychiatric hospital	E1 Asbestos pipe insulation	2 sampling locations. Once sample exceeding the environmental risk criteria for copper.	Asbestos
12	E1, A17	2014 PSI	Historically used as District Hospital Board as inwards good store and logistics	E1 Asbestos roof, drains, sumps & ground 2m from pipes A17 Underground storage systems (probably diesel) in car park west of building, no tank removal report exists	1 sampling location. 1 bulk asbestos containing material detected.	Asbestos, petroleum hydrocarbons
14	A2	2014 PSI		A2 Chemical bulk storage		Listed by URS as "Type of storage TBC" – Recommend adopting SVOC/VOC/TPH/Metals
15	A2	2014 PSI	Historically used a psychiatric hospital	A2 Chemical bulk storage		Listed by URS as "Type of storage TBC" – Recommend adopting SVOC/VOC/TPH/Metals
16	E1, A17, A3, G6	2014 PSI	Historically used as mortuary and embalming (with underground cesspit) and earthworks/filled.	E1 Asbestos pipe insulation debris A17 Self-contained diesel generation A3 Commercials analytic laboratory G6 Wastewater treatment (cesspit)	4 sampling locations. One exceedance of adopted human health criteria for arsenic.	Asbestos Diesel Listed by URS as "Type of storage TBC" – Recommend adopting SVOC//TPH/Metals, Formaldehyde, nitrates, lead, mercury, biological hazards.
17	A2, B2, A17	2014 PSI		A2 Workshop with standalone dangerous goods storage B2 Transformer A17 Underground storage system (probably petrol) just north of building removed in 1990s	1 sampling location. Once sample exceeding the environmental risk criteria for nickel.	Petroleum hydrocarbons., Listed by URS as "Type of storage TBC" – Recommend adopting SVOC//TPH/Metals
18	A1, A17	2014 PSI	1996 proposed Mobil Training Centre (petrol station)	A1 Agrichemicals. A17 Storage Tanks		Listed by URS as "Type of storage TBC" – Recommend adopting SVOC//TPH/Metals
23	B2, A10	2014 PSI	Historical horticultural building	B2 Power transformer. A10 Pesticide use	1 sampling location.	PCBs, hydrocarbons, trace elements, herbicides, organophosphates, organochlorides.
24	A10	2014 PSI		A10 Greenhouse	Additional investigation undertaken by Beca Limited May 2021. Detailed Site Investigation Report for Wairaka Stream Daylighting Works at Unitec Campus Mount Albert Auckland	Trace elements, herbicides, organophosphates, organochlorides.
27	A10	2014 PSI		A10 Sports turf		Listed by URS as "Type of storage TBC" – Recommend adopting OCP/ONP/Metals
29	A14	2014 PSI		A14 Pharmaceutical manufacture, blending, mixing or formulation		Pharmaceutical storage – recommend adopting a range or organic and non-organic commonly stored chemicals as CoC (may require a library search for contaminants for testing purposes)
33	B2	2014 PSI And 2017 DSI		B2 Power transformer and		PCBs, hydrocarbons, trace elements
C4	G5	2017 DSI and Beca 2021	Fill noted in 2017 DSI report	G5: Waste to land north of building 33.	1 sample location. Exceeded human health and environmental criteria for arsenic, lead and chromium. Zinc and nickel exceeded the targeted environmental criteria (at various depths).	PCBs, hydrocarbons, trace elements, asbestos
34	A17	2014 PSI		A17 Utility shed, small quantities of chemicals, fuels, paints.	2 sample locations. Exceeded human health criteria for arsenic. Exceeded environmental criteria for nickel. Additional investigation undertaken by Beca Limited May 2021. Detailed Site Investigation Report for Wairaka Stream	Listed by URS as "Type of storage TBC" – Recommend adopting SVOC/VOC/TPH/Metals
35	F4	2014 PSI		F4 Fuel storage, vehicle refuelling and repair		Hydrocarbons including PAHs, solvents and metals combined in waste oil.
36	A10	2014 PSI		A10 Greenhouse (constructed 1995)		Trace elements, herbicides, organophosphates, organochlorides. Type of storage TBC.

HAIL ID	Applicable HAIL Code	Source	Comment	HAIL Identified	Number of Targeted Soil Sampling Locations	Potential Contaminants of Concern
					Daylighting Works at Unitec Campus Mount Albert Auckland	
41	E1, A14	2014 PSI	Historically used a psychiatric hospital	E1 Asbestos pipe insulation in roof space and soffits A14 Pharmaceutical manufacture, blending, mixing or formulation	1 soil sampling location.	Asbestos. Range of chemicals and solvents.
45	B2	2014 PSI		B2 Power transformer.		PCBs, hydrocarbons, trace elements
46	A14	2014 PSI		A14 Pharmaceutical manufacture, blending, mixing or formulation	1 soil sampling location.	Pharmaceutical storage – recommend adopting a range or organic and non-organic commonly stored chemicals as CoC (may require a library search for contaminants for testing purposes)
48	B2	2014 PSI	Historically used a psychiatric hospital	B2 Power transformer		PCBs, hydrocarbons, trace elements
49	No HAIL code assigned	2014 PSI	Unconfirmed whether this is building 49.	Chemical/fuel storage		Listed by URS as “Type of storage TBC” – Recommend adopting SVOC/VOC/TPH/Metals
108	E1, F4, B2, A17, A2	2014 PSI		E1 Asbestos cement exterior cladding including roof F4 Automotive workshop B2 Transformer A2 Several Dangerous Goods Stores A17 Underground storage system (petrol) south of building- filled with sand		Asbestos, hydrocarbons, petroleum hydrocarbons, solvents, trace elements, PCBs, industrial gases including LPG, acetylene and oxygen. Type of storage TBC – recommend adopting a range or organic and non-organic commonly stored chemicals as CoC (may require a library search for contaminants for testing purposes)
114	E1, A3	2014 PSI		E1 Asbestos cement exterior cladding including roof, gutters, drains, sumps and ground 2m from downpipe. A3 Commercial analytical laboratories with several Dangerous Goods Stores		Asbestos. Type of storage TBC.
115	E1, A10	2014 PSI		E1 Asbestos cement exterior cladding including roof, gutters, drains, sumps and ground 2m from downpipe A10 Pesticide storage and use, laboratories		Asbestos, trace elements, herbicides, organophosphates, organochlorides.
170	B2	2014 PSI		B2 Power transformer		PCBs, hydrocarbons, trace elements.
172	B2	2014 PSI		B2 Power transformer		PCBs, hydrocarbons, trace elements.
173	B2	2014 PSI		B2 Power transformer		PCBs, hydrocarbons, trace elements.
174	B2	2014 PSI		B2 Power transformer		PCBs, hydrocarbons, trace elements.
178	A10	2014 PSI	Noted fill up to 0.9m, horticultural activities (in car park north east of building)	A10 Market gardens		Trace elements, herbicides, organophosphates, organochlorides.
180	B2	2014 PSI		B2 Power transformer		PCBs, hydrocarbons, trace elements.
200	A14	2014 PSI	Noted fill up to 0.5m	A14 Pharmaceutical manufacture, blending, mixing or formulation	2 sampling locations.	Pharmaceutical storage – recommend adopting a range or organic and non-organic commonly stored chemicals as CoC (may require a library search for contaminants for testing purposes)
201	A10	2014 PSI	Historical sports field	A10 Sports turf		Trace elements, herbicides, organophosphates, organochlorides.
202	E1, A14	2014 PSI	Historical psychiatric hospital residence	E1 Asbestos cement exterior cladding including roof, gutters, drains, sumps and ground 2m from downpipe A17 Possible chemicals and fuel storage A14 Pharmaceutical manufacture, blending, mixing or formulation	1 soil sampling location.	Asbestos, Listed by URS as “Type of storage TBC” – Recommend adopting SVOC/VOC/TPH/Metals Pharmaceutical storage – recommend adopting a range or organic and non-organic commonly stored chemicals as CoC (may require a library search for contaminants for testing purposes)
203	No HAIL code assigned	2014 PSI		Possible chemicals and fuel storage.	1 soil sampling location.	Listed by URS as “Type of storage TBC” – Recommend adopting SVOC/VOC/TPH/Metals
204	No HAIL code assigned	2014 PSI		Possible chemicals and fuel storage	1 soil sampling locations. 1 sample exceeded the adopted human health criteria for lead	Listed by URS as “Type of storage TBC” – Recommend adopting SVOC/VOC/TPH/Metals
205	No HAIL code assigned	2014 PSI		Possible chemicals and fuel storage		Listed by URS as “Type of storage TBC” – Recommend adopting SVOC/VOC/TPH/Metals
206	No HAIL code assigned	2014 PSI		Possible chemicals and fuel storage	1 sampling location.	Listed by URS as “Type of storage TBC” – Recommend adopting SVOC/VOC/TPH/Metals
207	A10, A14	2014 PSI	Historical horticultural use and psychiatric hospital residence	A10 Market gardens A14 Pharmaceutical manufacture, blending, mixing or formulation	2 soil sampling locations. One sample exceeded the adopted human health criteria for Benzo(a)pyrene eq.	Trace elements, herbicides, organophosphates, organochlorides. Range of chemicals and solvents (may require a library search for contaminants for testing purposes).
208	A10, A14	2014 PSI	Historical horticultural use and psychiatric hospital residence	A10 Market gardens A14 Pharmaceutical manufacture, blending, mixing or formulation		Trace elements, herbicides, organophosphates, organochlorides. Range of chemicals and solvents (may require a library search for contaminants for testing purposes).
209	A10, A14	2014 PSI	Historical horticultural use and psychiatric hospital residence	A10 Market gardens. A14 Pharmaceutical manufacture, blending, mixing or formulation		Trace elements, herbicides, organophosphates, organochlorides. Range of chemicals and solvents (may require a library search for contaminants for testing purposes).

HAIL ID	Applicable HAIL Code	Source	Comment	HAIL Identified	Number of Targeted Soil Sampling Locations	Potential Contaminants of Concern
210	A10, A14	2014 PSI	Historical horticultural use and psychiatric hospital residence	A10 Market gardens. A14 Pharmaceutical manufacture, blending, mixing or formulation		Trace elements, herbicides, organophosphates, organochlorides. Range of chemicals and solvents (may require a library search for contaminants for testing purposes).
312	A10	2014 PSI	Historical horticultural use and market gardens	A10 Market gardens		Trace elements, herbicides, organophosphates, organochlorides.
313	A10	2014 PSI	Historical horticultural use and market gardens	A10 Market gardens		Trace elements, herbicides, organophosphates, organochlorides.
310-311	A10	2014 PSI	Historical horticultural use and market gardens	A10 Market gardens		Trace elements, herbicides, organophosphates, organochlorides.
37-40	G6, A10, A1	2014 PSI		G6 Composting plant. A10 Greenhouse (constructed 1995) A1 Agrichemicals	1 sampling location. One sample exceeded the adopted human health criteria for arsenic.	Trace elements, herbicides, organophosphates, organochlorides. Type of storage TBC.
B	A10	2014 PSI	Historical horticultural activities	A10 Market gardens	7 soil sampling locations. Four samples exceeded the adopted human health criteria for arsenic and lead. One sample exceeded the adopted human health criteria for Benzo(a)pyrene	Trace elements, herbicides, organophosphates, organochlorides.
c	A10	2014 PSI And Beca 2021		A10 Market gardens	2017 DSI: 3 sampling locations. One sample exceeded the adopted human health criteria for arsenic. Additional investigation undertaken by Beca Limited May 2021. Detailed Site Investigation Report for Wairaka Stream Daylighting Works at Unitec Campus Mount Albert Auckland	Trace elements, herbicides, organophosphates, organochlorides.
C1	E1, I	Beca 2021	Demolished building. Identified 2021	E1 Asbestos in a deteriorated condition I Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health and the environment		Asbestos and lead
C2	E1, I, A14	Beca 2021	Demolished building originally labelled 44 and 52. Area subject to previous potential HAIL categories including chemical/fuel storage and Pharmaceutical storage and manufacturing	E1 Asbestos in a deteriorated condition I Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health and the environment A14 Pharmaceutical manufacture, blending, mixing or formulation		Asbestos and lead, listed by URS as “Type of storage TBC” – Recommend adopting a range or organic and non-organic commonly stored chemicals as CoC (may require a library search for contaminants for testing purposes)
C3	G5	Beca 2021	Appears filled likely from construction works undertaken at surrounding areas, potentially containing fill. Identified 2021 – possibly contains traces of asbestos from contoured fill from buildings demolished to the south in 2016.	G5 Waste disposal to land		Construction and building waste including Asbestos, TPHs and heavy metals
d	~~A10~~ Removed HAIL code	2014 PSI & Beca 2021	Barns against northern boundary – unknown use	A10 Sports turf	7 soil sampling locations (Beca 2021). One sample exceeded the adopted human health criteria for arsenic but 95% Upper Confidence Level Arsenic Concentration of Arsenic across sports field is not above adopted human health risk criteria.	Trace elements, herbicides, organophosphates, organochlorides.
C5		Beca 2021		G5 Waste disposal to land	1 soil sampling location. One sample exceeded the adopted human health criteria for arsenic.	
e	G3	2014 PSI	Potential fill, former residential property and barn (west of building 33)	G3 Landfill site		Trace elements
f	I	2014 PSI	Run-off collection point	I Accumulation of contaminants		Dependent on contaminants associated with catchments.
P2	A10	2014 PSI	Horticultural activities	A10 Market gardens	2 soil sample locations.	Trace elements, herbicides, organophosphates, organochlorides.
P3	G3 and A10	2014 PSI	Potential fill, pastoral land	G3 Landfill site	2 soil sample locations.	Trace elements, herbicides, organophosphates, organochlorides.
HAIL activities undertaken on neighbouring sites						

HAIL ID	Applicable HAIL Code	Source	Comment	HAIL Identified	Number of Targeted Soil Sampling Locations	Potential Contaminants of Concern
B	A14, A3, G4	2014 PSI	Historical storage of scrap metal	A14 Pharmaceutical manufacture, blending, mixing or formulation A3 Commercial analytical laboratory G4 Scrap yard		No contaminants of concern are likely to migrate to the subject site in sufficient quantity to result in a risk to human health or the environment.
C	A5	2014 PSI	Currently operating as Taylors Laundry	A5 Dry cleaning	4 sampling locations around the facility (upgradient and downgradient of the facility).	Volatile hydrocarbons including trichloroethylene, 1,1,1- trichloroethane, tetrachloroethene and carbon tetrachloride.
D	G3	2014 PSI	Potentially uncontrolled fill	G3 Waste disposal to land		No contaminants of concern are likely to migrate to the subject site in sufficient quantity to result in a risk to human health or the environment
G	F7	2014 PSI	BP Petrol Station (1356 Great North Road, Waterview)	F7 Service station		Total Petroleum hydrocarbons including BTEX

B

Appendix B – Task Sequence Flowchart

Task Sequence Flowchart for Activities on HAIL Sites

Change in land use and subdivision activities

Do any of the proposed works include a change in land use or subdivision within a mapped HAIL area?

Yes

Engage SQEP

SQEP should review the mapped HAIL area and assess if the change in land use or subdivision will result in a change in risk profile where impacted soils are exposed.

This step may include undertaking soil sampling

Is there a change in risk profile?

No

Issue subdivision information pack to Council and provide details on how updated Lots relate to HAIL boundaries. May include an updated map.

Yes

The SQEP will advise if works can be carried out under the works categories of the Site-wide CSMP or whether a project site-specific Remediation Action Plan (RAP) is required to manage the risk and future activities

Council should be notified at least 5 days prior to the land use change. A summary of the proposed mitigation / remediation, including any long-term management requirements, will be included in the notification

A Site Validation Report or Works Completion Report should be prepared post completion of works. The reports are to be shared with Council within 3 months of completion

Change in Land use and Subdivision

Soil disturbance, fuel storage system removal/replacement of structures activities

Do any of the proposed works include soil disturbance, fuel storage system removal/replacement of structures activities within a mapped HAIL area?

Yes

Engage SQEP

SQEP to review the HAIL area and assess if adequate soil sampling has been undertaken in the area of proposed works.

Adequate soil sampling completed?

Yes

No

SQEP and Project Manager to undertake cost : benefit analysis of undertaking soil sampling.

Soil sampling determined to be required?

No

Works to be undertaken as Category 3.

N.B. the SQEP may determine that sufficient PSI information is available to revise this category level down

Yes

SQEP determines scope of DSI

SQEP undertakes soil sampling / DSI

SQEP reviews soil sampling results and advises Consent Holder and Lead Contractor of the category that works should be undertaken as.

Category 1

No contamination identified: all contaminant concentrations below human health and environmental guideline values

Category 2

Low level contamination (including asbestos) with levels reflecting a risk generally below human health and environmental guidelines - if asbestos is within the unlicensed asbestos works scenario

Category 3

Contamination above human health and/or environmental guidelines - if asbestos is present within the asbestos related work scenario

Category 4

Contamination above human health and/or environmental guidelines - if asbestos is present within the licensed asbestos work scenario

Are soil disturbance quantities more than 200 m^3?

No

Yes

Council should be notified 5 working days prior to undertaking earthworks

Contractor to undertake works as per site-wide CSMP

Calculate final volume of soil disturbance undertaken as part of the project.

Was the project soil disturbance less than 200 m^3?

Yes

No

Works Completion Register to be updated by Consent Holder

Works Completion Register and any Site Validation Reports to be provided to Council annually in years where more than 200m^3 of soil disturbance have occurred under the provisions of the NESCS / AUP E30 consent. The register will be updated and managed by the Consent Holder

Works Completion Register to be completed by SQEP and provided to Council within 3 months of works being completed

Soil Disturbance and Fuel Storage Systems Removal

prepared by

Beca

C

Appendix C – Works Completion Register

Annual Register of Soil Disturbance Volumes Less than 200 m^3

Project Name#	Project Ref.	Project Manager	SQEP Contact and Company	Contractor and Company	Site Supervisor and Company	Date of Works	Site-wide CSMP Category of Works	Volume of Soil Disturbance	Volume of Off-site Soil Disposal	Location of Off-site Soil Disposal*	Unexpected Contamination Discovery^

#Site location plan showing area of earthworks and any contamination assessments reports needs to be provided

** Disposal dockets to be attached.*

^ If unexpected contamination is discovered a record of the discovery is to be attached. The record should include:

- *A description of the material (with photographs)*
- *Notification to and any correspondence with Auckland Council*
- *Testing results undertaken by the SQEP*
- *Summary of remedial measures undertaken by the Contractor (as advised by the SQEP)*