Site Management Plan

Excavation and Handling of Contaminated Soils at Christchurch International Airport

CHRISTCHURCH AIRPORT

Document Control

		Site Management Plan - Excavation and Handling of Contaminated Soils at Christchurch International Airport				
Revision	**Date**	**Document prepared by**			**CIAL Review and Approval**	
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TERMINOLOGY

Category SMP	Category Site Management Plan. A separate SMP has been prepared for each risk category: high risk, medium risk and low risk. The category SMPs set out the measures that need to be put in place during earthworks to manage the risks posed by potentially contaminated land.
NES Soil Regulations	National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011.
Users' Guide	A guidance document (*CIAL Users' Guide – Contaminated Land)* put together by CIAL to support CIAL employees and its site users/stakeholders to manage the disturbance of soil in the area covered under resource consent RMA2016884.
HAIL	Hazardous Activities and Industries List. A compilation by the Ministry for the Environment of activities and industries that are considered likely to cause land contamination resulting from hazardous substance use, storage or disposal.
PSI	Preliminary Site Investigation.
Risk category	HAIL activities identified in the PSI have been classified based on likely risk to human health. Based on the nature and occurrence of HAIL activities, the Airport campus has been subdivided into three categories of declining risk (high, medium, low). The HAIL activities for each risk category are set out in the respective category SMP.
Risk Category Maps	Maps showing the boundary of each risk category available on the CIAL website for Contractors and Suppliers.
SMP	Site Management Plan.
SQEP	Suitably Qualified Environmental Practitioner.

1 INTRODUCTION

This Site Management Plan (SMP) is for ground disturbance at 850 ha of the Christchurch International Airport campus (the site) that is covered under a global resource consent for soil disturbance activities. The site comprises 106 parcels in western Christchurch. Christchurch International Airport Limited (CIAL) owns the land area covered under the consent, which comprises the airport and associated operations, leased commercial land, undeveloped areas, and roadways. However tenants manage operations at their respective leased sites. The extent of the site boundary is shown in Figure 1 of the Risk Category Maps[1].

Soil disturbance may be required during operations at the site, which include airport maintenance and expansion projects, and the development of commercial land and associated roadways. This SMP has been prepared to provide procedures for the appropriate excavation, handling and disposal of potentially contaminated materials that may be encountered when disturbing soils at the site.

This document is structured as follows:

- **Section 2** provides a background to this SMP, including resource consent RMA2016884, the Preliminary Site Investigation underlying this SMP, and updates that have been made to the SMP and Risk Category Maps post 2016.
- **Section 3** summarises the objective and scope of the category SMPs, and the processes, roles and responsibilities of working under these plans.
- **Section 4** provides a summary of each category SMP.
- **Section 5** contains the verification and reporting required under this document.
- **Section 6** summarises general matters related to this SMP, including the applicability of the SMPs and relation to other processes, matters relating to the distribution and review of the SMP, and the regulatory context for this document.

This overarching SMP document should be read together with category SMP and the Risk Category Maps available on the CIAL website for Contractors and Suppliers.

2 BACKGROUND TO THE SITE MANAGEMENT PLANS

2.1 RESOURCE CONSENT

CIAL holds a global resource consent (RMA2016884) with the Christchurch City Council (CCC) to disturb potentially contaminated soil, remove or replace fuel storage systems, as well as routine works and other earthworks on the land under NES Soil Regulations[2]. This SMP meets the resource consent conditions and will need to be applied during all works which involve ground disturbance.

[1] Any sites located outside the site boundary shown on Figure 1 of the Risk Category Maps is not covered by the global NES Soil resource consent and will need to be addressed separately.
[2] National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011.

2.2 PRELIMINARY SITE INVESTIGATION

Tonkin & Taylor Ltd (T+T) prepared a 2016 Preliminary Site Investigation (PSI)[3] to identify current or historical uses at the site with the potential to cause ground contamination, and the likely nature and extent of contamination. The PSI identified several uses that are included on the Ministry for the Environment's Hazardous Activities and Industries List (HAIL)[4]. The findings of the PSI form the basis for this SMP.

The general findings of the PSI are summarised below:

- The Airport campus was primarily used for agricultural activities prior its development in 1937;
- In 1940, the Airport was converted to a RNZAF elementary flying school. A bomb squadron was established on the site in the event of an enemy attack. Shooting and grenade throwing training was also reported to have occurred within the site;
- Post-WW2, the airport was developed as an international airport; and
- The land surrounding the Airport campus was incrementally acquired to accommodate airport expansion and the development of adjacent parcels for commercial tenancy.

In order to efficiently and consistently address the management of potentially contaminated areas across the Christchurch International Airport campus, a whole site risk-based management approach has been developed. HAIL activities identified in the PSI have been classified based on likely risk to human health (refer PSI Table 4.1). Based on the nature and occurrence of HAIL activities, the Airport campus has been subdivided into three management categories of declining risk.

Risk Category Maps and category SMPs have been produced for each risk management category.

2.3 UPDATES TO THE SMP

As new investigations were undertaken post-2016 this new information was used to update the Risk Category Maps in 2019. Both the SMP and associated Risk Category Maps are available on the airport website for contractors to access and implement during soil disturbance projects. The reports gathered since 2019 have been used in updating the Risk Category Maps in this 2024 version of the SMP.

Due to the nature of chemicals produced and used globally and the developing understanding of the impacts of the chemicals on human health and the environment, there is a growing awareness of emerging contaminants. This version of the SMP includes emerging contaminants, specifically Per- and Poly-Fluoroalkyl Substances (PFAS). Information on PFAS use within the airport campus is informed by the 2024 GHD Ltd PFAS Baseline report[5]. The GHD report provides an overview of the historical uses and locations at the airport where PFAS may be a contaminant of concern.

[3] Tonkin & Taylor, March 2016. Preliminary Site Investigation for Ground Contamination, Christchurch International Airport, prepared for CIAL.
[4] Hazardous Activities and Industries List, Ministry for the Environment, 2011.
[5] GHD Ltd, September 2024. Baseline Report: The Implications of the Historical Use of PFAS Containing Products at Christchurch International Airport

3 WORKING UNDER SITE MANAGEMENT PLANS

3.1 OBJECTIVE OF THE SMP

The objective of the SMP is to provide procedures for the excavation, handling and disposal of contaminated soil encountered during maintenance and capital works projects, to minimise adverse effects on human health, and manage discharges to the environment.

Separate SMPs have been prepared for each management category. The category SMPs provide management and health and safety procedures that have been designed to reflect the likelihood of encountering ground contamination in the area and the potential risk to human health.

3.2 SCOPE OF THE SMP

The category SMPs provide procedures for:

- Undertaking excavations in areas potentially containing contaminated soils;
- Identifying the presence of contaminants;
- Managing and containing contaminated soils encountered/excavated during soil disturbance works;
- Managing potential nuisance effects during the works such as odour, dust and tracked soil;
- Managing health and safety during the works associated with potentially contaminated soil;
- Undertaking validation soil sampling to assess whether soils remaining on site are compliant with use criteria;
- Monitoring the works to ensure that works are undertaken in accordance with the SMP; and
- Determining the appropriate disposal location of surplus soils.

The category SMPs should be read in conjunction with the applicable findings of the PSI.

This SMP is not intended to cover the management of non-soil waste materials, such as removed pipe work or other infrastructure materials. It does however cover the handling and disposal procedures for asbestos containing materials (ACM) such as asbestos cement pipes.

3.3 RISK CATEGORY MAPS

The Risk Category Zoning Maps are based on a combination of sub-layers which include HAIL activities, previous investigations and the potential for emerging contaminants to be present. The emerging contaminants sub-layer will be updated as new information or emerging contaminants is acquired, and at this stage currently covers areas of PFAS use only.

3.4 APPLYING THE CATEGORY SMPS

Prior to works commencing, the party undertaking the works is to ascertain (via the Risk Category Maps[6]) which category applies to a proposed work area and notify the Contractor, who shall apply the appropriate SMP for all soil disturbance works. Guidance on which Site Management Plan, or which other

[6] christchurchairport.co.nz/globalassets/about-us/doing-business-with-us/contractors-and-suppliers/contaminated-soil-risk-category-maps.pdf

management measures, are applicable is contained in Section 3.1 of the Users' Guide[7], and in Figure 1 below.

Several areas have been used for multiple HAIL activities that have been classified in different risk categories (e.g. fuel storage and persistent pesticide use). Where a work area contains more than one category, the category SMP for the highest risk category shall be used.

Ground contamination investigations have been undertaken on a number of HAIL sites within the Airport campus. These investigations have not been assessed for methodology, results, or reliability. Additionally, the suitability of the sampling program will be highly dependent on the development plan and proposed use of the area. The CIAL Environment and Planning team may choose to review these reports to refine the risk classification selection for a particular work area. If the final classification differs from the categorisation above and in the Risk Categorisation Flow Chart (see **Figure 1** below), a rationale for the selection shall be included in reporting to CCC. Consultation between CIAL and the relevant Contaminated Land Specialist for that specific project must be undertaken if existing reports are used to modify an area classification.

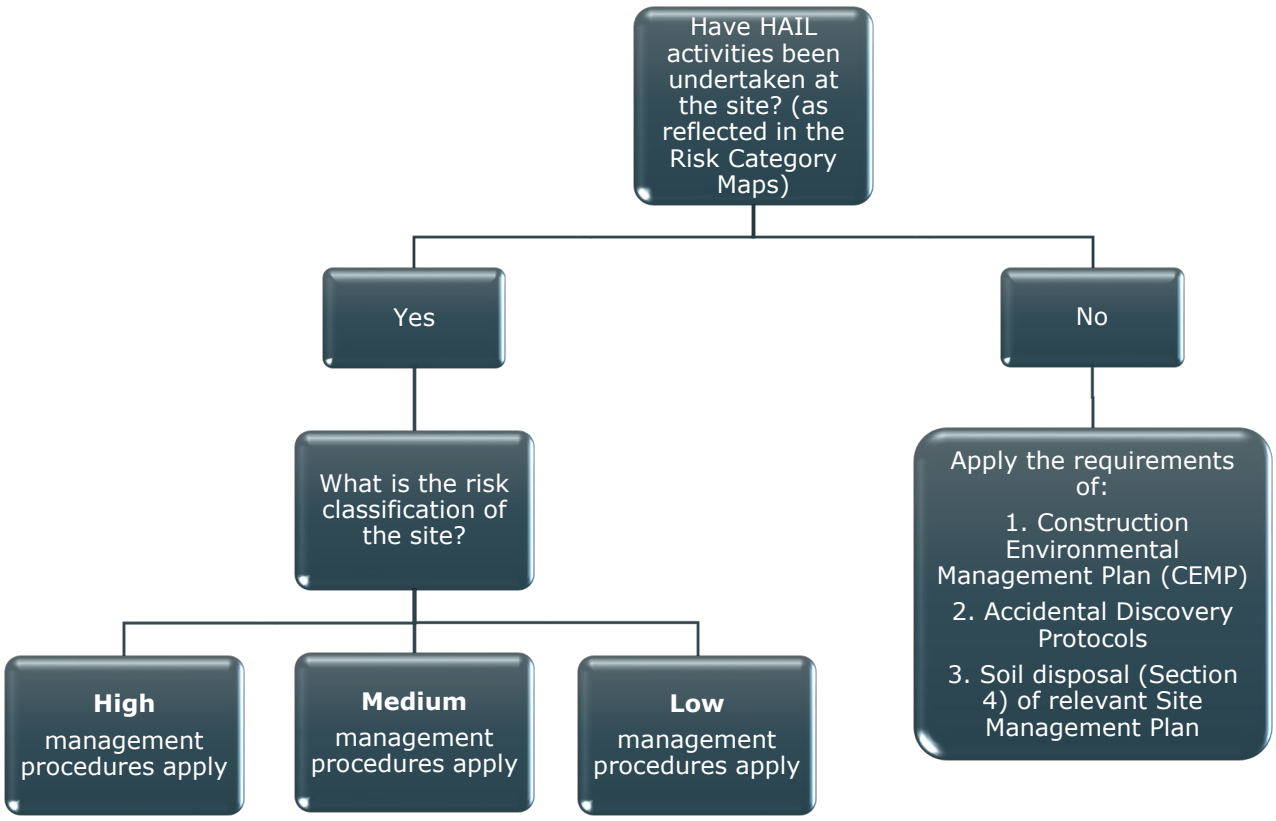


Figure 1: *Christchurch Airport earthworks management measures*

3.5 ROLES AND RESPONSIBILITIES

CIAL shall be responsible for:

- Distributing to the Contaminated Land Specialist any relevant reports from previous investigations that intersect proposed works.

[7] Enviser, November 2024, *CIAL Users' Guide – Contaminated Land,* prepared for CIAL

- Distributing the appropriate SMP to site contractors carrying out works;
- Compiling a report every six months for provision to CCC, as per Condition 4 of resource consent RMA2016884.
- Updating the SMP as necessary and ensuring any updated versions are provided to CCC and Contractors; and
- Providing advice and guidance to the project team as required on the application of the SMPs.

The Contractor is responsible for:

- Identifying the appropriate category SMP using the Contaminated Soil Risk Category Maps;
- Designating a Site Environmental Supervisor and Health and Safety Officer;
- Ensuring that all site staff and subcontractors understand and comply with the procedures and the health and safety requirements;
- Ensure the most recent updated copy of the SMP is kept at the work area;
- Implementing the required management procedures and health and safety controls as set out in the relevant category SMP;
- Ensuring that the site works are undertaken in accordance with this document and the category SMP;
- Notifying the Contaminated Land Specialist prior to commencing works that require observation; and
- Submitting to CIAL the verification documentation as set out in Section 5 of this document.

A Contaminated Land Specialist will need to be appointed provide training and inductions to site personnel, and provide contaminated land-related advice during works.

For further information, please refer to Appendix 1 of the Users' Guide.

3.5.1 PROJECT ORGANISATION

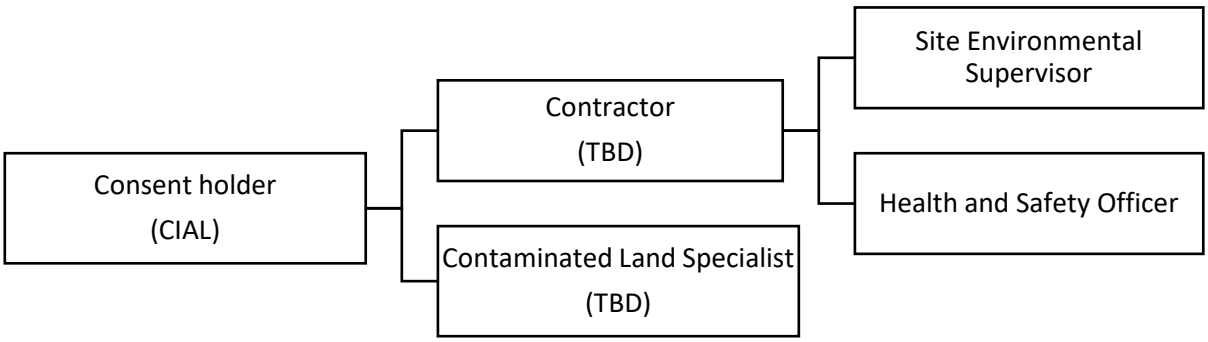


Figure 2: *Project organisation and required personnel.*

3.6 REQUIRED SITE PERSONNEL

3.6.1 CONTAMINATED LAND SPECIALIST

The Contaminated Land Specialist is engaged by CIAL to provide technical expertise as needed in the identification and disposal of contaminated soil under the guidance of a Suitably Qualified and Experienced Practitioner (SQEP, see Section 2.3.2). For the purposes of this SMP the Contaminated Land Specialist shall meet the following criteria:

> *The Contaminated Land Specialist shall be a person who is qualified to undertake a detailed site investigation (supervised) and who should have at least tertiary education in environmental science or engineering or a related field and two or more years of professional experience in environmental investigations and risk assessment.*

The Contaminated Land Specialist shall provide training to the Site Environmental Supervisor/Site Project Manager/Foreman on likely contaminants at the site, indicators of contamination, and the contents of the SMP. Additionally, at the commencement of works, all site staff shall be inducted by the Contaminated Land Specialist on appropriate personal protective equipment (PPE) use and indicators of contamination.

3.6.2 SUITABLY QUALIFIED & EXPERIENCE PRACTITIONER (SQEP)

The Contaminated Land Specialist should be guided by a SQEP in contaminated land. A SQEP is considered to meet the following criteria as set out in the NES Users' Guide:

- Relevant tertiary education in environmental science or engineering
- The person certifying the report has at least 10 years' experience
- Ideally the certifier is a member of a recognised professional body, such as a Certified Environmental Practitioner) through the Environment Institute of Australia and New Zealand (EIANZ) or Engineering New Zealand

The SQEP should review and approve advice on soil disposal in conjunction with CIAL prior to any soil being removed from the site.

3.6.3 SITE ENVIRONMENTAL SUPERVISOR

Prior to commencing any physical works on site, the Contractor shall nominate a Site Environmental Supervisor, who will receive training from the Contaminated Land Specialist on likely contaminants at the site, identification of contaminated materials, and the contents of the SMP. The Site Environmental Supervisor shall be responsible for ensuring that all requirements of this SMP are complied with, in particular:

- Conducting site inspections (regular inspections on Medium Risk Category areas, daily inspections on High Risk Category areas);
- The timely securing of permissions and documentation to dispose spoil material at appropriate disposal facilities;
- Notifying of CIAL and the Contaminated Land Specialist if suspected ground contamination is encountered;
- Collating and summarising tracking documentation detailing the disposal of contaminated materials; and
- Complying with building and resource consent conditions during the construction works.

3.6.4 HEALTH AND SAFETY OFFICER

An Environmental and Health and Safety Officer (HSO) shall be appointed by the Contractor for the duration of the works to ensure that contaminated land-related health and safety procedures are adhered to, alongside of those required under the Contractor's own Health and Safety Plan. The HSO shall have basic first aid training.

The HSO shall ensure that all relevant personnel are familiar with the application and use of the procedures and any PPE specified in this SMP before commencement of site work.

4 SITE MANAGEMENT CATEGORIES

Maps identifying the presence and extent of known HAIL activities at the Airport campus are provided with the Risk Category Zone Maps. A summary of each of these activities, the type of contamination they produce, identification of that contamination and the specific procedures required for soil management

are outlined in Table 1.1 of each category SMP. These procedures are in addition to the general, site-wide procedures. Please refer to the relevant category SMP for further information.

4.1 UNCATEGORISED SITES

Where no risk category intersects with a site, this means that there was no information found to suggest that current or historic activities have /has occurred on the site with the potential to cause ground contamination.

This does not definitively mean the ground is not contaminated. For this land, Accidental Discovery Protocols apply in the case unexpected ground contamination is encountered during the works. Contractors should be aware of the potential for unforeseen contamination to exist and be prepared to implement additional procedures if required by the contaminated land specialist.

The process contained in the flow chart in Figure 1 above and in the Users' Guide should be followed for all uncategorised sites.

5 VERIFICATION AND REPORTING

Verification is the process of confirming the objectives of the works have been achieved, and confirming works were undertaken according to agreed procedures and reporting requirements.

Verification shall be carried out on all work areas, with validation sampling carried out where evidence of contamination has been identified.

The verification and reporting tasks required under this SMP are set out below.

5.1 REPORTING TO CIAL

A Works Verification Form (Appendix 1 of the category SMP) will form the basis of the verification process and will be completed by the Contractor within one week of completion of the works. For projects where soil movement occurs in stages, the information below relating to soil movement shall be provided to CIAL within one week of the soil being moved off site.

If sampling is required, this will be undertaken by the Contaminated Land Specialist in accordance with the procedures outlined in Section 5.3. The Works Verification Form shall be submitted by the Contractor to CIAL's Environment and Planning Team. The Works Verification Form addresses the following:

- Confirmation that the soil disturbance works are complete;
- Confirmation if contaminated material was encountered or not during the works;
- Confirmation that soil disturbance works were completed according to this SMP and that there were no variations during the works;
- Confirmation that there were no environmental incidents during the works. If there was an environmental incident, then a letter shall detail the nature of the incident and the measures taken to mitigate effects;
- Results of any contamination tests undertaken; and
- Confirmation of the disposal destination of clean and contaminated soils, the verification test results undertaken for disposal permitting and confirmation of acceptance by the receiving fill facility.

Appended to the Works Verification Form will be copies of any laboratory results and contractor information as required below.

5.2 INFORMATION REQUIRED FROM THE CONTRACTOR

The following information, where not included specifically in the Works Verification Form, will be appended to the form and kept on file by CIAL's Environment and Planning Team. The information requirements are:

- Copies of weigh bridge summaries for the disposal destination for contaminated soil;
- Disposal volumes for natural soil removed and disposed;
- Records of visits by council representatives;
- Details of any complaints; and
- Details of any health and safety incident related to the contamination and how they were resolved.

The Contractor shall provide the required information within one month of completion of the works to which the information relates.

5.3 VALIDATION SAMPLING

As wide-scale remedial actions are not expected, and most of the site is likely to be sealed on the completion of works, validation sampling is not generally required. One notable exception will be if unexpected contamination is identified that may present a risk to future users of the site or groundwater or surface water discharges. If the Contaminated Land Specialist deems that validation sampling is required for a specific project, this will be carried out in accordance with the soil sampling procedures outlined in the relevant sections of each category SMP.

5.4 CIAL REPORTING TO CHRISTCHURCH CITY COUNCIL

A report shall be compiled every six months and provided to the CCC[8]. The report shall be compiled by CIAL outlining the works undertaken in the previous six-month period and any particular issues that arose.

The report shall cover all works aside from minor works meeting the permitted levels in the NES Soil Regulations. The report shall include the following:

- A brief description of each project;
- An approximate volume of soil disturbed for each project;
- An approximate volume of soil moved off site or within the airport site for each project; and
- Any additional remedial works or management required.

Contractors undertaking soil disturbance works will provide CIAL copies of all reports documenting the sampling, analysis, assessment, or disposal of any contaminated materials encountered. These reports will include information relating to the location, type and depths of contamination observed (if any), photographs, surrounding land uses and any monitoring/validation (if any).

[8] Marked for the attention of Team Leader Environmental Compliance Team (envhealthrcbc@ccc.govt.nz).

6 GENERAL REQUIREMENTS FOR WORKING UNDER THIS DOCUMENT

6.1 APPLICABILITY

The SMPs referred to in this document provide a framework for managing soil contamination hazards on site by identifying potential hazards and detailing mitigation measures. They provide information and recommendations to augment this process but are not intended to relieve the Contractor or the Principal of their responsibility for the health and safety of their workers, contractors and the public, or their responsibility for protection of the environment.

The provisions of the applicable SMP are mandatory for all persons (employees, contractor and sub-contractors) who will be involved in undertaking any of the proposed works.

Anyone undertaking such soil disturbance works should also refer to the separate CIAL document for the Users' Guide.

It is recommended that any persons undertaking works develop a site specific safety plan (SSSP) or job safety assessment (JSA) to complement the SMP and to address other health and safety requirements that may be applicable to their particular works. This plan should also be modified to address any specific health, safety or environmental issues that may arise during the works.

From time to time, statutory requirements, site occupation, operating procedures or site conditions may vary and will require that this plan be amended or updated.

6.2 DISTRIBUTION

The following parties have been provided with this SMP and the three category-specific SMP's:

- CIAL; and
- CCC.

A copy of the SMP shall be kept at the work area at all times.

6.3 REVIEW AND UPDATE

The consent conditions require this SMP to be updated by a SQEP and is now required to be reviewed every five years.

Any variations to the SMP shall be provided to CCC prior to implementation. Any changes made shall not reduce the level of control of the works without good evidence that this is acceptable.

It is the responsibility of CIAL to distribute updated versions of the SMP and to ensure the correct copy of the report is on site at all times.

6.4 REGULATORY CONTEXT

This document and associated Category SMP's have been prepared in general accordance with Ministry for the Environment Contamination Land Management Guidelines No.1 – *Guidelines for Consultants Reporting on Contaminated Sites in New Zealand*. Sampling procedures provided in the plans generally

comply with the MfE Contamination Land Management Guidelines No.5 – *Site Investigation and Analysis of Soils*.

The plans are also prepared in general accordance with the soil disturbance related controls referred to in the NES Soil Regulations. The persons preparing and certifying these SMP's are suitably qualified and experienced practitioners as required by the NES Soil Regulations and defined in the NES Soil Users' Guide (April 2012).

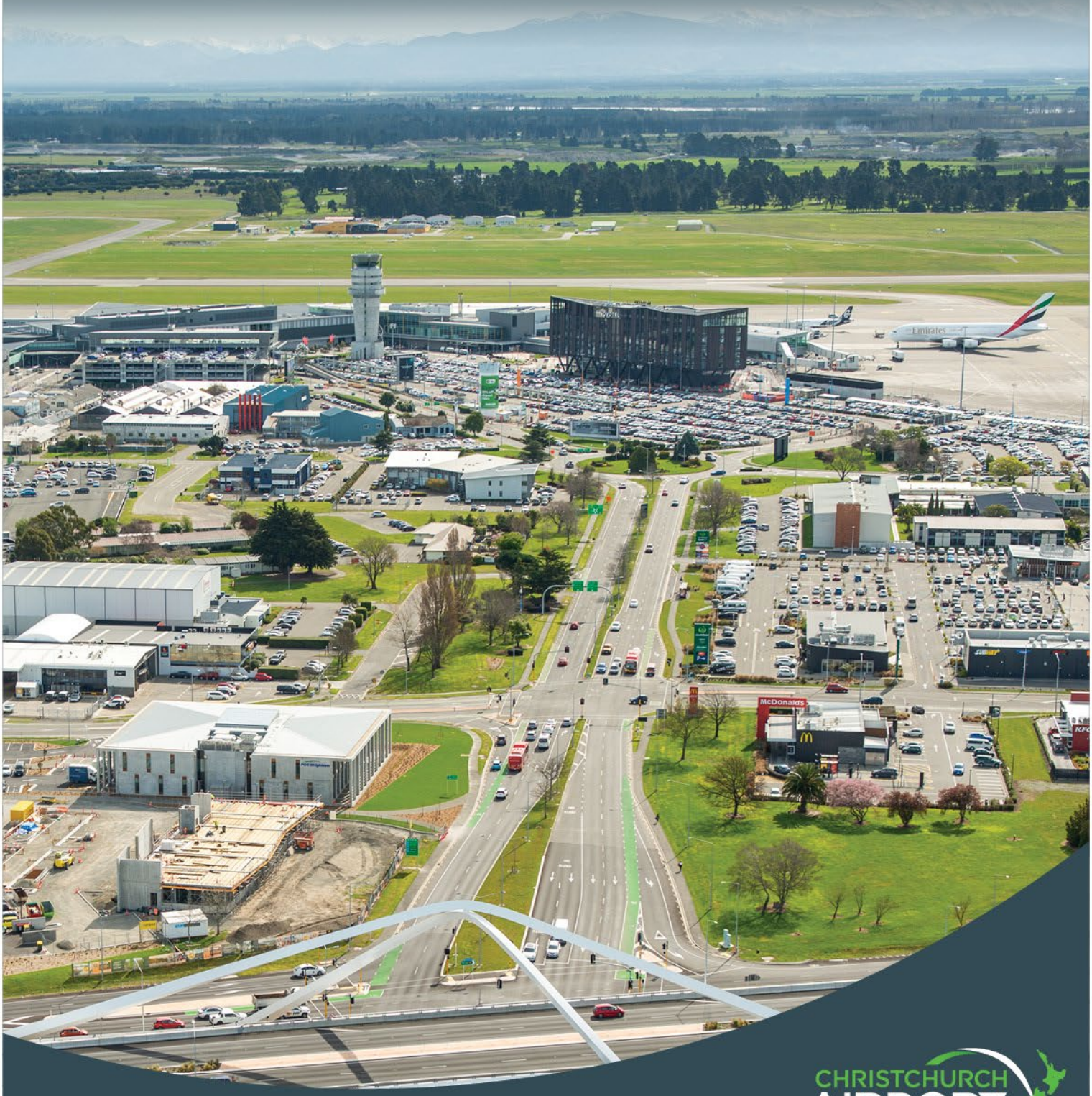
Where applicable for emerging contaminants, the latest accepted national guidance document will be followed in accordance with *Contaminated Land Guidelines No.2 – Hierarchy and Application in New Zealand of Environmental Guideline Values*.

APPENDICES

APPENDIX 1. Category Site Management Plan for Low Risk Category Areas

Contaminated Site Management Plan

Low Risk Category Areas



CHRISTCHURCH AIRPORT

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1 INTRODUCTION

1.1 BASIS FOR THE PROCEDURES

A Preliminary Site Investigation (PSI)[1] at the Christchurch International Airport campus identified current or historical uses at the site with the potential to cause ground contamination. The PSI informed a global consent application under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES Soil) for soil disturbance, the removal and replacement of fuel storage systems and for land use changes.

The consent was granted on 16 May 2016 as RMA92032983 (updated number RMA2016884) and includes Contaminated Site Management Plans (CSMPs) for three sub-categories of risk that relate to hazardous activities that may have occurred in the airport campus.

Low Risk Category areas are those that have been used for only low-risk HAIL activities. HAIL activities classified as High Risk are outlined in Section 1.3. This Low Risk Category CSMP must be read in conjunction with the overarching SMP. The boundaries of Low Risk Category areas are presented in the Risk Category Maps. Ground contamination investigations have been undertaken on a number of HAIL sites within Low Risk Category areas. These investigations have not been assessed for methodology, results, or reliability.

Although the potential for contamination is relatively low compared to other categories, there is still some potential for contamination to arise from general airport operations, including emerging contaminants such as Per- and Poly-Fluoroalkyl Substances (PFAS). All staff working on site should be aware of this potential and work methods should allow for early identification of contamination.

Excavations can proceed in accordance with standard earthworks procedures as set out in Sections 2 and 3. As with other categories, the excavation shall also be undertaken in a manner which allows soils of a different type/composition/contaminant levels to be kept separate, should contamination be identified. If this is carried out the better material may be able to be disposed at a lower landfill cost, following sampling and testing reducing the overall project costs.

The excavation method should allow for regular inspections and monitoring of the subsurface conditions to allow identification of any areas of unforeseen contamination. Inspection requirements are covered in Section 2.1, with soil sampling procedures in Section 2.2.7.

1.2 SITE MANAGEMENT

The following are key aspects of site management during all earthworks on Low Risk Category areas:

- The contractor shall advise CIAL's Environmental Manager at least one week prior to commencement;
- The site Hazard Board shall include information pertaining to the contamination likely to be identified (refer Table 1.1). The Contractor's details shall be provided on the Hazard Board;
- Personal protective equipment (PPE) relevant to the expected contamination shall be available on site (Section 5);
- The site shall remain secured during non-working hours to prevent access by the public or unauthorised personnel; and

[1] Tonkin & Taylor, March 2016. Preliminary Site Investigation for Ground Contamination, Christchurch International Airport, prepared for CIAL.

- Appropriate earthworks controls (Section 2) shall be established prior to works commencing.

1.3 IDENTIFICATION OF CONTAMINATION

A range of contaminants may be present within Low Risk Category areas, although the potential for them is lower than other categories. Standard indicators of contamination in Low Risk Category areas include the following:

- A hydrocarbon odour (typically smells like petrol, diesel, kerosene etc.);
- Other abnormal odours not normally associated with soil;
- Discoloured soil (i.e. areas of soil with dark staining, abnormal or unnatural colouring);
- Soil with waste material or building debris (i.e. plastics, metal, bricks, timber etc.) indicating the ground has been filled and may contain asbestos containing materials (ACM); and
- An oily substance or sheen on the surface of soil, or on the surface of water in the excavation.

Note that a number of contaminants (including PFAS) do not have obvious visual indicators of their presence and can only be detected via laboratory analysis. As a result, it is important that contractors and their Contaminated Land Specialists consult the various sub-layers that make up the Risk Category Zoning Maps which include:

- The HAIL sub-layer
- The previous investigations sub-layer
- The emerging contaminants sub-layer

These sub-layers can all be found on the CIAL website[2].

In order to identify HAIL activities that have occurred on a proposed work area and potential indicators of likely contamination are identified, the Contaminated Land Specialist shall be notified to inspect the excavation and advise on appropriate handling procedures if required in addition to the procedures in Section 2. Otherwise, soil shall be handled in accordance with the procedures in Section 2.

There may be situations where the development of specific site management procedures is needed in addition to the procedures outlined in this SMP, depending on the nature of the excavations and the HAIL activity (e.g. munitions from grenade throwing). Table 1.1 summarises likely contaminants that may be encountered in Low Risk Category and instances where specialist advice is required prior to earthworks.

Table 1.1: Low Risk Category specific HAIL activities, key contaminants and additional management sections

Type of HAIL activity	Potential Contaminants	Identification of Contamination	Sections
Corrosives bulk storage (Activity A4)	Various acids and bases.	Stressed vegetation.	No additional management sections.
Commercial printers (Activity A15)	Solvents, metals, acids and bases.	Stained ground, stressed, vegetation, solvent odours.	
Persistent pesticide storage or use (Activity A10)	Metals and organochlorine pesticides (OCPs).	Stained ground, stressed vegetation.	

[2] https://www.christchurchairport.co.nz/about-us/doing-business-with-us/contractors-and-suppliers/

Type of HAIL activity	Potential Contaminants	Identification of Contamination	Sections
Woolsheds (Activity A16)			
Grenade throwing (Activity C3)	PCP, nitroglycerine, heavy metals, fuel oils and solvents.	Visible shot or shells.	Specific site management procedures required.

Note - for asbestos in soils see Appendix 2, Contaminated Site Management Plan - High Risk Category Areas (November 2024)

1.4 POST-WORKS VERIFICATION

Works verification procedures are outlined in Section 5 of the campus-wide SMP and are centred on the use of a works verification form by the Contractor and Contaminated Land Specialist. A copy of the Works Verification Form is included in Appendix 1.

2 SOIL MANAGEMENT PROCEDURES

Due to the relatively low potential for contamination in Low Risk Category areas, standard soil management procedures will generally be applicable, with some additions to allow for low-level contamination. The additional procedures focus on the early identification of contaminants and implementation of appropriate handling and disposal procedures.

2.1 INSPECTION PROCEDURES

Inspections of Low Risk Category excavations will be undertaken by the Site Environmental Supervisor at an interval determined by the Contaminated Land Specialist prior to the commencement of works.

If unforeseen contamination is encountered (see accidental discovery protocols – Section 3), the Contaminated Land Specialist shall be contacted to inspect the excavation and advise on the appropriate contaminated soil handling procedures, or soil sampling, if required by the Contaminated Land Specialist.

2.2 GENERAL SOIL HANDLING PROCEDURES

The following general handling procedures should be followed where contamination may be present in any Low Risk Category area, except where testing of soils has proven soils to be absent of contaminants above published background levels (see Section 2.2.7):

- Consult the CIAL Environmental Manager and Contaminated Land Specialist prior to disturbing soils to determine a suitable receiving facility (if applicable);
- Material excavated shall be loaded by the Contractor directly onto trucks for offsite disposal (refer Section 4), or temporarily stockpiled to prevent contamination of other areas;
- Trucks shall be loaded within the site where runoff and possible spills during loading will be controlled and contained;
- Measures shall be put in place to ensure contaminated soil is not tracked offsite on wheels of trucks;
- Each truck shall have a tracking document[3] signed onsite and collected at the receiving facility to track each load of material;

[3] Driver's log sheets will be sufficient as tracking documents

- Trucks shall have their loads covered by tarpaulins during transport of material to the receiving facility. These shall be affixed before leaving site;
- Stockpiling shall be in accordance with Section 2.2.1;
- A permit/manifest shall be obtained by the Contractor from the disposal destination prior to transportation and the Contractor is responsible for obtaining this approval;
- All contaminated material removed from site shall be disposed as per the procedures set out in Section 4.1; and
- All weighbridge dockets shall be retained by the Contractor and provided to the Engineer to the Contract as soon as practicable or within two working days. The Engineer to the Contract is to provide a tracking summary to the CIAL Environmental Manager for all material removed from site.

Should PFAS contamination be identified, the management procedures for PFAS contaminated material included in the Medium Risk Category Contaminated Site Management Plan will need to be followed.

Health and safety precautions identified in Section 5 shall also be followed.

2.2.1 STOCKPILING OF CONTAMINATED SOILS

It is possible stockpiling of contaminated soil on site may be required due to phasing of work, or other construction constraints. Where possible stockpiling should be avoided and, if required, the time material is stockpiled shall be minimised as far as is practicable.

Any material that is suspected to be contaminated that requires stockpiling shall be managed by the Contractor as below:

- Sediment control measures shall encircle the stockpile, this may include:
  - Proprietary products (e.g. filter socks); and
  - Silt fences.
- If the stockpile is to be remain for more than 1-2 days and/or if rain is forecast during the time the stockpile is present, the stockpile shall be covered with geotextile or a polythene cover (or a similar material) to prevent rainfall induced erosion;
- Fenced or otherwise secured so that the general public cannot have access to the stockpile; and
- If the material is odorous, odour control measures shall be put in place. This could include covering the material with clean soil, a polythene cover or instituting a deodoriser system.

2.2.2 DUST GENERATION

From an environmental and human health perspective, dust generated from contaminated soils has the potential to contain contaminants and, during windy conditions, may discharge offsite.

Where there is potential for contamination in Low Risk Category areas, in addition to the standard dust control practices, the Contractor shall:

- Limit the amount of material to be excavated as much as practicable;
- Limit vehicle access onto contaminated areas;
- Use a water truck or portable water sprays in trafficked areas to dampen dust during dry and windy conditions;
- If required, cover stockpile material awaiting laboratory testing/removal to prevent dust generation;
- Visually monitor dust emissions in the vicinity of the excavation until exposed material has been covered by clean material; and
- Avoid work during windy conditions.

When utilising water to control dust, the Contractor shall ensure that:

- The volume of water used for dust suppression does not cause surface ponding or runoff; and
- The application of water does not induce soil erosion and soil pugging.

2.2.3 STORMWATER AND SEDIMENT CONTROL MEASURES

Rainwater has the potential to come into contact with contaminated material and become contaminated itself. Contaminated soil may also be entrained in the stormwater and result in the deposition of contaminated sediment. All stormwater at the airport campus is discharged to groundwater via soakpits.

Where contamination is suspected/identified in Low Risk Category areas, the Contractor shall ensure that stormwater and sediment control procedures are put in place prior to any ground breaking works commencing and include at a minimum:

- Limiting the duration of exposure of contaminated ground as much as possible;
- Divert clean stormwater away from excavations/exposed soil in contaminated areas.
- If stormwater does enter contaminated areas, contain runoff during rainfall events within the excavation;
- Bund stockpiles as set out in Section 2.2.1;
- Controlled site exit points and methods to prevent contaminated soils being tracking offsite by vehicles.

The purpose of the above stormwater and sediment control measures is to prevent contaminated water from entering groundwater via soakpits.

2.2.4 CROSS CONTAMINATION

To avoid transferring contaminated soils from one location to another, all machinery and equipment shall be decontaminated prior to moving from a suspected/identified contaminated area to a different location. Decontamination procedures are site-specific and will be determined by the Contaminated Land Specialist prior to the commencement of works. Procedures may include the manual brushing down or washing of vehicles.

2.2.5 PREVENTION OF PREFERENTIAL PATHWAYS ALONG PIPELINES

Installation of pipelines through contaminated soils can provide a preferential flow path, through which contaminants can migrate. When laying pipe work through areas of contaminated soil where the contaminants may interact and migrate with groundwater, measures (such as pipe dams) shall be put in place to prevent these contaminants from travelling along the permeable bedding of the pipeline. Advice on the design of the mitigation measures (pipe dam etc.) shall be sought from the Contaminated Land Specialist.

2.2.6 PROCEDURE FOR REMOVING AND REPORTING ON UNFORESEEN STRUCTURES

It is possible that subsurface structures with potential to cause ground contamination may be encountered during the works in Low Risk Category areas. Structures of concern are those associated with the storage, transfer or disposal of fuels, chemicals or wastes. These may include USTs, pipelines, waste tanks or sumps, but do not include structures associated with stormwater or municipal wastewater.

If unforeseen structures of this type are encountered, the Contaminated Land Specialist shall inspect the structures and advise on handling, disposal, and site validation procedures. Any abandoned drainage lines shall be permanently capped to prevent the migration of contaminants, and inspected by the Contaminated Land Specialist prior to reinstatement.

Underground fuel storage tanks (USTs) are a special case, and a procedure for their removal, if encountered during works, is set out in the High Risk Category CSMP. The CIAL Environmental Management team and Contaminated Land Specialist shall be contacted if a UST is encountered during works.

2.2.7 SOIL SAMPLING REQUIREMENTS AND PROCEDURES

Soil sampling required under Section 2.1 shall be undertaken by the Contaminated Land Specialist according to the requirements of the NES Soil Regulations 2012, the "Australian/ New Zealand Standard AS/NZS 5667 11:1998" and the MfE Contaminated Land Management Guidelines No.5[4]. Soil samples shall be collected according to the following procedure:

- The materials encountered shall be described in accordance with the NZ Geotechnical Society "Guidelines for the classification and field description of soils and rocks for engineering purposes";
- Freshly gloved hands shall be used to collect soil samples and shall be placed immediately into laboratory supplied containers appropriate for the analytes to be tested;
- Any equipment used to collect the samples shall be decontaminated between sample locations (using clean water and a phosphate and PFAS-free detergent or similar); and
- Samples shall be shipped in a chilled container to an IANZ accredited laboratory under chain of custody documentation.

The Contaminated Land Specialist shall identify potential contaminants on the basis of visual and olfactory observations. However, at a minimum they shall include metals (arsenic, chromium, copper, nickel, lead and zinc), TPH, BTEX and PAH. Any evidence of the presence of asbestos shall trigger testing for asbestos content in soil. Other contaminants (including emerging contaminants) may be tested for at the discretion of the Contaminated Land Specialist. Where required, analysis should include leachate testing to inform offsite disposal options.

The Contaminated Land Specialist shall report the results of any testing to CIAL and the Contractor. It is appropriate to evaluate the results primarily with respect to:

- Protection of human health criteria for industrial/commercial land use in accordance with MfE Contaminated Land Management Guidelines No.2[5]; and
- Background concentrations for the local area.

The need for evaluation of the testing against other standards (i.e. environmental standards) should be discussed with the Contaminated Land Specialist and CIAL.

2.2.8 DEWATERING PROCEDURES

It is highly unlikely that groundwater will be encountered in excavations within Low Risk Category areas. The Contractor shall in the first instance contact the Contaminated Land Specialist to advise if contamination is present and discuss appropriate disposal strategies with respect to the contaminants of concern. Groundwater and ponded surface water within Low Risk Category areas shall not be discharged to soakpits. Should dewatering be required, contact the CIAL Environmental and Planning Team to discuss options.

Disposal shall be to sewer at the discretion of CCC. Treatment of the water may be required prior to disposal. Alternatively, disposal by sucker truck and transport to a Treatment Plant may also be possible.

2.2.9 IMPORTED MATERIAL PROCEDURES

[4] Contaminated Land Management Guideline No. 5, Site Investigation and Sampling (Revised 2021), Ministry for the Environment
[5] Contaminated Land Management Guidelines No. 2, Hierarchy and Application in New Zealand of Environmental Guideline Values (Revised 2011), Ministry for the Environment

Material imported to site is generally virgin quarry material, site sourced material, certified cleanfill, or topsoil from a garden supplier. Any other soil or aggregate imported to site that is not sourced from a quarry or garden supplier, site sourced, or certified as cleanfill shall be sampled by the Contaminated Land Specialist at a rate of one sample for every 500 m^3 and tested for metals and hydrocarbons as well as any other contaminants as determined by the Contaminated Land Specialist. Results must be consistent with expected background, unless otherwise authorised by resource consent conditions at the source location. It is preferable that fill is tested at its source prior to its use at the site. Otherwise, if not, the Contractor shall stockpile the fill on site until test results are available.

Rock or aggregate sourced directly from a quarry or supplier does not require testing prior to importation.

3 ACCIDENTAL DISCOVERY PROTOCOLS

Unexpected soil contamination could be encountered during earthworks at Low Risk Category Areas. Visual and olfactory indicators of contamination include, but are not limited to, the following:

- Odour (petroleum hydrocarbons, oil);
- Green/yellow discoloured soil which may indicate high levels of copper and chromium;
- Black staining coupled with an odour which may indicate heavy oil/hydrocarbon contamination;
- Black gravel/sand which may be boiler ash materials that could be high in metals and PAHs; and
- Inclusions of deleterious materials including, but not limited to, abrasive blasting sand/agents, asbestos*, asphalt, bark, cables, cesspit/stormwater sump cleanings, containers, cork tiles, corrugated iron, electrical equipment and insulation, formica, foundry sand, greenwaste, hardboard, household waste, MDF, medical and veterinary waste, metals, paint, painted materials, paper and cardboard, particleboard (chipboard), plywood, road sweepings, sawdust, tar, timber (processed) and wood chips[6].

  *for asbestos in soils see Appendix 2, Contaminated Site Management Plan - High Risk Category Areas (November 2024).

The following is a "first response" checklist for the Contractor to follow should visual or olfactory evidence of contamination be encountered during the execution of earthworks.

The presence of other contaminants in high levels may dictate further controls need to be implemented and additional or amended containment/disposal procedures may be required. The first response procedures are designed to provide actions for the Contractor to ensure that contamination is contained while decisions and procedures regarding its management and final disposal are being confirmed.

First Response Checklist:	
Stop work within 20 m of the contamination discovery and isolate the area by taping, coning or fencing off.	☐
Advise the site controller (e.g. appointed person by the contractor managing the works) who will inform the CIAL Environmental Manager as soon as practicable.	☐
Prepare and implement contaminated soil Health and Safety procedures.	☐
Update the site Hazard Board and prevent access to the area by unnecessary personnel.	☐

[6] Technical Guidelines for Disposal to Land, Revision 3, October 2022, WasteMINZ

First Response Checklist:	
The contractor and/or CIAL Environmental Manager must advise the Contaminated Land Specialist to inspect and advise of specific controls if appropriate.	☐

The full accidental discovery protocol is attached in Appendix 2.

4 SOIL DISPOSAL

4.1 DISPOSAL OF CONTAMINATED SOIL

All soils excavated from Low Risk Category areas shall be assumed to be contaminated unless testing (previous investigations or as per Section 2.2.7) has indicated that soils are uncontaminated. Contaminated soils shall be kept separate from other excavated material where possible in order to minimise disposal costs.

If sampling is required, as determined by the Contaminated Land Specialist, it can be undertaken in situ (pretesting prior to excavation) or following excavation from stockpiles. All sampling must be undertaken by a Contaminated Land Specialist under the supervision of the SQEP[7]. Contractors should be aware that laboratory testing takes **AT LEAST 5-14 working days** (depending on the analytes being tested) **and methodology should account for this potential delay.** If there is a staged approach to testing (i.e. total concentrations followed by leachate potential testing) this period would be extended further.

The results of the testing will dictate the disposal locations, broad guidelines are as follows:

- If the levels of contaminants are consistent with background concentrations (or specific cleanfill consent conditions) then these materials may be disposed of to cleanfill (subject to approval from the cleanfill operator; see Section 4.3);
- The Contaminated Land Specialist will assess the analytical results to determine potential acceptance to Managed Fill facilities (e.g. Burwood Landfill, Frews Hororata), to a Class A Landfill (e.g. Kate Valley Landfill) or a remediation facility (e.g. Texco Remediation, Taiko);
- Excavated materials containing asbestos require disposal to a facility licensed to accept this waste type (e.g. Kate Valley Landfill) with the prior approval of the operator; and
- Excavated materials containing emerging contaminants such as PFAS will require special controls (such as wrapping the material for transport) and the Contaminated Land Specialist will advise.

Approval from the facility operator must be obtained prior to transporting material offsite.

Records of the material disposed (weighbridge dockets etc.), and the location of disposal shall be kept for all loads and provided to the Engineer to the Contract and CIAL Environmental Manager as soon as practicable.

4.2 DISPOSAL OF HYDRO EXCAVATION MATERIALS

[7] Where pre-testing is required for disposal or health and safety purposes then testing shall be undertaken in accordance with Ministry for the Environment Contaminated Land Management Guidelines. All testing shall be undertaken by a Contaminated Land Specialist. Analysis results will be compared to the receiving facility acceptance criteria and most recent and relevant human health assessment criteria.

Materials from all hydro excavation (slurry etc.) works undertaken at Low Risk Category sites must only be disposed of at a facility that has confirmed acceptance based on the contaminant concentrations and material type.

4.3 DISPOSAL OF UNCONTAMINATED SOIL

Soils from Low Risk Category that have been pretested and proven to be uncontaminated[8] may be transported to cleanfill for disposal, subject to approval from the cleanfill operator, or retained on site.

The loading of trucks and transport to the cleanfill shall be as per standard soil handling procedures (Section 2.2).

Records of the material disposed, and the location of disposal should be kept and provided to the Engineer to the Contract and CIAL Environmental Manager as soon as practicable.

5 HEALTH AND SAFETY PROCEDURES

This Health and Safety Plan (HSP) relates to the risk to workers as a result of low to moderate potential for significant ground contamination. These are additional to standard health and safety requirements of the Contractor during excavation works.

5.1 GENERAL REQUIREMENTS

Health and Safety requirements shall be managed through site specific and job specific safety authorisations (JSAs). The following procedures are to be used as a guide for the preparation of these JSAs. The following procedures deal with health and safety matters relating to contaminated ground only and do not cover other hazards on site.

These general procedures are designed as a base level for all sites, and are designed to cover the generic health and safety set up and controls related to contaminated ground.

5.1.1 SITE ESTABLISHMENT

The following shall be put in place by the Contractor prior to ground works commencing:

- The site will be fenced 1.8 m secured fencing to restrict entry to authorised workers and prevent access by the general public. Appropriate warning signs (e.g. *"Restricted entry", "Danger open excavations"*) shall be erected around the fenced site unless the works are is suitably excluded from the general public as deemed appropriate by a CIAL Senior Manager (i.e. WHS Manager, Environmental Manager, Property Projects Manager);
- Health and safety site specific inductions and daily prestart meetings shall be completed; and
- Health and safety facilities as required by the hazard management procedures, such as wash facilities, personal protection equipment stores and first aid points shall be provided.

5.1.2 GENERAL SAFETY REQUIREMENTS

[8] Soils are uncontaminated for the purposes of disposal to cleanfill if they meet the relevant resource consent conditions of the receiving cleanfill.

Contractor's staff, sub-contractors and visitors shall be required to undergo a site specific safety induction before entering and/or commencing work. The purpose of the safety induction is to make sure staff, sub-contractors and visitors are aware of the hazards related to contaminated soil relevant to the site, safe working procedures, safety equipment and requirements and the action plan in case of an emergency.

The Contractor shall appoint an HSO for the duration of the works. The HSO shall be responsible for ensuring health and safety procedures are adhered to and that the risks associated with the potential hazards are controlled.

The following general safety procedures shall be followed by all staff entering and/or working in the immediate area of the project activities:

- All incidents shall be reported to the HSO;
- Workers shall be made aware of potential hazards on site so they can be identified and appropriate control measures can be taken to ensure the safety of workers, and passers-by;
- Site workers shall avoid unnecessary contact with site soils;
- Site workers shall avoid exposure to suspected asbestos containing material;
- Site workers shall wear personnel protective clothing and equipment as outlined in Section 5.1.3;
- A first aid kit and fire extinguisher must remain and be available on site at all times; and
- Hand washing facilities must be provided onsite.

5.1.3 GENERAL HAZARD MINIMISATION PROCEDURES

Works undertaken in Low Risk Category areas are unlikely to contain highly contaminated soil. However, as there is still some risk, it is appropriate for all workers, sub-contractors and visitors to adopt a certain precautionary level of hazard management related to contaminated soils. This section sets out the procedures to manage the potential hazards on sites where no obvious signs of contamination are observed.

Where obvious signs of contamination are observed, additional procedures are contained in the procedures for High Risk Category areas. To prevent exposure to potentially present contaminants, the following procedures shall be followed on Low Risk Category sites where no obvious signs of contamination are present:

- All workers physically involved in excavating soil, or working within the excavations shall:
  - Wear clothes that cover arms and legs;
  - Wear P2 dust masks during dusty conditions; and
  - Have good hygiene practises (i.e. wash hands before eating, drinking, using the toilet or smoking).

If signs of contamination are noted, the Contractor must immediately cease works until the additional health and safety measures set out for High Risk Category areas are instituted.

The Contractor must review any new work element and continually monitor and assess whether there are any new associated hazards, and whether these can be eliminated, isolated or minimised. If these hazards are related to ground contamination, the Contractor shall seek advice from the Contaminated Land Specialist. The Contractor shall then instruct all staff, sub-contractors and visitors on the health and safety procedures associated with the new hazard.

APPENDIX 1. Works Verification Form

Project Details			
Project Name		Principal Contractor	
		Earthworks Contractor	
Project Location		Commencement of earthworks	
Other Resource Consents Relevant to project		Completion of earthworks	
Risk Category Zoning (Low/Med/High)			
Summary of works			
Details of contaminated soil investigations completed as part of the project (DSI, Soil testing results).			
Details of the Contractors Contaminated Land Briefing (date, location, by who)			
Soil Movements			
Approx. volume of total soil disturbance (m^3)			
Approx. volume of soil relocated within the airport campus (m^3)		Airport campus deposition location	
Approx. volume of soil moved offsite (m^3)		Disposal Location(s)	
Approx. volume of imported material (m^3)		Source of imported material(s)	
Additional Soil Management			
Detail of additional soil management required			
Contaminated Land Inspections?			
Accidental Discovery Protocol used? If yes, provide details			
Form completed by		Date	
Project Manager		Signed	
Contaminated Land Specialist (if applies)		Signed	

APPENDIX 2. Accidental Discovery Protocol

CONTAMINATED SOIL

ACCIDENTAL DISCOVERY PROTOCOL

What happens if we dig up something that isn't soil or it looks and smells strange?

1. STOP excavation within a 20m radius;
2. Advise the site supervisor of the discovery;
3. The site supervisor shall contact the **CIAL Project Manager;**
4. The CIAL Project Manager will contact a **Contaminated Land Specialist;**
5. Update site hazard board identifying exclusion zone;
6. The Contaminated Land Specialist will provide advice on the soil and outline what steps are to be taken, this may require a site visit;
7. Implement health and safety procedures and environmental controls as advised by the Contaminated Land Specialist.

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