Whenua parakino – contaminated land guidance

Waka Kotahi New Zealand Transport Agency

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More information

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Contents

1. Document background

As a delivery agency, Waka Kotahi NZ Transport Agency is responsible for development and maintenance of our transport network across the country. As part of soil disturbance activities, and as a result of hazardous activities and industries, both past and present, these works may encounter contaminants in soil and water during the disturbance of contaminated land. If works are not appropriately planned and managed, the disturbance of contaminated land can pose a risk to human health and the environment. Because of this, management of contamination needs to be considered and planned for in advance.

This guidance reflects Waka Kotahi policy as well as legislative requirements. This document has been prepared as a high-level overview that can be used to understand our expectations for managing soil contamination associated with our activities for the protection of human health and the environment.

1.1. Document outline

This guidance document includes the following key features:

- general guidelines for identifying and assessing soil contamination
- regulatory requirements for activities on contaminated land
- basics of soil and water sampling and analysis for contamination, and
- reporting requirements at the end of works completion.

1.2. Document audience

This document is intended for project managers, network managers, property staff and consent planners who have overall responsibility for planning and executing a project, whether that project is a new capital project, maintenance of the existing network, or the acquisition and disposal of land. While this document has been produced for Waka Kotahi use, many of the concepts and legislative requirements are likely to be applicable for other road controlling authorities who may be undertaking capital or maintenance works.

After reading this document, users should have a high-level understanding of contaminated land considerations that are relevant to Waka Kotahi directed activities. This document will provide a framework to prompt project managers to consider the implications of management of contaminated land for their projects at an early stage. In addition, by providing minimum expectations and outcomes, we aim to improve communication between project managers and contractors, to encourage a coordinated response to contaminated land across our network.

2. Drivers for investigating and managing contaminants in soil

Contaminated land can pose a risk to human and environmental health, particularly when soil is disturbed by activities such as earthworks, as these activities can expose contaminants, if present, and potentially release them into the air, land and water. Contaminated soil may not be obvious when first looking at a site and if not appropriately managed can cause additional problems down the track such as delays, and costs for Waka Kotahi and our contractors.

Some of the potential issues arising from contaminated land being encountered during our activities are:

- health and safety risks to workers
- adverse impacts to sensitive environments from disturbance of contaminated land causing discharges during construction and maintenance activities
- impacts to construction methodologies, timeframes and costs, to manage soil contamination – especially if off-site disposal is required
- ongoing liability for contamination, including runoff of contaminants into the environment or neighbouring properties, and
- resource consenting risks and requirements, potentially resulting in lengthy delays or unexpected costs to a project.

Contamination risks can be managed efficiently if they are identified and assessed early when soil disturbance activities are proposed. Waka Kotahi requires that contamination risks are considered at the options assessment stage of a new capital project or as part of planning a maintenance activity. If there are subsequent changes, for example the location or extent of earthworks, the original assessment for the presence of contamination may not be sufficient to characterise the full extent of potentially contaminated land.

2.1. Contaminated soil and Waka Kotahi activities

Waka Kotahi is committed to ensuring the removal, placement and disposal of contaminated soil is achieved in accordance with best practice to ensure that risks to human health and the environment are managed appropriately when contaminated land is encountered during infrastructure delivery, operations and maintenance activities.

Z/19 Taumata Taiao – Environmental and Sustainability Standard sets out the process for considering risks associated with contaminated land early in the planning phase, whether they are capital projects or maintenance and operations activities. The environmental screen associated with the standard triggers the initial consideration of contaminated land and should be completed regardless of project size. An initial desktop study to inform the environmental screen could take place during the indicative business case (IBC), detailed business case stage (DBC) or single-stage business case (SSBC), depending on the size of the project.

Issues with contaminated land primarily arise when soil disturbance or dewatering activities are undertaken. Activities where contaminated land may need to be considered include:

- designing new roads and paths, particularly route selection and considering whether identified contaminated land can be avoided,
- land purchase
- earthworks cut and fill design
- construction of new infrastructure
- construction of new stormwater basins and swales
- maintenance, upgrade or repair of surfaces
- maintenance or upgrades of road verges
- re-surfacing
- maintenance or construction of bridges, culverts or railway level-crossings, and
- land acquisition and disposal.

The following key question needs to be answered at an early stage of the project: '*Is there a potential risk to human health or the environment and will soil or water contamination affect the design, costs, and delivery of a project?'* To answer this question, certain steps need to be followed to determine if contamination levels are high enough, and exposure likely enough, that the health of people (workers and the public) could be negatively impacted. If contamination risks are low, soil with low levels of contamination could be considered for potential beneficial reuse on-site. Beneficial reuse of soil can save significant costs to a project by avoiding landfill disposal[1] and provide for reducing emissions and waste associated with removal.

Soil with low levels of contamination can be beneficially reused on-site

Landfill disposal can be a costly option, considering transport costs and high landfill gate fees for contaminated soil. In some cases, soil may need to be disposed to landfill because it is not geotechnically suitable for reuse on the site. Early consideration of contamination in the design phase can minimise the amount of soil sent to landfill, while addressing residual risks to the health of workers, the public and the environment.

[1] Note that approval from relevant Waka Kotahi personnel (such as property, environmental planning, maintenance) should be sought prior to re-using soil on-site, particularly if ongoing management is required.

Case study: Contamination discovery during a roundabout upgrade

A contaminated land investigation was conducted at the beginning of a roading upgrade project, during which time it was identified that pits for former petroleum underground storage tanks (USTs) were likely to be present within the project area. This made sense because the site nearby had historically been used as a petrol station, but the records for the site were not complete. As the location of the pits was not well understood, shallow soil samples in the expected area of the USTs were collected and tested to the intended depth of earthworks. Results from pre-works testing did not indicate the presence of significant contamination, so a contaminated soil management plan (CSMP) was prepared to guide the works and the council granted consent for the work to proceed. Thinking that the risk of contamination had been adequately assessed, the project manager gave the 'green light' for the project to start.

During the site works two concrete bunkers for the former USTs were discovered. Soil testing around the bunkers indicated high levels of petroleum hydrocarbon contamination. The intended finished surface levels required the removal of both bunkers. The expense to remove the bunkers, and remediate the surrounding soil, would have been significant so the project manager enquired with the regional council about their legal obligations under the Resource Management Act 1991 and regional plan rules. The regional council was advised of the soil contamination, who raised concerns regarding possible contamination of nearby groundwater bores (used for drinking water supply) if the contaminated soil was left in place. The outcome was a decision to remove the contaminated soil to landfill, which removed the ongoing risk to the environment. However, there were lengthy project delays and additional costs for earthworks and disposal.

In retrospect, if a more detailed investigation had been conducted before the earthworks began, time and costs for the bunker removal could have been budgeted in the project. A more detailed investigation, including identifying the exact location and depths of the tank bunkers and collection of soil samples from around the bunkers, would have provided the necessary information for managing the excavation and saved time and cost to the overall project.

3. Identifying potential contamination sources

3.1. Hazardous Activities and Industries List (HAIL)

The past use of hazardous substances in industry, agriculture and horticulture has left a legacy of soil contamination in New Zealand. This contamination has been mainly caused by past practices in which chemicals were used, stored and disposed of in a way that is not safe by today's standards.

To help with identifying potentially contaminated land, the Ministry for the Environment (MfE) has compiled a list of hazardous activities and industries commonly associated with contaminated land. This list is called the Hazardous Activities and Industries List (HAIL). The HAIL is used by councils as a starting point for determining whether a piece of land is contaminated.

Existing infrastructure corridors and designations may cross properties where HAIL activities are currently occurring or have occurred in the past, and proposed infrastructure corridor alignments could pass over land where historic or current HAIL activities have occurred. If a project involves soil disturbance on a HAIL site, there is likely a need for further investigation and management of soil contaminants.

3.2. Other potential sources of contaminants

3.2.1. Non-HAIL activity associated contamination

In addition to the HAIL activities, there may be historic sources of contamination in roading materials such as coal tar binder that was used in roads until the 1980s or contaminants from vehicles including lead from petrol and metals from brake-lining wear.

Contamination sources may also be related to spills of petrol, historical maintenance activities, or runoff of contaminants from neighbouring contaminated sites.

Asbestos containing materials and fibres can also be present in soils through the improper maintenance and/or demolition activities associated with structures and/or waste containing asbestos.

3.2.2. Acid sulphate soils, naturally elevated contaminants, and biological contaminants

Acid sulphate soils are naturally occurring and are known to exist in low lying areas of Northland, Auckland and Bay of Plenty regions. When these soils are disturbed and react with oxygen, they can generate large amounts of sulphuric acid, iron, aluminium and heavy metals. Acid sulphate soils can cause harm to infrastructure such as concrete and steel due to the corrosive nature reducing service life and provide for ecological harms. In areas where acid sulphate soils may be encountered controls for managing the disturbance of the soils should be implemented to ensure that ecological receptors are not harmed during any disturbance. The design of any structures proposed to be placed in areas where acid sulphate soils may be found should also be considered.

In some areas of the country contaminants in soil can be naturally elevated, for example arsenic in peat soils. If this soil needs to be excavated (for example. for geotechnical reasons) then consideration of appropriate disposal locations is likely to be required.

In areas where there is potential to be kauri dieback disease there may be implications for soil disposal and placement elsewhere on- or off-site. While the testing for *Phytophthora agathidicida* (the pathogen responsible for the disease) is outside the scope of this document, at locations where kauri are present, site environmental management plans should consider the implications that kauri dieback disease may have on soil disposal options.

4. Legal obligations for activities on contaminated land

This section contains a brief summary of the main regulations and rules that apply to disturbance of contaminated land. This provides a high-level assessment of legal obligations at a national level in New Zealand at the time of development of this guide; additional regulations may apply in local situations. The advice of a suitably qualified professional (planner, lawyer and/or suitably qualified and experienced contaminated land practitioner (SQEP)) should be sought if there is any uncertainty over the planning, legal or technical requirements for a project.

4.1. Resource Management Act 1991

The Resource Management Act 1991 (RMA) is the main law governing how people interact with natural resources. Contaminated land is defined under the RMA as 'land with hazardous substances in or on it that are reasonably likely to have significant adverse effects on the environment (including human health)'.

4.1.1. The NES Soil

The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES Soil) is the primary legislation under the RMA for managing the risks of contaminants in soil to protect human health. Compliance with the NES Soil is managed by territorial authorities.

Under the NES Soil, a 'piece of land' is considered potentially contaminated if it is 'more likely than not' that hazardous activities and industries activities have occurred. For example, if a site contains UST for petroleum hydrocarbon storage in one section of a large site, the area where the UST are located will likely be subject to the NES Soil.

If the 'more likely than not' test shows that hazardous activities and industries have occurred on the piece of land, consent under the NES Soil may be required if any of the following activities are proposed:

- removal or replacement of an underground fuel storage system
- soil sampling for contamination
- soil disturbance, including earthworks, trenching, pot-holing, etc, and off-site disposal of soil
- subdividing the site, and
- Changing the land use such as conversion of a site from a commercial land use to a residential land use.

If the NES Soil applies to a project, consent will be required if the soil disturbance volumes and off-site disposal soil volumes exceed the following criteria:

- ***soil disturbance: 25m^3 per 500m^2 of project area per year***
- ***off-site disposal: 5m^3 per 500m^2 of project area per year.***

For Waka Kotahi projects, it is likely that soil disturbance and removal will be the key activity where the NES Soil will apply. Consideration of the NES Soil at an early stage of the project means that the works can often be designed to stay within the permitted criteria, for example by designing or planning a project to reuse excavated soil within the site works as backfill, thereby minimising the amount of soil for off-site disposal.

It is worth noting that the volume thresholds stated in the NES Soil are noted as 'per calendar year'. MfE states in the NES Soil users' guide that, 'a person could remove this amount on two consecutive days, with each day considered as occurring in consecutive years'. Project managers should consider the timing of soil disturbance in order to determine the correct NES volume thresholds for a project.

If the soil disturbance is a permitted activity under the NES Soil, no consent is required if the following conditions are met:

- Controls must be in place to minimise exposure of people (for example site workers and the public) to contaminants. These controls are usually described in a site management plan (SMP) or environmental management plan (EMP) for the works.
- The soil must be re-instated to an erosion-free state within one month of the works, for example by covering with a layer of compacted material.
- Any soil taken away from the site must be disposed to a licensed facility. If soil contaminant concentrations are above natural background levels of contaminants, soil cannot currently be disposed to a cleanfill.
- The soil disturbance cannot last longer than two months.
- Any existing structure that contains contaminated soil must not be compromised. For example, if contaminated fill is covered with a capping layer, this layer must not be damaged.

If the above criteria are not met, consent will be required and the assistance of a SQEP is necessary. Figure 4.1 details the process for assessing whether an NES consent is required.

In many cases, roads are a designation under the RMA so some consents may be waived for certain aspects of a project if details are provided to the consenting authority in an outline plan of works (OPW). However, the NES Soil in most cases will apply over designations. Some councils impose additional conditions on soil disturbance on contaminated land, such as district council consents for earthworks and regional consents for discharges to water or land.

In accordance with the NES Soil, investigations of contaminated land need to be completed, or reviewed, by a SQEP.

4.1.2. District plan rules

Territorial authorities are responsible for the prevention or mitigation of adverse effects of development, subdivision, or use of contaminated land. In addition to the implementation of the NES Soil, territorial authorities may also have rules relating to earthworks volumes, soil disturbance volumes and other environmental considerations. The project planner should seek advice if there is any doubt regarding what consents and permits are required from a territorial authority for a project.

4.1.3. Regional plan rules

Regional councils establish rules for protection of the environment in regional plan documents. Generally, regional plan rules specify that an activity on a site cannot release contaminants into water, ground, or into air, at concentrations that pose a risk to the environment. For example, sediment discharged from a contaminated site during earthworks must be controlled.

In situations where soil will be reused on an adjacent site, consent may be required to deposit contaminated soil on the ground. It is outside the scope of this document to describe all the regional plan rules related to contaminated land. Project managers should seek the advice of a suitably qualified professional if the project site is potentially contaminated, if your project involves the taking of water, and discharges to water, land or air, and if you are seeking to deposit soil on another site (other than a landfill or other licensed disposal facility).

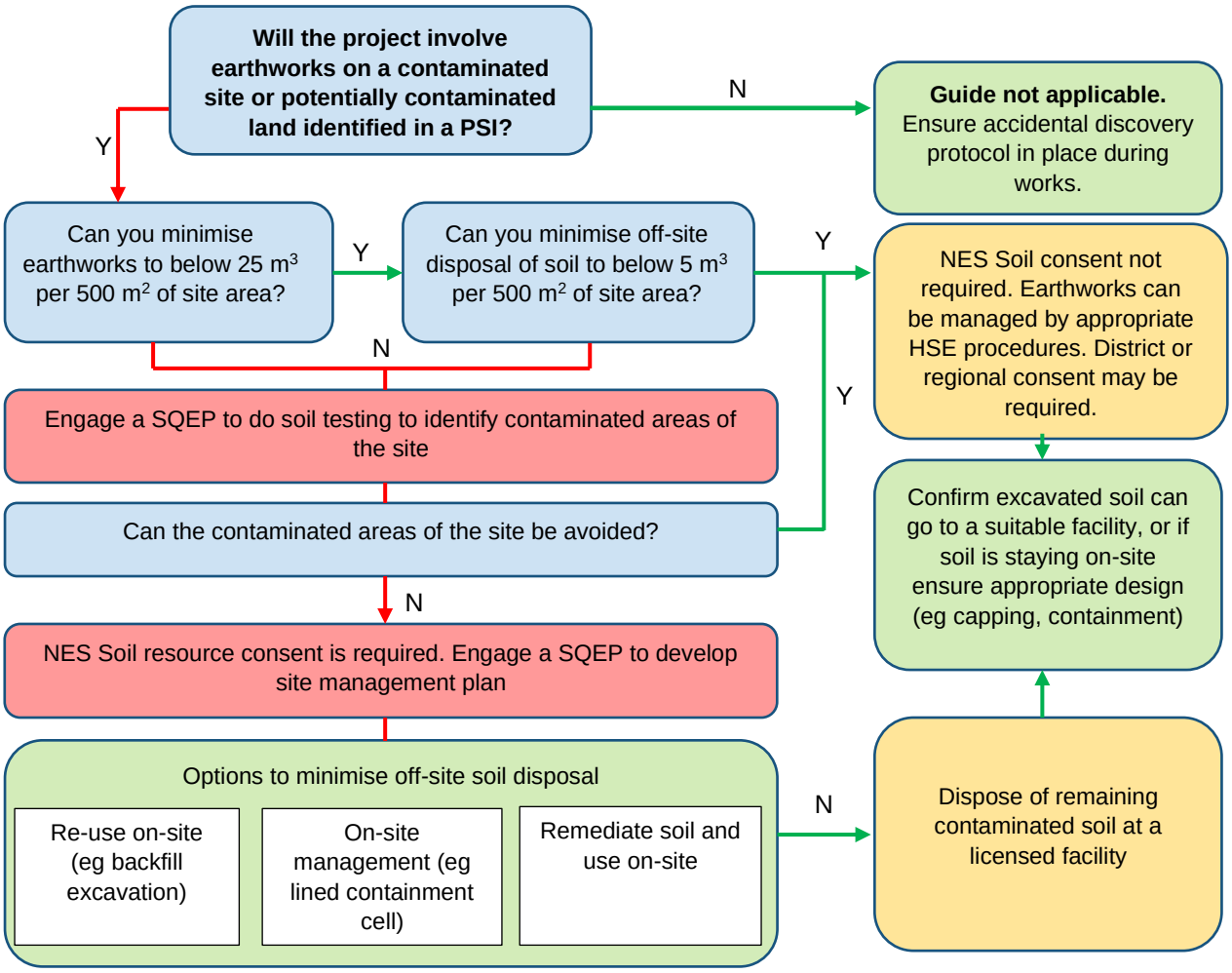

Figure 4.1. Flowchart for managing contaminants in soil

4.2. Health and Safety at Work Act 2015

All persons conducting a business or undertaking (PCBUs), including Waka Kotahi, have obligations under the Health and Safety at Work Act 2015 (HSWA) to protect the health and safety of workers and others, and take steps to minimise or eliminate workplace risks. For contaminated soil and water, workers may be exposed by physical contact with soil, water or airborne soil particles such as dust.

4.2.1. Asbestos

One of the key workplace hazards is inhalation of airborne contaminants including asbestos fibres. While asbestos is not associated with most road construction materials, asbestos containing materials (ACM) were used in a wide variety of building, infrastructure, and construction applications. Fibres or fragments of ACM may have been released to ground from the disturbance or demolition of historic infrastructure, for example removal of asbestos underground pipes and lagging material.

The Health and Safety at Work (Asbestos) Regulations 2016, provides a national framework for identifying, managing, and removing asbestos. In order to help achieve compliance with the Asbestos Regulations, WorkSafe New Zealand has prepared an Approved Code of Practice: Management and Removal of Asbestos (ACoP), 2016. The key requirements of the Asbestos Regulations and ACoP are that works involving asbestos contaminated soils must be undertaken with appropriate asbestos controls in place and that contaminated soil removed from site must be taken to an approved disposal site. The ACoP refers readers to the New Zealand Guidelines for the Assessing and Managing Asbestos in Soil (GAMAS), (BRANZ 2017) for further guidance on the level of control required.

Additional controls may be required for works involving structures or buildings that include ACM. The contractor shall seek advice from a licensed asbestos assessor and/or licensed asbestos removalist where this may arise. An asbestos management plan or asbestos removal control plan may be required in accordance with the Asbestos Regulations.

In all situations where asbestos may be present in soil, a SQEP must be engaged to investigate. It is important to note that a licensed asbestos assessor may not be suitably qualified to assess asbestos in soil, and likewise a SQEP may not be suitably qualified to assess asbestos in a building or infrastructure.

4.3. Te ao Māori considerations

In relation to whenua parakino – contaminated land, all soils have mauri, and the movement of soil may not be appropriate in some circumstances. Waka Kotahi has some excellent resources that may assist when seeking to engage with Māori and the Te Mātangi Māori partnerships team should be contacted in the first instance if there are any queries. Māori perspectives on managing soil should also be considered if there are sites of significance, wāhi tapu, mahinga kai, or silent file areas nearby.

5. Identification and assessment of contaminated land

5.1. Contaminated Land Management Guidelines

The Contaminated Land Management Guidelines (CLMG) are a series produced by the MfE that set out guidance on investigating, assessing, reporting and managing contaminated land providing for the consistent identification, consideration and management of contaminated land across New Zealand.

CLMG1 and CLMG5 are incorporated into the NES Soil by reference, and all site investigations and reporting must be completed in accordance with the CLMGs. Project managers should be aware of the guidelines and confirm that project investigations are completed by a SQEP. CLMG1 describes minimum reporting for contaminated land, including preliminary site investigations (PSI), detailed site investigations (DSI), site validation reports (SVR), and remediation action plans (RAP). CLMG5 provides minimum requirements for soil sampling and analysis. A full list of guidelines and resources for contaminated land can be found in Appendix A.

5.2. Initial desktop study

At a minimum, the project manager, or a SQEP on their behalf, shall complete a desktop study of the potential for the project to encounter contaminated land as part of the environmental screen.

A desktop study should include the following actions as a minimum:

- check the regional council contaminated land register
- review Waka Kotahi information and files, if available, including checking for coal tar presence (see Appendix B)
- review historical aerial photographs to assess historic land use
- determine if soil contamination has been encountered or investigated on previous projects in the area, and
- if possible, conduct a walkover of relevant properties/sites if permissions have been granted by the property team in consultation with the landowner.

If there is no indication that HAIL or other contaminating activities are occurring in the activity area, then works can likely proceed without the need for further assessment. If the desktop study shows that HAIL or other contaminating activities are identified, are considered ‘more likely than not’, or are suspected to be within the activity area, further investigation is likely to be necessary to meet regulatory requirements under the NES Soil and district or regional plan rules. Even if there is no evidence of HAIL activities, project and maintenance managers should include provisions for unexpected discovery of contamination in environmental management plans (see section 8.1).

For small volumes (less than 5m^3) of ground disturbance (for example hand digging) in a defined area, additional investigations are generally not required and the works would likely be able to proceed as a permitted activity under the NES Soil (See section 4.1.1 and figure 4.1).

For activities where soil disturbance volumes will exceed the NES Soil permitted activity thresholds (such as where earthmoving equipment will be used), further investigation must be completed in order to inform an application for consent under the NES Soil. At a minimum, the project manager or contractor will have to engage a SQEP to:

- complete a PSI, see section 5.4
- if indicated to be required in the PSI, complete a DSI, see section 5.5.

If NES Soil consent is required for a project, any reports produced will need to be submitted to the local council as part of the consent application and for their records.

Choosing a suitably qualified and experienced practitioner (SQEP)

A SQEP is typically an employee of an engineering or environmental consultancy who has experience in assessing and managing contaminants in soil. A contaminated land SQEP needs to be selected carefully, as the appropriate management of contaminated land can reduce the risk to human health, the environment and reduce costs if contaminated land is identified at the earliest possible stage, or issues if it is dealt with incorrectly.

While there is no strict criteria in the NES Soil for determining whether a person is a SQEP, there is guidance on determining who is a SQEP in the NES Users' guide and Appendix E of CLMG 5 (revised 2021). One of the best ways of determining whether someone is a SQEP is to check whether they hold a current Certified Environmental Practitioner (Site Contamination Specialist) accreditation. If there is any doubt, consider discussing with the Waka Kotahi contaminated land subject matter expert.

It is worth bearing in mind that not all environmental consultants are suitably qualified to undertake all types of site assessment and investigation work. For example, a consultant may be experienced in surface soil sampling but may not be experienced in dealing with petroleum hydrocarbon plumes from leaking tanks, or similarly may not be experienced or insured for asbestos assessment. While not essential, it is helpful if a consultant can demonstrate a track record of quality work on projects

5.3. Preliminary conceptual site model

The information gathered in the desktop study will provide a basis for developing a preliminary conceptual site model (CSM) for those areas that are identified as contaminated land within or immediately adjacent to areas proposed to be disturbed or dewatered as part of project or maintenance activities. A CSM is a tool that can be a useful starting point to visualise how contaminated land poses a risk to people or the environment. A CSM prompts consideration of potential sources of contamination, pathways for contamination to spread to the area to be disturbed, receptors including workers, the public, neighbouring properties and the environment.

A generalised preliminary CSM is shown in Figure 5.5. CSMs can be tailored to specific activities and specific sites. In many cases, a written description that describes (a) contamination sources, (b) exposure pathways (such as dust and water), and (c) potential receptors (for example site workers and the public) is sufficient for a CSM.

Development of a CSM is a good first step in any activity involving contaminated land and should be refined as knowledge about contamination increases.

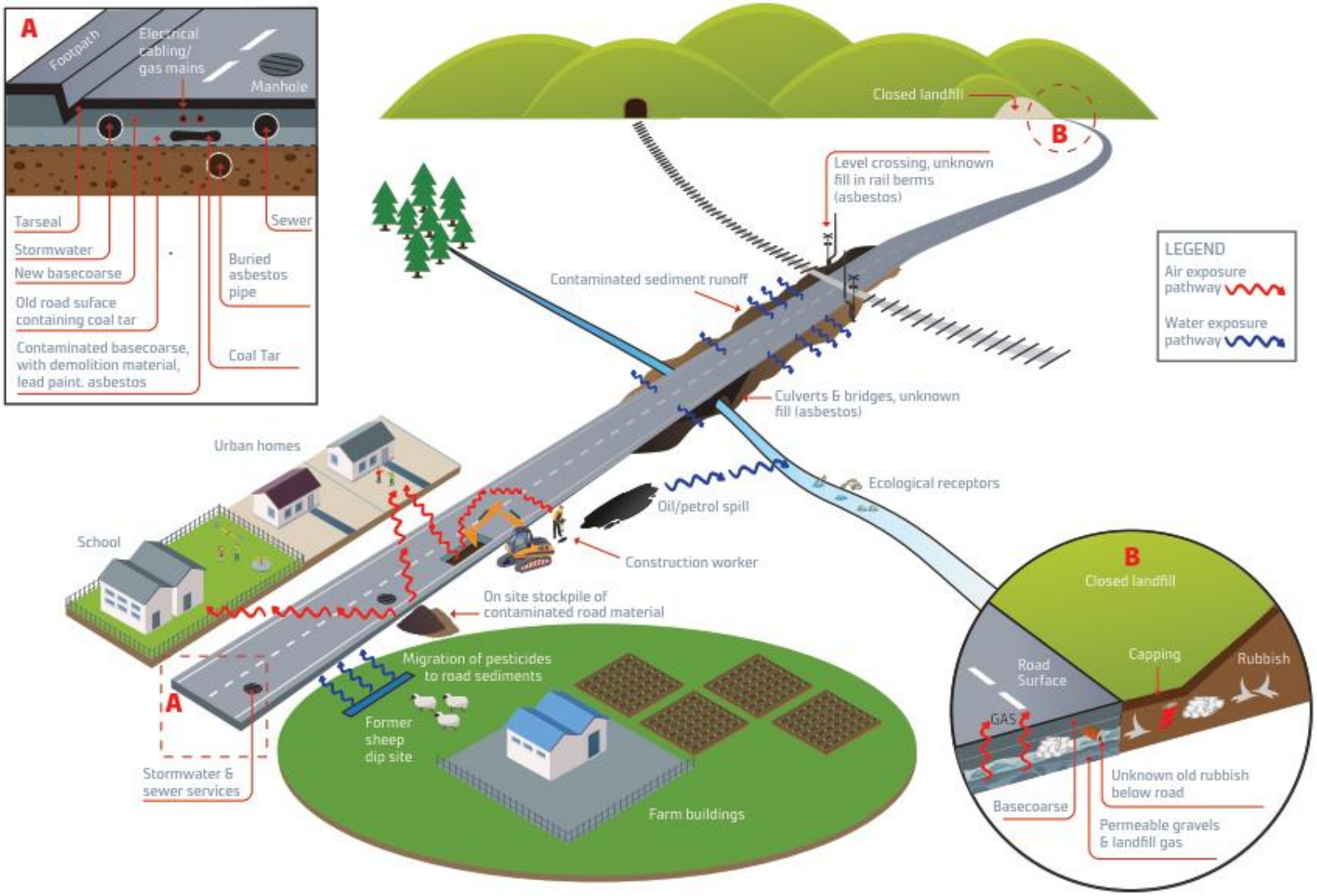

Figure 5.5. A generalised preliminary conceptual site model (CSM).

5.4. Preliminary site investigation (PSI)

Commissioning a PSI is generally advised if it is likely that contaminated land is present in a project or area of proposed maintenance, or if the area to be disturbed is large and may cross some sections of land where contaminating activities may have occurred. For capital works, a PSI can take place during the IBC or DBC (or SSBC) stage, depending on the size of the project.

A preliminary site investigation (PSI) must be done on any identified HAIL site, before works begin.

A PSI is a high-level assessment completed by a SQEP focused on identification of contaminated land or HAIL sites (past or present) in or immediately adjacent to the works area and which provides important information to inform a risk assessment. A PSI involves a comprehensive desktop exercise (refer section 5.2) and usually a site visit. Limited soil samples may be taken to get an initial understanding of soil contamination levels, to investigate areas of the site that have potential HAIL activities, or to inform potential disposal options for surplus soil. In general it is better to undertake a PSI as early as possible, so information about contaminated land can be considered early in the planning process.

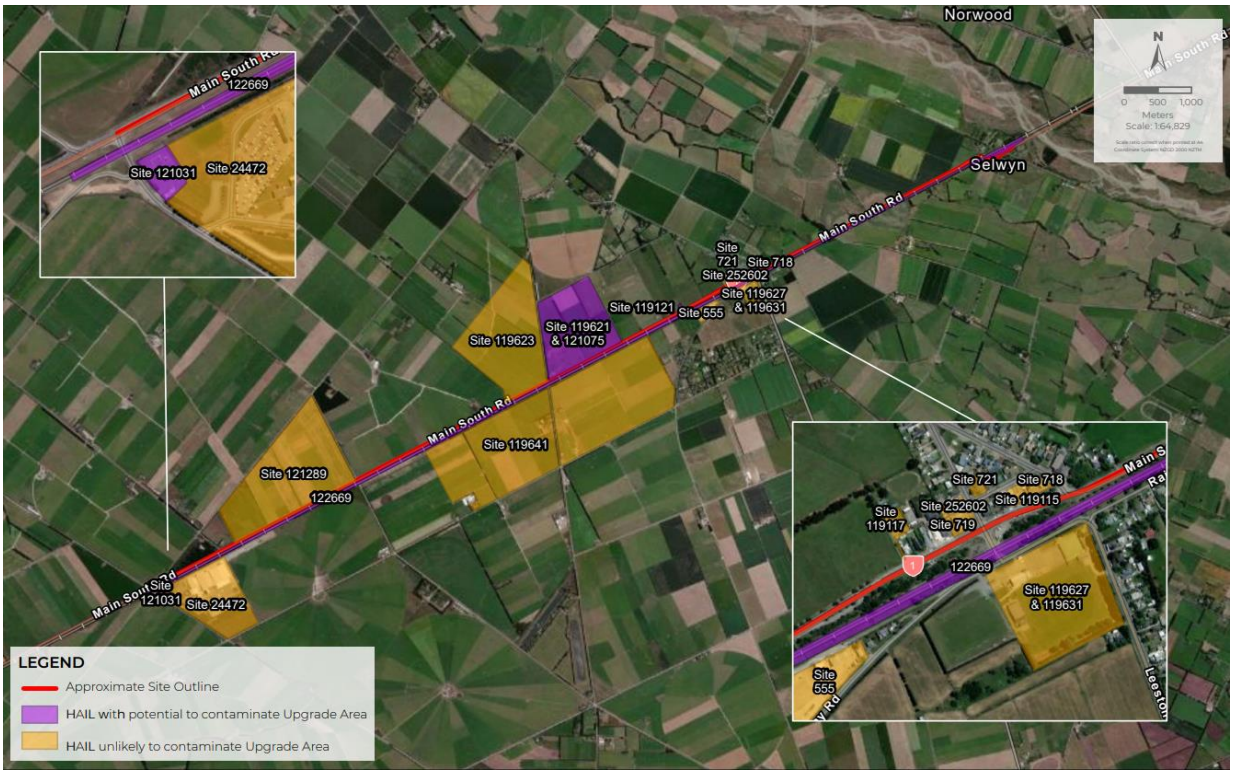

Figure 5.4.1. An example of HAIL activities identified in the vicinity of proposed works (WSP, 2017)

5.5. Detailed site investigation (DSI)

Depending on the results of a PSI there may be further work to do to identify the nature and extent of contamination in the activity area. This can be completed by commissioning a DSI, undertaken under the supervision of a SQEP. The DSI includes sample collection and analysis, and an assessment of the extent and type of contamination in the activity area. A DSI can be conducted prior to proposed maintenance works or during the DBC (or SSBC) of a capital project to assist with risk identification and assessment and consenting. By this stage the likely extent of works should be reasonably well known, and the investigation can focus on the relevant areas of contaminated land that may be disturbed. Having this information upfront can assist with procurement as contamination risks and potential costs are better established.

DSIs can also be conducted during the maintenance works or construction phase – the advantage of this is that land that may have been inaccessible during the pre-construction phase is now available for investigations. A DSI completed early (that is prior to the maintenance works or construction phase) will provide useful information to inform the design, construction methodology and potential soil disposal options. Also, it can take several weeks after soil sampling has been completed for laboratory results to be available and a report to be written.

If consent is required, the soil disturbance will not be allowed to go ahead until the regulatory authority receives the DSI. A DSI is usually included in an application for consent under the NES Soil or as an appendix in an assessment of environmental effects (AEE), as this gives the council an idea of the risks involved in disturbing the contaminated soil. If the DSI shows soil contamination at levels that may pose a risk to site workers, the public, or the environment, the council will likely require further investigation, or require provision of a site management plan (SMP) to accompany the consent application. Refer to section 8 for further information on SMPs.

An important aspect for both PSI and DSI is they should be tailored to the footprint of the activity area and/or project. It is generally unnecessary to investigate areas where soil disturbance is not planned, even if HAIL activities have occurred in those areas in the past. In some situations previous soil testing results from areas outside the project footprint may be included in a DSI. The information from the PSI and/or DSI should be used to update or expand any CSM that has been developed for the project.

Specific considerations for Waka Kotahi activities and investigations

Waka Kotahi aims to achieve industry best-practice when investigating and managing contaminated land. In addition to national legislation and guidance, the following should be considered by SQEPs undertaking investigations on behalf of Waka Kotahi:

- Land designations associated with Waka Kotahi works can often be long and narrow, which can pose challenges for investigation of contaminated land and may limit options for storage and management of contaminated soils. Earlier soil and water sample analysis may assist teams to provide for appropriately permitted disposal of soil and water reducing double handling.
- If soil is proposed to be re-used or placed elsewhere on-site or works are proposed in the vicinity of sensitive receptors such as significant natural areas additional assessment may be required (that is comparison with ecological criterion may be appropriate).
- Water quality sampling may be required to be undertaken as part of a contaminated land investigation in the event that dewatering is required, and water is to be discharged.

6. Expectations regarding soil and water sampling

Waka Kotahi expects that any soil or water sampling will be undertaken under the instruction of a SQEP, including oversight of the sampling plan and assessment of analytical results. This should ensure that sampling is appropriate relative to the scale of the project, and that relevant contaminants are sampled for. A brief overview of sampling requirements is outlined below and may be used by maintenance managers and project managers to check the suitability of soil and water sampling plans developed by contractors or consultants.

6.1. Soil and water sampling

Soil sampling should be undertaken in accordance with CLMG5. This guideline covers key aspects of sampling, including sample locations and depths, sample handling, and health and safety considerations. The sampling should be completed to a standard that enables an informed assessment of the spatial extent of the contamination, and the risks that it may pose to receptors.

In some instances, surface water and groundwater may be impacted by contaminating activities, for example a petrol station with a hydrocarbon plume extending into groundwater. For most Waka Kotahi projects, discharges of contaminants will arise from dewatering of excavations, or construction-phase stormwater. In these instances water sampling may be required to determine the impact of contaminated land on the water prior to discharge and to surface water receptors (such as nearby streams or rivers) or groundwater.

Figure 6.1. An example of a test pit where rubbish was encountered below the surface.

6.2. Laboratory analysis

The decision on what contaminants to test for in a soil or water sample should be informed by the results of the PSI and should reflect the identified HAIL activities on the site. For example, if lead is the only contaminant of concern then it may not be necessary to analyse for a full suite of heavy metals. The contaminants of interest should be determined before soil or water samples are taken, in order to ensure the correct sampling containers are used. For example, soil samples that will be tested for asbestos must be collected in a separate, larger container than the container needed for heavy metals analysis. A SQEP should select contaminants for analysis in accordance with national guidelines and local regulations or, if analytical testing is for soil disposal, an options assessment to meet the receiving facilities acceptance criteria. Analysis must be completed by a laboratory that is accredited by International Accreditation New Zealand (IANZ), with experience in the analysis of contaminants in soil and water samples.

6.3. Health and safety

Staff who collect samples must operate under an appropriate health and safety plan or job safety analysis, tailored to soil sampling risks (for example traffic hazards, physical strain, encountering underground services, working around earthmoving equipment, confined spaces, contaminants that may be encountered). Staff should use appropriate personal protective equipment (PPE).

Specific health and safety documentation required to address all health and safety risks presented by a site, including contaminant-specific risks and their management, falls outside the scope of these guidelines.

7. Contaminated land management options

Decisions on managing contaminated land can have a significant impact on costs and activity timeframes. However, there are opportunities within the legal requirements to minimise these impacts, as well as incorporating sustainable soil management practices. Various management options should therefore be considered at the outset of activities before undertaking soil disturbance works, applying for consents or other authorisations.

7.1. Management options for Waka Kotahi works

The following sections describe potential management options for Waka Kotahi works. The management of contaminated land should be undertaken in consultation with a SQEP. For sections 7.1.3 to 7.1.4, Waka Kotahi should be consulted regarding ongoing risks and liabilities associated with these options.

7.1.1. Alterations to the road design or route

The information from the desktop study for potential HAIL sites and contaminated land can be used in the early stages of project design to identify areas where soil contamination is present. These areas can potentially be avoided, or the design can include options that minimise soil disturbance. For example, avoiding deep foundations on potentially contaminated land can reduce costs for disposal of any surplus soil.

7.1.2. Reducing soil disturbance

The planning phase of maintenance works or design phase of a project is the best time to identify opportunities for reducing the volume of soil disturbed during a project. As a result, off-site disposal costs can be reduced and environmental and health and safety benefits realised. Reducing soil disturbance may also avoid the need for NES Soil consent by staying within the permitted activity criteria. Finally, the potential for off-site discharges of contaminants to the environment will be reduced if the volume of soil disturbance is minimised.

Options for reducing soil disturbance might include balancing cut and fill volumes, consideration of shallow foundations for structures or in-situ stabilisation as opposed to excavation, the use of alternative methods of excavation (such as horizontal drilling for underground services) and management of ‘over excavation’, potentially including performance standards in contracts.

7.1.3. Re-using and/or managing soil on-site

In many situations, excavated soil with low levels of contamination can be reused to minimise off-site disposal volumes and costs. This can often be a more sustainable use of soil rather than transporting it to landfill. Reuse of excavated soil can also reduce the costs of imported fill material, subject to the material meeting geotechnical considerations and consideration of a SQEP as to the suitability of the soil for reuse. Examples of low-level contamination soil reuse options could include activities such as the construction of site features including bunds, hillocks for noise control and visual amenity, and other landscaping features.

For soil with contaminant concentrations exceeding relevant guideline values, reuse may be appropriate with control measures in place such as capping or containment. When considering whether identified contaminated soil is retained within Waka Kotahi property boundaries, the ongoing maintenance and management of the soil should be considered. Wherever possible the management option should provide the best practicable option to prevent or minimise environmental impacts, minimise maintenance requirements and minimise monitoring costs.

Construction of engineered containment cells to encapsulate contaminated soils could be considered for these soils. When covered with a layer of compacted clean material, a containment cell may provide a long-term solution for managing certain types of contaminated soil. For certain contaminants, cells could be required to be protected by a thick or strong layer to prevent water intrusion, tree root intrusion, and erosion. Volatile contaminants that generate a vapour may require a containment cell with an impermeable barrier and vapour management system.

It is important that a long-term site management plan (LTSMP) is developed in situations where soil with contaminant concentrations that exceed relevant guideline values is reused within property boundaries and capped or contained. The LTSMP will provide a record the location of the material, of the types of contaminants that remain, and the measures that need to be followed to prevent the disturbance of the area. For example, an LTSMP will include measures to manage erosion, and generation of contaminated water and dust. The LTSMP should be retained within an asset owner's manual so that contractors are aware of any ongoing maintenance requirements. Even though a LTSMP will incur ongoing maintenance costs, in many cases it may still be cheaper than disposing of significant volumes of contaminated soil to a landfill.

In some situations, it may be appropriate to reuse soil on an adjacent property or on a separate property within the Waka Kotahi network. Before soil is reused on another property, you must determine whether consent is required for this activity. Unless the soil is uncontaminated material, with concentrations of contaminants that are within the range of natural background concentrations, you will likely require a consent from the regional council and may require ongoing management. You should seek the advice of a SQEP in situations where you are seeking to reuse contaminated soil at on an off-site location.

7.1.4. Soil remediation options

For some projects involving large amounts of contaminated soil, or where soil is heavily contaminated and cannot be reused or managed on-site, soil remediation may be considered. Soil remediation may be a good option where site characteristics, or the distance to off-site disposal facilities, requires alternative management methods to the traditional 'dig and dump' approach. The drawbacks of soil remediation include an increased amount of time for planning works, consenting and preparation of RAP, costs for plant and equipment, ongoing monitoring and maintenance of infrastructure.

In order to design a soil remediation system, a robust understanding of the nature and concentrations of soil contaminants and the characteristics of the soil is required. A SQEP with experience in remediation design in all cases will need to design a soil remediation strategy. A full assessment of soil remediation options is outside the scope of this document, but examples of soil remediation include monitored natural attenuation (MNA), soil mixing, and soil washing.

7.2. Soil disposal options

The most common method for managing surplus contaminated soil is to transport the soil to a disposal facility. This method is popular because contamination is usually removed from the work site and the ongoing management of the soil contamination is taken over by the disposal facility. Although this is generally the most popular option, it is increasingly at odds with Waka Kotahi sustainability goals and objectives. It is recommended that other options outlined above in section 7.1 are considered before soil is removed to a disposal facility.

The types of soil disposal facilities are described in table 7.1, along with a description of the potential risks and relative costs for different options. In all cases acceptance of contaminated material is at the discretion of the receiving facility/landfill and approval should be sought from the disposal facility prior to transporting the soil, which may involve the submission of investigation reports and/or laboratory results.

7.2.1. Impact of the waste disposal levy changes

It is worth noting that waste levy charges (under the Waste Minimisation Act 2008) are being progressively increased from 2021–24 across landfills, and managed and controlled fills. Further information on the levy increases can be found on the MfE website. The aim of increasing the levy is to encourage and incentivise material reuse and recycling, rather than disposing of material to fill sites.

The levy does not apply to cleanfills (class 5) but the definition of cleanfills under the Waste Minimisation Act restricts their definition to facilities that only accept virgin excavated natural material (VENM). This differs from the MfE cleanfill guidelines that were produced in 2002, that allowed for the deposition of weathered asphalt (bitumen). For Waka Kotahi this means that bitumen disposal for capital and maintenance projects will likely incur a levy as it is not considered to be cleanfill under the Waste Minimisation Act and associated waste levy regime.

Table 7.1. Soil disposal options and types of disposal facilities[2]

Option	What can be disposed?	What are the associated risks and costs?
Cleanfill (Class 5)	Natural, inert material that contains contaminants concentrations within natural background levels. For contaminated sites, or for sites where HAIL activities are likely to have occurred, disposal to cleanfill is not allowed unless analytical testing shows that contaminant concentrations are within background levels. Liquid waste and treated contaminated soil (eg stabilised soil) are not generally not acceptable for cleanfill disposal.	Most sites that have been developed for roading purposes will not contain high levels of contaminants. However, diffuse sources of contamination (eg soil contaminated with lead from historical petrol emissions), and point sources (eg coal tar, underground storage tanks) may be present in soil, and soil from these areas will likely not be acceptable for cleanfill disposal. If contaminated soil is improperly disposed to cleanfill it may need to be removed at the generator's (i.e. Waka Kotahi or contractor's) cost. Cleanfill disposal is the cheapest off-site disposal option, and usually requires no additional consents or approvals.
Managed (Class 3) and controlled fill (Class 4)	Surplus soil and other material (eg building materials) that contain contaminants at concentrations above background levels. Material that is suitable for cleanfill disposal is also suitable for managed fill disposal. Managed fills have more controls than cleanfills to manage discharge of contaminants in leachate. However, highly contaminated soils and liquid waste are not suitable for disposal to managed fill.	Managed and controlled fills are consented to receive contaminated materials with some able to receive construction and demolition waste. Soil sample analytical results can be compared to the landfills' acceptance criteria, which can be used to assess if the material might be acceptable for disposal. It is important to note that the facility has the discretion to accept the material or not, even if it meets the acceptance criteria. The capacity of these facilities to receive large volumes of low-level contaminated soil may be unsuitable for projects with large amounts of surplus soil. Managed and controlled fills are not consistent across the country in terms of their environmental management. Inappropriate disposal of highly contaminated soil may result in legal actions and costs for removal of contaminated soil. Soil testing is required for disposal of low-level contaminated soil to a managed or controlled fill. Note that managed and controlled fills are not available in some parts of the country.
Landfill (Class 1 and 2)	Engineered facilities with a relatively high level of environmental controls. Landfills often have a system for collection of leachate that is generated through breakdown of waste materials. Contaminated soil may be accepted at a landfill, subject to the waste acceptance criteria. Soil testing is generally required to determine total concentrations of contaminants, and to assess whether the soil will generate contaminated leachate. Class 1 landfills can accept soil with high levels of contaminants, including asbestos. Class 2 landfills can accept waste that typically contains 10 times less contamination than what is acceptable at a Class A landfill.	Soil testing, organised and completed by a SQEP, is required before disposal to landfill. Liquid and sludge wastes will likely require some form of treatment so that the landfill machinery can handle them. There are relatively few landfills in New Zealand that can accept highly contaminated soil (often only one to three per region), so transport and disposal costs may be high to take soil to a distant disposal location. Disposal of asbestos waste requires special handling (such as sealed trucks, wrapping of soil) and is typically more expensive than disposal of other contaminated soil. In all cases approval should be sought from the disposal facility prior to the transportation of the soil. Note also that waste levy charges for Class 1 facilities are increasing progressively from 2021 onwards.

[2] Descriptions in the table are based on the full description of landfill facilities as defined by the Waste Minimisation (Calculation and Payment of Waste Disposal Levy) Regulations 2009

8. Construction site management plans

For all projects involving soil disturbance on contaminated land a site management plan (SMP) is an important document. The site management plan details how the proposed works will comply with safety and consenting requirements. For Waka Kotahi these can be included in an environmental management plan (EMP) along with other environmental considerations. P47 Environmental, social and cultural management during construction outlines the Waka Kotahi minimum standards for managing environmental, social and cultural impacts. CLMG 1 recommends that a SMP includes procedures for managing the aspects listed below:

- **Community relations** – it is important that people who live nearby to the works, and businesses that may be affected by the works, are taken into consideration. This could involve an extensive consultation process for major projects, simply providing information or approaching a defined contact person for smaller projects with less impact on neighbours.
- **Stormwater and soil management** – soil disturbance often results in discharges of sediment to stormwater, and this discharge should be minimised as much as possible. Depending on the scale of the project, the SMP will include engineering provisions for managing stormwater contamination (for example installation of silt fences, daily cover of exposed excavations). Regional councils often include specific provisions in plan rules for managing stormwater discharges, including the requirement for a specific erosion and sediment control plan (ESCP).
- **Noise and odour control** – noise generated during earthworks will usually be considered and managed by the contractor as part of their standard work procedures. Odour related to volatile soil contaminants (such as coal tar or petroleum contamination) may require specialist consideration and management approaches, as well as consultation with neighbours and local businesses to minimise the impact of odour on them.
- **Dust control** – generation of contaminated dust during earthworks needs to be considered and controls put in place. Like noise controls, contractors will generally address dust control as part of standard work procedures. Dust control measures need to be more stringent for certain contaminants, particularly asbestos where the risk of dust exposure is much higher.
- **Contingency plans to respond to site incidents** – the SMP must outline procedures and responsibilities in situations where contaminants are unexpectedly discharged to the environment (for example spills), and where unexpected contamination is discovered (see section 8.1).
- **Proposed long-term site management** – depending on the type of earthworks, soil contamination may remain in place after a project is complete. The LTSMP should describe methods for identifying areas of contamination and any structures designed to contain contamination (such as engineered containment cells) are not compromised in future works. In some cases, ongoing monitoring of discharges in air and water (including groundwater monitoring) will be required. Sometimes this information is provided in a separate document that presents the post-earthworks condition of the land, and the necessary controls required for future disturbance.
- **Occupational safety and health issues and measures** – the SMP must describe specific health and safety measures related to soil contaminants to protect the health and safety of workers. These measures include provision of appropriate personal protective equipment (PPE), established exclusion zones for highly contaminated areas, and potential ongoing monitoring of worker health and safety (for example physical examinations if workers are exposed to contaminated soil for long periods).

8.1. Unexpected contamination

Unexpected contamination can also be encountered during site works, and an accidental discovery protocol should be included in any construction site management plan prepared. Any of the following indicators may reveal unexpected contamination:

- strong odours when breaking into soil
- stained and discoloured soil or water in excavations
- presence of buried drums or containers
- presence of refuse
- visible sheen on soil, surface water, groundwater or dewatering water
- visible asbestos-containing material fragments or fibres, and
- fill material that originated from an unknown source.

If these indicators are observed, work needs to stop in that area. It is useful to take photos and write a description of what has been observed, then the areas should be isolated by taping or coning the area and the appropriate notifications included in the plan actioned. If clean soil is used to cover unexpected contamination, the clean soil will likely become contaminated and should be managed in the same manner as the contaminated soil.

A SQEP should be contacted to assess the contamination and provide advice on how to manage it. Often this will require visual confirmation of the potential contamination, soil sampling for confirmatory testing, provision of advice and preparation of a subsequent report. If sampling is required, considerations and expectations for soil and water sampling are outlined in section 6. The NES Soil may also apply to the works following the discovery of any unexpected contamination, and the requirements outlined in section 4.1.1 should be followed.

Records to indicate that the above steps have been completed shall be kept with the project files, and included in any completion reporting (for example the site validation report or works completion report).

9. Reporting and ongoing monitoring requirements

In addition to the PSI and DSI documents described in section 5, there may be additional reporting requirements for projects involving disturbance of contaminated soil. In situations where a resource consent is required for a project, the regional council or district council will likely include consent conditions that require submission of the following key documents. It is also important that information regarding management, disposal or movement of contaminated soil is retained by Waka Kotahi to inform future works or maintenance activities in these areas.

9.1. Works completion report

A works completion report can be required by territorial or regional council authorities and generally includes verification and validation that the works in relation to contaminated land have been undertaken according to agreed procedures and the site management plan. In many cases a works completion report will be sufficient for Waka Kotahi works, as opposed to a site validation report as detailed in section 9.2 below, which is specifically for confirming that remedial goals have been met.

This report may include information confirming contaminated land disturbance is completed in accordance with the SMP, documentation of off-site soil disposal, and confirmation that no contaminated land complaints were received. The report may also detail unexpected contamination encounters and actions taken and locations of these discoveries.

9.2. Site validation report (SVR)

A site validation report (SVR) is completed at the conclusion of works involving contaminated soil to demonstrate that the project objectives and remedial goals have been achieved in accordance with the RAP. The SVR should be written in accordance with CLMG 1 and should include the following:

- any variances from the original project plan, and confirm that the project met the conditions of any regional or district (for example NES Soil) consents for the project
- any testing results of remaining in-situ soils, after contaminated soil has been removed
- evidence of appropriate off-site disposal of any contaminated soil, including waste disposal dockets for disposal to cleanfill, managed fill, or landfill
- if soil has been reused within the site, document where the soil was placed and what management measures were put in place (if required)
- a description of any incidents or unexpected contamination discovered during the works
- if further testing was undertaken, for example to investigate a spill or an area of unexpected contamination, the SVR will include details of the testing and any further risk assessment completed by the SQEP.

Often, the requirements of a SVR are met by a works completion report. The appropriateness of a works completion report depends on the scale of the works and the degree of soil contamination, and advice may be sought from a SQEP to ensure the appropriate level of reporting. The details and location of any contaminated soil remaining on-site should be recorded in an appropriate filing location, ideally with GIS location data accompanying it. A copy of the report should be provided to the Waka Kotahi Environment and Sustainability team: environment@nzta.govt.nz.

9.3. Ongoing monitoring

If a management option that requires a LTSMP is chosen, for example retaining contaminated soil on-site, it is likely to need ongoing monitoring and maintenance following the completion of works. This may be required as part of a consent from a council. Ongoing monitoring and maintenance ensures that any containment features such as a capping layer remain in good condition, and that there are no impacts on the surrounding environment.

Maintenance teams should be provided with relevant documentation at the completion of works, including, but not limited to, the location of the management option, maintenance requirements, health and safety considerations, and any consent conditions.

Appendix A: Guidelines and resources for contaminated land

Ministry for the Environment (2012). *Users' guide: National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*. www.mfe.govt.nz/publications/rma-land-hazards/users-guide-national-environmental-standard-assessing-and-managing.

Ministry for the Environment. Contaminated Land Management Guidelines (CLMG). Available at the links below:

- *CLMG No. 1 – Reporting on contaminated sites in New Zealand* (Revised 2021). https://environment.govt.nz/publications/contaminated-land-management-guidelines-no-1-reporting-on-contaminated-sites-in-new-zealand/
- *CLMG No. 2 – Hierarchy and application in New Zealand of environmental guideline values* (revised 2011). https://environment.govt.nz/publications/contaminated-land-management-guidelines-no-2-hierarchy-and-application-in-new-zealand-of-environmental-guideline-values-revised-2011/
- *CLMG No. 3 – Risk screening system* (2004). https://environment.govt.nz/publications/contaminated-land-management-guidelines-no-3-risk-screening-system/
- *CLMG No. 4 – Classification and information management protocols* (2006). https://environment.govt.nz/publications/contaminated-land-management-guidelines-no-4-classification-and-information-management-protocols/
- *CLMG No. 5 – Site investigation and analysis of soils* (revised 2021). https://environment.govt.nz/publications/contaminated-land-management-guidelines-no-5-site-investigation-and-analysis-of-soils/

Ministry for the Environment (2011). *Guidelines for assessing and managing petroleum hydrocarbon contaminated sites in New Zealand*. www.mfe.govt.nz/publications/hazards/guidelines-assessing-and-managing-petroleum-hydrocarbon-contaminated-sites-new.

Ministry for the Environment (1997). *Guidelines for assessing and managing contaminated gasworks sites in New Zealand*. www.mfe.govt.nz/publications/hazards/guidelines-assessing-and-managing-contaminated-gasworks-sites-new-zealand.

New Zealand guidelines for assessing and managing asbestos in soil, as referenced in https://www.worksafe.govt.nz/topic-and-industry/asbestos/management-and-removal-of-asbestos/.

WorkSafe (2016). *Approved Code of Practice: Management and removal of asbestos*. https://worksafe.govt.nz/topic-and-industry/asbestos/management-and-removal-of-asbestos/.

Ministry for the Environment (2019). *PFAS [per- and poly-fluoroalkyl substances] investigation, response and funding guidance*. https://environment.govt.nz/assets/Publications/Files/pfas-investigation-response-funding-guide.pdf

Appendix B: Coal tar

Coal tar was used in road surface binders and road surface treatments around New Zealand until the 1970s and as up to as late as the 1980s. Coal tar contains high levels of polycyclic aromatic hydrocarbon (PAH) compounds, much higher than bitumen, and these can present risks to human health and the environment if not managed appropriately. Coal tar can also be costly to dispose of, as it can only be disposed of to facilities that are consented to receive it. WasteMINZ is in the process of developing a full guidance document for assessing and managing coal tar. Until the guidance is published project and network maintenance managers should be aware of the potential for encountering coal tar. The sections below outline the high-level considerations when assessing the risk of encountering coal tar, and how it should be managed when encountered.

B1. Health and environmental concerns from exposure to coal tar

Coal tar in road surfaces and impacted pavements is unlikely to present a significant risk to worker or public health in its undisturbed form. However, during maintenance and rehabilitation activities where coal tar is disturbed, contaminants may become exposed and mobilised through dust and other small particles.

The key risk of coal tar to the environment is the discharge of particles of coal tar as sediment and deposition in streams, rivers and harbours. PAHs are toxic to animals as well as humans, so environmental controls should focus on preventing the generation of fine-grained particles and controlling the transport of sediment off-site.

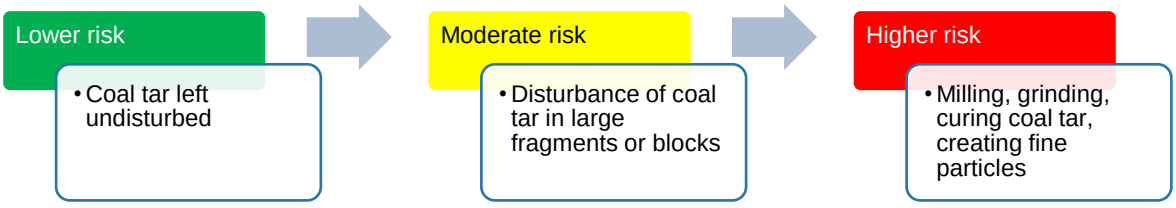

Figure B1: Risks associated with encountering coal tar in the Waka Kotahi network

B2. Potential for encountering coal tar

The early identification of coal tar risk allows for a better project planning and outcomes. Cost-effective solutions for disposal of waste materials can be considered, and appropriate health and safety and environmental controls can be more efficiently implemented. Table B1 below outlines the potential likelihood of encountering coal tar across the Waka Kotahi network. If there is a likelihood of encountering coal tar a SQEP should be engaged to undertake testing and provide advice on management and disposal options.

Table B1: Likelihood of encountering coal tar in the Waka Kotahi network

Likelihood of encountering coal tar	
Road built after 1980	Unlikely to be present
Older roads in urban areas, particularly near gasworks sites	Higher likelihood of encountering coal tar
Regional roading network	Lower likelihood in general, but increasing for roading near railway lines
Road built before 1980 with low disturbance – eg never repaved and **low number of underground services**	Possibly present, with the distribution of coal tar relatively consistent
Road built before 1980 and significant disturbance (repaving, stripping, significant underground services)	Possibly present but the distribution of coal tar may be inconsistent

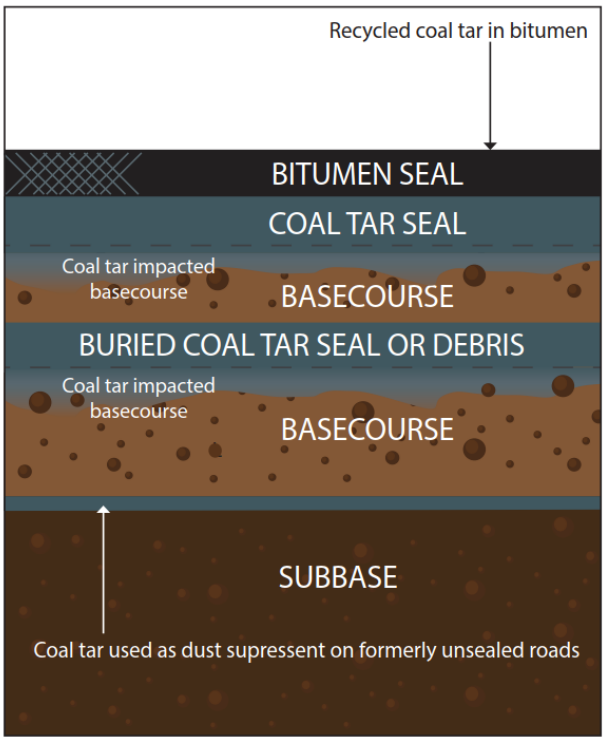

Figure B1: Example of the potential vertical distribution of coal tar within the pavement profile

B3. Managing coal tar when it is encountered

The main options for the management of coal tar are:

- **Leave materials in place – overlay with new pavement or seal**, and minimise the disturbance of coal tar impacted materials.
- **Excavate and dispose** the coal tar materials with appropriate handling and disposal to a facility licensed to receive these materials.
- **Treatment or stabilisation options** through materials recycling and stabilisation.
- **Excavation and re-burial on-site** resulting in encapsulation of coal tar materials under or beside the roadway.
- **Excavation and re-burial off-site (within the designation)** resulting in encapsulation of coal tar materials in bridge abutments or other areas with large fill volume requirements.

Each approach has advantages and disadvantages. The specifics of the project will determine the most appropriate and cost-effective strategy – often a combination of strategies will be required. The management approach should consider implications on future maintenance and upgrade activities.

For maintenance projects where the removal of coal-tar impacted surfaces or pavements is required, excavation and off-site disposal is likely to be the only available management option.

All management options must meet both engineering and regulatory requirements.

B4. Disposal of coal tar and coal tar contaminated materials

Coal tar, coal tar contaminated bitumen and basecourse or subgrade containing coal tar cannot be disposed at a cleanfill. If there are visual or olfactory indications of coal tar, or field or laboratory testing indicates the presence of coal tar then the material must not be disposed at a cleanfill facility. Coal tar materials must be disposed to a facility licensed to receive such materials. A SQEP will be best placed to make that assessment.